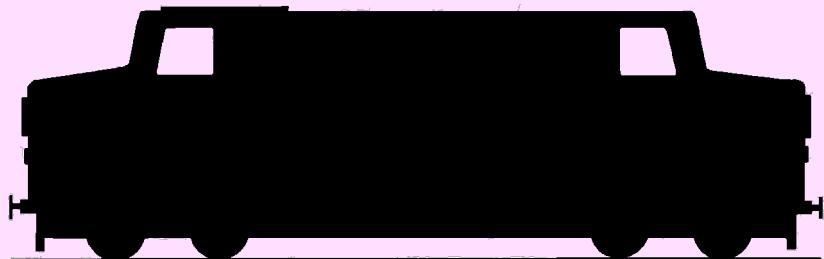
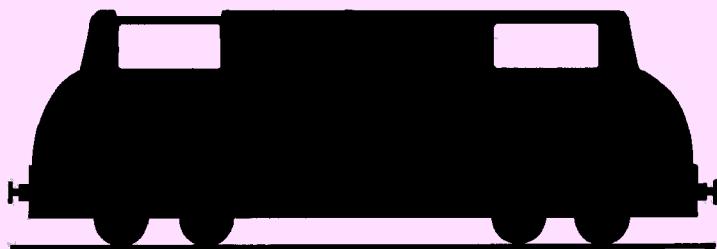


A HISTORY OF THE PAIGNTON ZOO RAILWAY

The story of the railway running in the grounds of the zoo, from opening in the Second World War to the present day



MINOR RAILWAY HISTORIES – No.5

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from opening in the Second World War to the present day**



PETER SCOTT



"Warship" locomotive D801 "Jungle Express" waiting in the station at the head of a full train of brightly coloured coaches. The former main driveway is right and the old ticket office building is left, behind the photographer. The platform was later removed when the new class 37 diesel, replacing this locomotive, arrived in May 1995.

(S Mortimer. 21/7/91)

Overleaf: On a beautiful, bright sunny day, the class 37 diesel heads out on well loaded train. It has just passed the site of the former station seen in the view above. The former main driveway is behind the hedge over which, two youngsters watch the train's progress.

(P Scott. 15/4/08)

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INTRODUCTION

The Paignton Zoo Railway owes its existence to a Conservative MP's son from Liverpool and a Billiard Slate Maker's son from Battersea - an unusual and perhaps unique combination. It was Herbert Whitley, son of Edward Whitley, solicitor and one time MP for Everton who first established, solely as a private collection, what was to become Paignton Zoo. Herbert opened his grounds to the public in 1923 for educational and scientific reasons - not for entertainment. Unfortunately, Customs and Excise saw it differently and there followed a battle, with the zoo closing and opening to the public a number of times.

Herbert Whitley would have never tolerated the idea of a miniature railway running through the grounds of the zoo, but the Second World War was to change things. He was on the verge of disposing of most of his collection, when Reginald Goddard came onto the scene. The Billiard Slate Maker's son from Battersea had opened a zoo at Chessington in 1931 and in August 1940, obtained a five year lease of Paignton Zoo from Herbert Whitley. This suited both men well - Whitley would see his collection retained and the zoo reopened to the public, while Goddard would have another outlet and a refuge during the war for some of his animals. Reginald Goddard was very much in favour of entertainment in addition to his zoological interests. Chessington Zoo had a circus from its early days and a miniature railway from 1932. It was no surprise then when he moved some of his attractions to Paignton. Therefore, the Paignton Zoo Railway opened to the public in September 1940, as a 12" gauge line, using equipment from Chessington.

At the end of the war, Goddard was unable to extend his lease or obtain the freehold and he departed back to Chessington in February 1946 with his 12" gauge railway. A brief period of steam operation followed in 1947 and 1948 with a new gauge of 10¼". In the summer of 1948 a petrol locomotive from Dudley Zoo took over and internal combustion has held sway on the railway ever since. The railway has always contributed a significant amount of revenue to help support the zoo - this and providing entertainment for youngsters (and adults!), whilst allowing unique views of the lakes and their wildlife, explain its continued existence and appeal. It now carries around 120,000 passengers each season, making it one of the most intensively worked 10¼" gauge railways in the country.

The railway may appear to have had a fairly simple life (the track layout has barely changed since 1940) and an unrewarding subject for research. However, that is far from the case. As ever with miniature railway research, the story extends far away from the central subject. I am grateful to the large number of people who have assisted me, please see the Acknowledgements section. I am indebted to the staff at the zoo, Ken Bean for valuable help and guidance on the Chessington "Earl" locomotives and to Dave Holroyde, Simon Townsend and James Nutty with assistance in tracing the history of the locomotives. Ray Ellis provided much useful information on the zoo during the war years. Where possible, all research has been taken back to primary sources.

Here then, for the first time, is the full story of this 10¼" gauge railway, from its roots as a 12" gauge line, right up to the present time. I hope the book is a suitable tribute to Herbert Whitley, Reginald Goddard and all those who have worked on the railway over the past 68 years.

Peter Scott
Reading
September 2008

CHAPTER ONE

PAIGNTON ZOO

FARM ESTATE TO ENVIRONMENTAL PARK

Introduction

Paignton is now a well-known seaside resort, located on "England's Riviera" on Tor Bay - with the zoo being one of its most popular attractions. The area has the highest number of hours of sunshine each year in the country and is sheltered from the prevailing west winds. The earliest settlement is believed to have been around 700AD and there have been various different versions of the town's name - the earliest can be traced to the Domesday Book as Peinton. Other variations include Paington, Paynton and Peytone. It was officially called Paington as late as 1837. Although at the centre of the Tor Bay, Paignton was less attractive for the merchant and fishing fleets, which preferred the more sheltered quays of Brixham and Torquay. However, there were references to a harbour as early as 1567.

Before the coming of the railway, Paignton was still very much a farming community, noted for its cider and large sweet cabbages. The real rise of the town as a seaside resort dates from late Victorian times. The railway reached Paignton in 1859, opening on Monday 1st August, having opened to the present Torre station (then called Torquay) from Newton Abbot on Monday 18th December 1848. Paignton's population in 1801 numbered 1,575, rising slowly to 1,796 in 1821. In 1871 it stood at 3,590 and further increased to 8,385 in 1901 and to 11,241 in 1911. By 1954 it had risen to 25,000 and in 2001 it stood at 47,398. Always an attractive sandy beach, the sands and dunes needed a sea wall and promenade to stop erosion. This was constructed in the 1860s, with the pier opening in June 1879.

For centuries Paigntonians have been known as "pudding-eaters" because of the pudding that was part of its history for seven centuries, since the granting of the town's charter in the 13th century. To mark the completion of the railway in August 1859, a huge pudding was baked and a dinner held on Paignton Green for invited guests. The pudding was made in the shape of a cone and cost £45, with an estimated weight of 1½ tons. Over 15,000 people congregated on the Green, either as guests or spectators, to witness this huge pudding. The custom is that the Paignton Pudding is baked every 50 years.

The zoo had an on-off early life, first opening to the public in 1923 and then closing and opening three times over the years from 1924 to 1946. It took a century and a half for marshy land in Paignton to be reclaimed, the last major reclamation being at Goodrington in 1936. The railway was extended on to Kingswear, to serve Dartmouth - opening on Tuesday 16th August 1864. However, the section from Paignton to Kingswear was closed officially by British Rail on Saturday 28th October 1972. It was taken over by the Dart Valley Railway from 30th October 1972 and is still operated by them, as the Paignton & Dartmouth Steam Railway - another popular attraction for the many holiday visitors to the area.

Herbert Whitley

What is now known as Paignton Zoo Environmental Park was founded by Herbert Whitley, a rich, shy, self taught scientist and eccentric. With a tall gangling figure, it is said that he ate and slept little, rarely travelled or appeared in public and dressed in shabby clothes. However, Herbert's roots were far away from Devon, being in the north west of England. He was born in Halewood, Lancashire, just to the south east of Liverpool, on 2nd January 1886.

Herbert's father, Edward Whitley (1825-1892) was a well-known figure of society in Liverpool. Born in that city, he was educated at Rugby and practised as a solicitor in Liverpool from 1849. He became a magistrate in 1868 and from 1866 was a member of the Town Council and Mayor in 1867-1868. He went on to become a Conservative MP for Liverpool from 1880-1885 and MP and County Councillor for Everton from 1885 until his death in 1892. With his wife, Elizabeth Eleanor, he had five children - Herbert being the third eldest. Herbert therefore came from an affluent and well-to-do family.

A Move to Devon

Herbert's father, Edward Whitley, died aged 67 in 1892 leaving his wife to manage the family, or at least the younger members of it, on her own. Having decided to leave the north west of England, quite why the family chose a new life in Devon and specifically Paignton is not known. Their new home was the Primley Estate, with its mansion on Primley Hill, on the western outskirts of Paignton, where the family arrived in 1904. Originally called "Prim-Leigh" from the Anglo Saxon "Morning Meadow", Primley had previously been owned by the Belfield family.

Herbert's interest in wildlife was said to have started when as a child his mother gave him a pair of canaries. He had already bred and displayed finches before the move south. Herbert must have been delighted when he saw the sixteen greenhouses adjoining the house at his new home! However, in the meantime to run the Primley Estate, Herbert went into partnership with his next eldest brother, William.

Primley Estate Develops

Over the next few years the estate grew quickly. Nearby farms were bought up and herds of cattle and sheep acquired and bred. A horse stud was developed and large black pigs introduced. Animals were sold locally, as well as being exported overseas. By 1911 William and Herbert were winners at the Royal Cornwall, Devon County and Bath & West Shows. Expansion went on unabated - dogs kennels were constructed and great danes, greyhounds and whippets bred; a poultry farm was built and in 1908 a set of large pigeon lofts were erected. In a few years the Primley Estate had become a live stock "supermarket" and had by 1910 grown to be the largest employer in Paignton. In 1910 some monkeys arrived and one assumes plans for a zoo must have been forming in Herbert's mind. Indeed, the first exotic birds came to Primley in 1911.

The coming of the First World War in 1914 meant a shortage of man power on the estate's nine farms. Both Herbert and William were prevented from action due to medical conditions,

but sadly their younger brother Charles was killed at Arras in April 1917. With the war over, William went off to run his own estate, having married a few years earlier. This left Herbert to manage the Primley Estate on his own, but development continued. A sixty hutch rabbitry was built, with guinea pigs and coloured mice introduced. He also formed his own tropical world - with a fish and amphibian collection, joined by a large variety of exotic plants. These developed into a well-known and respected botanical collection.

The Zoo Opens to the Public

Herbert Whitley never intended his private zoological and botanical collection to become a commercial operation, but in 1923 local pressure eventually persuaded him to open it to the public. He designed the 75 acre layout himself, in grounds across the main road from Primley House. This was a lightly wooded undulating site, with a stream running through. Here he planted an arboretum of rare and unusual trees and shrubs, and laid out the cages and enclosures for his extensive animal collection.

There appears to be no record of the date when the zoo first opened to the public and there was certainly no official opening ceremony. The *Torbay Express* of Monday 2nd July 1923 stated the zoo "*will shortly be opened to the public*", while the *Paignton Observer & Echo* of Thursday 5th July 1923 reported that it was "*rapidly nearing completion*". The evening of Tuesday 10th July 1923 saw members of Paignton Urban District Council paying "*a visit of inspection*" on the invitation of Herbert Whitley. The new zoo seems to have been known as the "*Torbay Zoological Park*". Entrance, initially appears to have been free, but Herbert then had to charge users of one of the roads leading through the new zoo. Some lesser individuals had been annoying the animals, so a charge of 1/- for adults and 6d for children was imposed. Almost immediately this fell foul of HM Customs & Excise.

Entertainments Tax & Closure

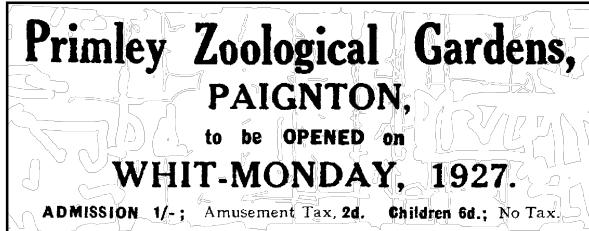
Entertainments Tax had been imposed in 1916 as a temporary measure for the First World War, but was still in force in 1923 (it was finally abolished in the 1957 budget). The officials stated that as Herbert was making a charge, he was providing entertainment and would have to pay Entertainments Tax. This he refused to do, seeing his zoo not as entertainment, but education. Therefore, he appeared before Paignton Magistrates on Friday 21st March 1924. Unfortunately, HM Customs & Excise won, and Herbert immediately reacted by closing the zoo to the public. He stated: "*Mr Herbert Whitley (the owner) does not intend to defraud the public by charging Tax where no entertainment exists, and consequently, with much regret, has decided to close the grounds to the public*".

However, closure did not stop development of the zoo continuing. New cages for the ever increasing number of animals were provided and the stream dammed to form some lakes. One special arrival at this time were a pair of condors - more used to soaring sixteen thousand feet up in the Andes, than living by the seaside in Paignton! With the zoo closed to the public, the peace allowed the various new arrivals to settle into their new habitat.

Reopening & Closure Again

Thankfully, Herbert relented and the zoo reopened to the public on Whit Monday, 6th June 1927, this time under the name "Primley Zoological Gardens". Admission was set at 1/2d for adults (including the disputed tax at 2d) and 6d for children (tax free). The collection was described at this time as "*the finest and largest private zoo in the world*". Already eighty rare species had been bred and reared there and lions were now also amongst the selection of animals on display. The lakes were also populated with an extensive collection of wildfowl. The first guide book was published in 1930 and two pages outlined the argument over the Entertainments Tax that was soon to raise its ugly head again. The first fatal accident occurred on Monday 5th October 1931, when a member of staff was mauled by a lion and later died.

An advert from the Thursday 2nd June 1927 edition of the *Paignton Observer & Echo*, advising about the reopening of the zoo.



August 1934 saw the opening of the tropical house - however, this gave rise to another falling out with HM Customs & Excise. From 1st January 1937, it was decided to split the admission into two 6d tickets: one for the main zoo admission and one for a supplementary entrance fee to the tropical house - thereby avoiding the Entertainments Tax. Initially, the authorities stated they were satisfied no Tax was due, but in April 1937 reversed their decision. Therefore, from the evening of Whit Monday, 17th May 1937, Herbert Whitley closed the zoo to the public. On Friday 6th August 1937, he was again summoned to appear before the magistrates for non-payment of the Tax (for the period 1st January to 17th May 1937 presumably). Again he lost; being fined accordingly and therefore keeping the zoo closed. Despite local pressure, HM Customs & Excise stood firm. This was despite the zoo entirely being a scientific collection, whereas some other zoos that were exempt from Entertainments Tax included amusements in their programme.

With no hope of the zoo reopening, animals of more interest to the visiting public than Herbert were moved on. Otherwise new examples still arrived. With the outbreak of the Second World War in September 1939, the future for private zoos looked very bleak. Herbert decided to dispose of a large part of his collection, except for his beloved pigeons and some of the reptiles. The rest of the reptiles went to Belle Vue Zoo in Manchester and in the summer of 1940 he was considering disposing of more of his collection, when things suddenly changed.

Second World War

Animal lover and entrepreneur, Reginald Goddard (1890-1946) had opened his Zoological Garden at Chessington, Surrey in 1931 and had rapidly established it as a popular attraction - both for the animals and the amusements he provided, such as a circus. (See Chapter Two for more details). Chessington Zoological Garden had been closed from Sunday 3rd September 1939 at the outbreak of the Second World War, this being due to Government restrictions preventing large crowds forming at entertainment venues. This was soon relaxed and the zoo

was open again by Wednesday 13th September. However, the authorities were none too keen on the zoo's large cats and other animals considered dangerous, in view of the risk of them escaping following an air raid. Two young lions had been shot on Friday 8th September 1939 for that very reason, and two tigers were transferred to Maidstone Zoo.

The *Paignton Observer & Echo* of Thursday 22nd August 1940 reported that Reginald Goddard had been "in Torquay recently recuperating from an illness", which the *Surrey Comet* explained was a "sharp attack of pneumonia". Reports differ as to who made the first contact - Herbert Whitley looking for someone to takeover and run his zoo, or Reginald Goddard seeking to develop and run another zoo. Either way, the stage was set for an unlikely partnership between Whitley and Goddard. The former would be able to retain some of his collection and be able to reopen it to the public, while the latter gained another "outlet" and a safer place to move some of his animals to. It seems speedy talks were held over the weekend of 17th & 18th August and on Monday 19th August a five lease was signed to permit Reginald Goddard to reopen and run the zoo. No time was lost, with animals being sent down by train from Chessington to Paignton on Thursday 22nd August 1940 - the *Herald Express* of that date reporting "*Three truck loads of young animals bred by Mr Goddard at Chessington Zoo, are due to arrive at Paignton Station just after six o'clock [pm] and will be unloaded and taken to Primley*". Amazingly, given the short time to prepare things, the zoo was reopened to the public on Saturday 24th August 1940, under the name "Primley Zoological & Botanical Gardens".

Primley Zoological & Botanical Gardens
PAIGNTON

Winter Season

OPEN DAILY, including Sundays from 9.30 a.m. until Sunset.

THESE BEAUTIFUL GARDENS
will be Re-Opened to the Public

TO-DAY (SATURDAY)
August 24th, from 9.30 a.m.

Lions Tigers Leopards Bears
Elephant Camel Llamas Zebra
Monkeys Cranes Eagles
and a great variety of other Birds

Aquarium Children's Games & Toys

BABY ELEPHANT
PERFORMS DAILY at 11.30 a.m. and 3.30 p.m.
Amusing — Educational

THE GARDENS ALONE ARE WORTH A VISIT

Admission:
Combined Tickets to include Grounds, Tropical and other Houses, Aquarium, and use of Games, 1/3; or 1/- for Children under 12.

A limited number of Cars allowed in the Grounds
CAR PARK ADJACENT

You MUST Enjoy Yourselves Here !

The *Paignton News* of Saturday 24th August 1940 carried this advert mentioning the reopening, by Reginald Goddard, of the zoo that day. Note the demand "You *MUST Enjoy Yourselves Here!*". No doubt those living in the area found the zoo a welcome local attraction and a pleasant diversion from the war.

We have to thank Reginald Goddard for the inception of the subject of this book - the Paignton Zoo Railway. As we will see in the next chapter, it was he who introduced the railway during the time of his lease in the war years. A railway, after all, was not the sort of thing Herbert Whitley would have approved of - education was the thing, not entertainment.

Paignton Zoo remained open to the public during the war; indeed the Government was keen to see such attractions be available to local people - to encourage them to find entertainment and spend their leisure time locally, saving the need to travel. A Pathé news reel film, dated 6th October 1941, featured the zoo under the title "Ladies of the Zoo". It claimed all the keepers were female and showed some of them at work feeding flamingos, penguins, lions and tigers. The zoo escaped any damage during hostilities and helped the war effort, as some of the Primley pigeons formed part of the National Pigeon Service, a very hush-hush affair involving some 17,000 message carrying birds across the country. Chessington fared less well, suffering a number of hits during bombing raids - the worst being in 1944 caused by a flying bomb.

The end of the Second World War came in May 1945, and by the summer Reginald Goddard's five year lease of the zoo was nearing the end. It seems he then started negotiations with Herbert Whitley, either to obtain the freehold, or a very long lease - thereby allowing him to put money into developing and improving the zoo. In his column in the *Paignton News* of Saturday 4th August 1945 "JB" quoted Reginald Goddard as saying "*Just as soon as we can get rid of the red tape we shall go right ahead with plans for Paignton's Zoo*". However, by the beginning of January 1946 rumours were that the zoo was to be closed down, because Goddard had been unable to obtain either the freehold or a suitably long lease from Herbert Whitley. Indeed, that turned out to be the case and the zoo closed to the public at the end of Sunday 3rd February 1946. Reginald Goddard then removed his animals, staff and amusements back to Chessington, but not before Herbert Whitley had taken court action against him. This amounted to a protection order requiring Goddard to look after the remaining animals. With the war over, Chessington became very popular with the London's war weary folk, and they flocked through the zoo's gates. Sadly, Reginald Goddard died on Christmas Day, 25th December 1946. However, to his legacy, apart from Chessington, must be added the fact he allowed Paignton Zoo to survive the war years, to carry on into the future.

This notice, announcing the closure of the zoo, appeared in the *Paignton News* of Saturday 2nd February 1946.

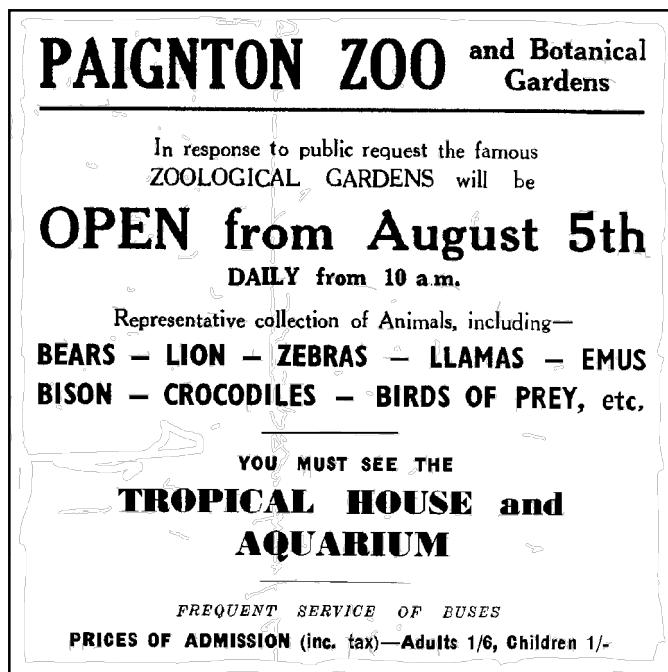


Reopening and the 1950s & 1960s

Following Goddard's departure, it seems Herbert Whitley was keen to see the zoo reopened. He granted a long lease to Norman Dixon a chartered accountant from Birmingham and Harry Manning, the latter being well-known at the time in the entertainment business. Also involved was a wealthy client of Dixon's, one W E Parkes. The latter became Chairman, while Dixon and Whitley were Directors. The zoo reopened to the public on Bank Holiday Monday, 5th August 1946, known this time as "Paignton Zoo and Botanical Gardens". The *Paignton News* of Saturday 10th August 1946 reported that 2,500 people visited on the opening day. Fortunately, the zoo has remained open continuously since.

During 1953, Herbert's health began to fail and after a long and painful illness he died on Thursday 15th September 1955, aged 69. He was buried in the family grave at St Peter's Church in the Dartmoor village of Buckland in the Moor near Ashburton. To protect the future of the zoo, the Herbert Whitley Trust (later renamed the Whitley Wildlife Conservation Trust) was created by the terms of his will - this came into being on 1st November 1956, having existed nominally since 15th September 1955. It was stipulated that the Trust be of a scientific and educational nature. This was a brief will drawn up near the end of his life and estate duty of some £500,000 left the Trust unable to carryout all of Herbert's intentions. To allow the Trust to carry on Primley House was sold, becoming an old people's home. Apart from the zoo, most of Herbert's other assets were sold at an auction on 11th & 12th September 1956. On offer were 700 acres of land, including three farms, which raised nearly £200,000.

An advert from the *Paignton News* of Saturday 3rd August 1946, advising that the zoo would reopen on Bank Holiday Monday, 5th August 1946. Note the admission charge was now 1/6 for adults (including the long disputed Tax). Yet another variation of the zoo's name was used.



The zoo now slowly developed and by the early 1960s was following the general tendency to reduce the large variety of single specimens with groups of fewer species, thereby allowing the animals to enjoy a more natural "family" life. A family of the lar or white handed gibbon, *Hylobates Lar*, arrived on the island in the large lake in 1961. The same year saw the appointment of a full time Education Officer and by 1962 the zoo had 346,751 visitors. The first giraffes arrived in 1968, by which year there were 361,464 visitors.

1970s onwards

The zoo had now begun to expand with new arrivals and attractions, including in 1972, a new born baby giraffe. In 1973 Rodent City was built and Baboon Rock completed. The years from 1975 onwards saw a significant drop in visitor numbers, which only recovered by 1985. The Ark was opened by Johnny Morris on 4th July 1985 and has since been redeveloped as a hands-on educational area. The Rhino House opened in 1986, to be followed by the Island Restaurant in 1989. 19th August 1991 saw the 20,000,000th visitor welcomed.

In 1995 the European Regional Development Fund awarded a grant of £2.9 million and for the next six years, major redevelopment work was undertaken. In April 1996 plans were announced for five habitats, to be developed with the European grant and money raised by the sale of the former car park to Safeway (now Morrisons) for a supermarket. The construction of the supermarket was somewhat controversial and only went ahead after a public enquiry finally granted permission on 20th May 1994. 1996 saw the zoo's name changed to "Paignton Zoo Environmental Park". In June of the same year the new entrance, reception area and shop was opened. All this development paid off, as in 1997 visitor numbers climbed above 300,000 to 337,739 for the first time since 1990. In 2000 Reptile Tropics, the zoo's large hothouse featuring plants and reptiles from the world's tropical forests was completed. On 24th February 2003 a Wessex Trains class 150 two-car diesel unit, 150 266, was named "The Whitley Wonder" at Paignton station by Hugh Whitley, trustee of Whitley Wildlife Conservation Trust and descendant of Herbert Whitley. The unit was also branded with zoo logos. This was one of a series of namings of this class of train after West Country attractions and railway lines.

Thankfully, the zoo founded by Herbert Whitley in the 1920s continues to be home to some of the world's most endangered plants and animals. It is a registered education and conservation charity whose purpose is to conserve plants, animals and their habitats. Many of the species in the zoo are part of national and international breeding programmes. Paignton is unique amongst zoos in the United Kingdom in that it attempts to display animals and plants in the context of their own natural habitat. These habitats are represented by areas of the zoo named: Wetland, Forest, Savannah, Devon Woodland, Tropical Forest & Desert. There are now some 500,000 visitors each year to the zoo.



The above is taken from the foot of Reginald Goddard's headed paper, for a letter written in October 1945, very near the end of his period of control of the zoo.

(Norfolk Record Office, BR 220/7)

CHAPTER TWO

FIRST RAILWAY 1940 – 1946

WARTIME 12" GAUGE LINE

Introduction

The story of the Paignton Zoo Railway starts at Chessington Zoological Gardens (now known as Chessington World of Adventures), in what was then Surrey, but now part of Greater London. Chessington Zoo's founder was Reginald Stuart Goddard, who was born on 27th August 1890 in Battersea, London. His father, Arthur Goddard was shown as a "Billiard Slate Maker" in the 1891 census and by 1910 Reginald was a managing partner in the family firm of Goddard & Son - Slate & Slab Merchants of Battersea, London. The company specialised in making slate billiard tables. He was a Flight Lieutenant in the First World War, first with the Royal Naval Air Service and subsequently the Royal Air Force. Reginald Goddard was something of a showman and entrepreneur, and owned a chain of billiard halls in one of which, somewhat surprisingly, a pet shop was established. The owner of the pet shop was encouraged by Goddard to turn it into a miniature zoo and it was this that seems to have got him interested in such things.

To establish his zoological garden, Reginald Goddard purchased Burnt Stub - a mansion with 65 acres of parkland and gardens adjacent to the Kingston - Leatherhead road (the present A243). Chessington Zoo opened to the public on Tuesday 28th July 1931. Amusements were always a feature of the zoo, indeed it was usually known as "Chessington Zoo & Circus", although a 1933 map records it as "Surrey Zoological Garden" (at opening it was known simply as "Surrey Zoo").

Chessington Zoo Railway

Reginald Goddard had placed a large contract with Barnards Limited of Norwich (see Appendix One for more details of this company) for the provision of iron gates, railings and animal cages for his new zoo. He then asked Barnards to supply a complete 12" gauge miniature railway. The company surveyed and laid a circuit of some $\frac{3}{4}$ mile in length through the zoo, with the new railway opening for the 1932 season. The reason for the choice of gauge is interesting. Similar contemporary railways tended to be of a larger gauge, such as 2ft (Lilleshall Abbey, Shropshire and Wicksteed Park, Kettering), 20" (North Bay, Scarborough and Golden Acre Park, Leeds), or the more common 15" gauge. In his article "Early Locos at Chessington" (*The Narrow Gauge No.136*) Ken Bean tells us that initially in 1931, Barnards had supplied a short 2ft gauge line with a Bagnall 0-4-0 steam locomotive as motive power. Apparently, the boiler was allowed to run low on water and that "*Mr Goddard asked Barnards to remove the 2ft gauge line and build him a railway half the size, and powered by internal combustion*". This also explains why Reginald Goddard selected "steam outline" locomotives! Barnards supplied all the rolling stock and eventually six internal combustion locomotives. It would appear the early locomotives were not a great success, as each barely lasted one season without being rebuilt or replaced.

The "Earl" Class Locomotives

The two final locomotives, (actually given works numbers 4 and 5) built in 1937 at Barnards Limited works at Mousehold in Norwich, were much more successful. These were a pair of steam outline 4-4-0 engines based on the "Earl" (also known as "Dukedog") class 4-4-0 tender locomotives of the Great Western Railway. Apparently, this particular locomotive was selected as, being outside framed, stability would be greater and there was better accessibility for maintenance and repairs. The result was a pair of smart looking powerful locomotives, which were to run at Chessington for many years. Barnards also built some rolling stock to accompany the new locomotives.

Motive power was supplied by a 4 cylinder Austin 10 petrol engine. This was water cooled with a belt driven fan. Maximum horse power was stated to be 21 at 3,300rpm. The drive was taken through a gearbox with four forward and one reverse gear and coupled to the driving wheels by a Renold chain drive. The radiator was fitted just behind the grill in the smokebox, with a water tank on top of the cab. The frames were constructed of $\frac{3}{8}$ " plate, electrically welded. Driving wheels were 14" diameter cast steel and supplied by Hadfields of Sheffield, as were the 7" diameter front bogie wheels. Overall length with tender was 12' 6". Vacuum brakes were fitted, operating on all four driving wheels, with components supplied by Clayton Dewandre Company Limited. The petrol tank and vacuum cylinders were fitted under the driver's seat inside the tender, which had six 9" diameter wheels. Sprung buffers were fitted to the front of the engine and rear of the tender. The (removable) locomotive body was constructed from sheet iron and had a brass hand rail running its whole length. An exhaust operated whistle was fitted. The accompanying bogie coaches were 16 feet in length, with the bogies containing 9" diameter wheels, set 12' 6" apart. Width was 2' 6". Each carriage could seat 12 people, two abreast in three bays.

Construction of the two locomotives and three coaches commenced on 14th January 1937 with the manufacture of crankpins, axle boxes and buffers. There seems to have been a little delay in delivering the first of the two locomotives. Writing to Reginald Goddard on 9th March 1937, Barnards said "*We very much regret the delay in despatching the first of the two 12" gauge locomotives ordered by you. This is largely due to the extreme difficulty in getting deliveries from outside suppliers*". They went on "*We hope to deliver the loco some time before Easter*". They also asked what names he would like on the locomotives. Those chosen by Reginald Goddard reflected the alleged history of Burnt Stub - No.4 was named "Oliver Cromwell" and No.5 "Queen Elizabeth". According to Goddard, in the 16th century Queen Elizabeth I established an archery school for officers there and later Oliver Cromwell's forces burnt down the original mansion house, which after the restoration was rebuilt and named "Burnt Stub". No.4 "Oliver Cromwell" was presumably delivered around Easter (Easter Sunday was on 28th March), while No.5 "Queen Elizabeth" was still at Barnards Limited in May 1937, as it featured in an article in the *Eastern Daily News* of Friday 7th May 1937. The reporter describes riding on a train of three coaches hauled by "Queen Elizabeth" on a test track laid by Barnards Limited in a former aircraft hanger at their works at Mousehold in Norwich. This locomotive and the three coaches then went onto Chessington. The livery of both locomotives was light green.

The June 1937 edition of "*Animal and Zoo Magazine*" carried a large piece about the zoo "*Mr Goddard has installed a new model engine and train, capable of a speed of 40mph, in which visitors can tour the grounds. Part of the route runs past the Ostrich compound and the birds spend their time racing the train as it passes them, immediately returning to await its next*

appearance and another race". One hopes trains did not reach their stated maximum speed, as even the ostriches, with a top speed of around 44mph, would have only just been able to keep up! (Barnards specification stated "*This unit is capable of travelling at 30mph*"). Not long after their arrival, Reginald Goddard renamed the two locomotives. "Oliver Cromwell" became "Princess Elizabeth" and "Queen Elizabeth" became "Princess Margaret" - after the two Princesses of King George VI, who had come to the throne on 12th December 1936 and whose Coronation took place on 12th May 1937. The winter of 1937/1938 saw Barnards Limited overhaul both locomotives and fit them with electric head lights. They also supplied a second set of three coaches.

As was noted in Chapter One, the outbreak of the Second World War on Sunday 3rd September 1939 brought about the immediate closure of Chessington Zoo, although it did reopen a short time later. Indeed, the railway continued to run during the war, when the zoo was open. However, with Reginald Goddard obtaining a lease of Paignton Zoo in August 1940 (as explained in Chapter One), he could move some of his animals, circus and amusements there. This, therefore, brought about the opening of the first miniature railway at Paignton Zoo.

The New Railway at Paignton

Unusually then, the new miniature railway at Paignton Zoo opened during the Second World War. The zoo reopened to the public on Saturday 24th August 1940 and, unsurprisingly given Reginald Goddard had only a week to get things ready; a miniature railway was not among the initial attractions on offer. However, he wasted little time and the railway seems to have opened on or about Wednesday 4th September (assuming Goddard was being honest with his advertising!) - an advert in that days edition of the *Herald Express* and the *Paignton News* of Saturday 7th September mention a "*Miniature Railway*" among the attractions, (although a similar advert in the *Paignton Observer & Echo* of Thursday 5th September does not). Adverts in the *Paignton News* of Saturday 31st August and the *Herald Express* of Monday 2nd September do not mention the railway. In his column in the *Paignton News* of Saturday 7th September, "JB" said "*since I was there a few days ago signposts have sprung up [and] the site of the miniature "Jungle Railway" prepared...*". Interestingly, the name Jungle Railway, or Jungle Express have stuck to this day. The local press ignored the actual opening of the railway.

It is not clear who provided and laid the track. It is likely this was Barnards Limited, given that company did most of Reginald Goddard's railway, zoo fencing and cage work during the war. However, the relevant papers and letters have not survived in the Barnards Limited archive. Either way Goddard was very fortunate to be able to obtain suitable track materials to lay a miniature railway during the war. Initially, the full track layout was probably not ready - hardly unexpected given the short time scale. However, it seems to have been completed by the winter of 1940/1941. The *Paignton Observer & Echo* of Thursday 30th January 1941 reporting some of the improvements and additions accomplished by Goddard stated "*The miniature railway is now complete, and winds enticingly round the lakes, which, to a certain extent, have been cleared of their surrounding fringe of shrubs, so that a pleasant view across the lakes is revealed*". The completed railway laid out by Reginald Goddard was a circuit of 12" gauge track running, as described by the newspaper report above, "*round the lakes*". These were the lakes formed when the stream was dammed in the 1920s. The layout was probably a simple circuit, around 520 yards in length. Whether any sidings, or shed for

the locomotive and coaches was provided is not known. The section on the far side of the lake was driven through a total wilderness - a virtual jungle. Perhaps this is where the name of the railway came from! A young visitor to the zoo in the period 1940 to 1943 remembers a trip on the railway "*The train was always stationary in front of the restaurant, originally with no station platform. From its position by the main path it travelled clockwise over the small bridge into the wild area which surrounded the lake. You could see that there had been a hurried clearance of undergrowth to make room for the rails*".



One of the first newspaper adverts to refer to the miniature railway among the attractions on offer at the zoo. This example is from the *Paignton News* of Saturday 7th September 1940. Later adverts were not quite so lavish.

To operate the railway Goddard sent down to Devon, one of the 12" gauge "Earl" locomotives and three coaches. Initially, "Princess Elizabeth" was moved from Chessington to Paignton, but it is not for certain whether it stayed the entire duration of Goddard's control of the zoo. In his book *Light & Miniature Railway Locomotives of Great Britain* (Birmingham Locomotive Club 1950) Eric Tonks, lists only "Princes Elizabeth" (the former "Oliver Cromwell") as being at Paignton. However, a photograph in *Wimbledon to Epsom* (Middleton Press 1995) shows that same locomotive at Chessington in 1943. Later, it appears either of the two locomotives was sent down from Chessington as required. This is supported by a letter dated 26th February 1945 from Goddard to Barnards in which he said "*I am urgently wanting the two pieces for the engine, as one has to leave here on Saturday next to go to Devon*". (The parts were chain jockeys and guard. This also suggests the railway did not run all year round at Paignton). However, in the early years of the war it is highly unlikely

valuable petrol was used to move either locomotive between Chessington and Paignton. It is known from correspondence that a senior employee of Barnards saw "Princess Elizabeth" at Paignton Zoo *"during the war"* whilst on his honeymoon. Additionally, the son of one of the locomotive drivers at Chessington remembers taking "Princess Elizabeth" and coaches to Paignton. The situation is not helped by the lack of photographs taken at either Chessington or Paignton during the war. So far only two photographs (showing the locomotive) of the 12" gauge railway at Paignton have come to light - the first taken in 1940 shows "Princess Elizabeth". The second taken in 1942 also appears to be of "Princess Elizabeth". Given wartime conditions, the lack of photographs is hardly surprising. A picture in the 1941 zoo guide book is clearly of the railway at Chessington, not Paignton. Given the above, it is certain that "Princess Elizabeth" arrived in September 1940 to open the railway - but in later years may have been replaced by "Princess Margaret".

The "Earl" Class Locomotives

There has been much confusion over the two "Earl" class locomotives built by Barnards Limited for Reginald Goddard. This is due to the locomotives being virtually identical and each carrying the name "Queen Elizabeth" for a time. Photographs taken at the time of their construction, show categorically that the first built (works number 4) was named "Oliver Cromwell" and had a triangular shaped starting handle bracket on its front buffer beam. The second locomotive built (No.5) was named "Queen Elizabeth" (after Queen Elizabeth I) and had a straight starting handle bracket. After that things are less clear!

At Chessington, the original works plates later went missing and they were numbered 2 & 1, and then 1 & 2 - respectively. To make things worse, the bodies could be exchanged and a few photographs show this did occur. This gives four different possible combinations. If one assumes the frames identify the actual locomotive - then the starting handle brackets can be used to distinguish the true locomotive in any photograph. The picture mentioned above of "Princess Elizabeth" at Chessington in 1943 has a straight bracket, indicating the frames of "Princess Margaret"! Later, presumably in 1953, No.4 "Princess Elizabeth" was renamed "Queen Elizabeth" (after Queen Elizabeth II). See also Chapter Five.

Wartime Operation

The new railway was no doubt very popular with wartime visitors to the zoo. It enabled them to travel around the lakes, observing the waterfowl, wallaroos and water deer, and opening up new views of the islands. The *Paignton Observer & Echo* of Thursday 5th June 1941, reporting on the Whit Monday holiday (2nd June) said *"Between seven and eight thousand people visited the Zoo during the day, where the circus did five shows to full houses. There were queues for the miniature railway and the children's playground"*. The zoo was open all the year round, but the railway was only operated seasonally - probably from Easter until the autumn. A surviving ticket from the period (see Chapter Four) shows a fare of 6d and is titled "Devon & Chessington Zoos & Circus", which probably means the same tickets were used for the railways at both Paignton and Chessington.

In June 1941 Reginald Goddard applied for, and was granted, an intoxicating liquor licence. However, the Devon Licensing Committee proposed imposing certain other conditions. One of these was that on Sundays, Christmas Day and Good Friday there should be *"no entertainment, amusements, side-shows, miniature railway traffic or performances of any kind"*. Reginald Goddard countered that Sundays was the zoo's busiest day and that *"it was very largely in the interests of the working class public that the Gardens were opened that day"*. On considering the matter the Paignton Licensing Justices, to whom the matter had been referred, decided that the proposed condition should not be allowed. Therefore, no doubt

to the relief of Reginald Goddard and the visitors to the zoo, miniature railway trains continued to run on Sundays.

Both the railway at Paignton, and that at Chessington, seem to have been busy during the war. Reginald Goddard, writing to Barnards on 9th October 1943, said "*I could do with another railway engine, as those I have are getting badly worn, and I should have one in reserve for emergencies*". Unsurprisingly, given it was in the middle of the war, Barnards replied on 13th October 1943 "*Regarding your query for a railway engine we have been looking into the matter of supplying a further one but we are definitely unable to do so at the present moment. We will however, communicate with you later should we be able to take any further action regarding this, we will also give you the quotation for the increased gauge as soon as possible*". This latter matter is interesting, as it shows as early as 1943, Goddard was considering what we will see was 15" gauge equipment. As with all Barnards' wartime correspondence, the letter carried the patriotic message "*One day nearer Victory*" typed under the date.

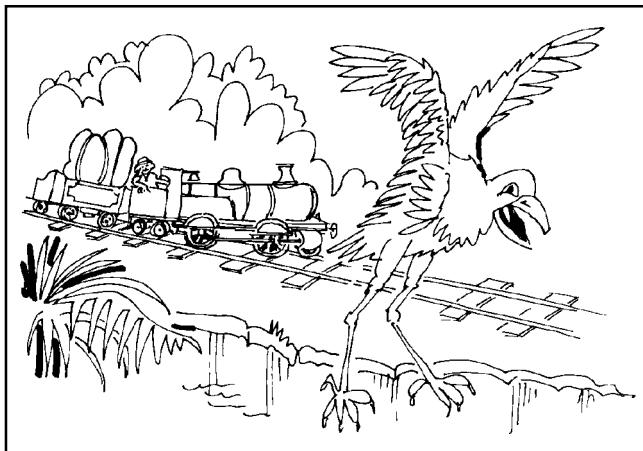
Gas Bags

The Second World War brought many restrictions and shortages - one being petrol. Rationing of this commenced on Saturday 16th September 1939. To alleviate petrol shortages, some buses and commercial vehicles in the larger towns and cities were converted to run on town gas, as were some private cars. The gas was stored in large bags, usually carried on the vehicle's roof. In the case of London buses, a gas producer was towed on a trailer behind the bus. One of the first routes in London to be operated by gas buses was route 406 (Kingston - Redhill) operated from Leatherhead garage from late September 1939. The close proximity to Chessington will be noted. Whether this encouraged Reginald Goddard to save petrol is not known, but both his "Earl" class locomotives operating at Chessington and Paignton were converted to use town gas for fuel.

The gas bag was carried above the first coach of the train, on a roof fixed on that coach (thereby providing handy covered seats for showery or wet days!). Pipes were fitted to carry the gas to the locomotive and for refilling the bag. A photograph taken at Paignton in 1940 (see page 21, top) shows the equipment was not fitted at that time and it is likely the work was carried out over the winter of 1941/1942, or early in 1942. The *Paignton & Observer & Echo* of Thursday 9th April 1942, reporting on a visit to the zoo on Wednesday 8th April by local councillors and the like, noted "*The party also inspected the amusements introduced for children, and noticed that the engine which drives the miniature railway through the grounds is now fed with gas*". At this time petrol rationing was becoming more severe - the value of the basic petrol ration unit for private cars was halved from 1st April 1942 and was abolished entirely from 1st July 1942. After that petrol was only available to licensed users. The other locomotive at Chessington was no doubt converted at the same time. The *Surrey Comet* of Wednesday 28th January 1942 reporting on "*Attractive plans for coming season*" at Chessington Zoo noted "*Toys and games will be as usual with the miniature and land trains running on coal gas (instead of petrol)*".

In his book *Chimps Champs & Elephants*, Jack Baker related this story "*Dolly Widdicombe, the teenage daughter of the maintenance manager, was relief driver in the wartime days of petrol rationing when the little engine was fitted with an overhead gas bag. All was well, until that day when a crane suddenly strayed onto the track, causing instant braking and the*

undignified overturning of the top heavy engine, fortunately without serious injury even to the surprised bird which promptly fell into the lake!". A wartime visitor to the zoo recalls the railway, and "at that time it ran on mains gas and on the roofs of the carriages large gas bags were fitted, these were reinflated at regular intervals".



Jack Baker's amusing cartoon from his book *Chimps, Champs & Elephants* - depicting the incident with the crane. This is one of many similar cartoons in his excellent book about the zoo.

(Reproduced with due acknowledgement to SJH Publications Ltd)

Whether gas operation of his miniature railways at Paignton and Chessington was a serious attempt by Reginald Goddard to save petrol and do his bit for the war effort, or merely more of a publicity stunt is not known. If it was the latter he seems to have kept remarkably quiet about it. However, it was most likely forced upon him by the petrol restrictions of 1942 and it seems to have made continued operation of his railways in that difficult time possible. No doubt as the petrol supply position eased, the equipment was discarded. London Transport gas bus operation finished by October 1944 and the last gas bus in the country ran in February 1946. Petrol rationing, however, continued until Friday 26th May 1950 and a visitor to Chessington Zoo (writing in *The Narrow Gauge* No.138), says that "around 1947" the gas bag was still in use.

An Unfortunate Accident

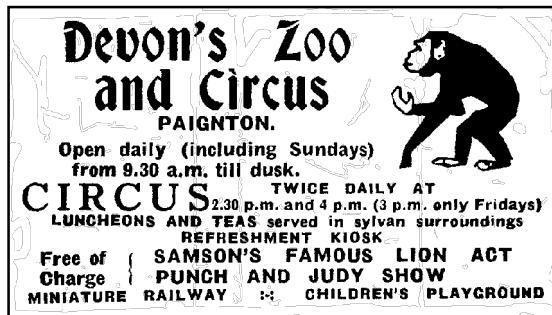
The afternoon and evening of Thursday 24th May 1945 saw a large party of 2,700 Paignton school children visit the zoo at the invitation of Paignton Urban District Council and Reginald Goddard, who had granted them free admission. A circus and the Paignton Amateur Talent Club entertained the children. Free teas & ices were also provided. Unfortunately, the happy events came to an abrupt end at around 7pm. Shortly after the three coach train left the station, the last coach overturned, injuring six children. They were taken to Paignton Hospital by ambulance, where two girls and one boy were detained. Injuries were stated to be lacerations and fractures. Apparently, this had been the last train of the day - the *Paignton News* of Saturday 26th May 1945 reporting "[the children] were riding on the miniature railway which encircles the lake, and as the train rounded a bend, the children scrambled to get on it, and caused a carriage to overturn". The paper also reported the accident occurred after "the grown-ups had left for their homes and only the children remained". Presumably, without supervision and realising this was the last train of the day, a number of children tried to board an already crowded moving train - thereby causing the accident. The *Paignton Observer and Echo* of Thursday 31st May reported that two children were still in hospital - one with a fractured leg and the other with a fractured collarbone. However, the Chairman of the Council stated that the accident "was not as serious as first thought". The visit to the zoo had been a Victory treat, celebrating the end of the war.

After the War and Closure

With the war virtually over, Reginald Goddard seems to have been proposing extensive work at Chessington and to a lesser extent, Paignton. Barnards supplied a Ghost Train and a Rabbit Town (apparently a sort of model village) for Chessington and by the autumn of 1945 had started work on the similar items for Paignton. In September 1945 Goddard was asking Barnards for a supply of new rails, both for the railways at Chessington and Paignton, and for a proposed new 15" gauge line at Chessington. By November, he had repaired the track at Chessington and was only asking for a "*new set to go down to Paignton*". Reginald Goddard, it seems, was prepared to invest in Paignton and was therefore hoping to gain the freehold or a long lease of the zoo that would allow him to do this.

Sadly it was not to be, and as explained in Chapter One, Paignton Zoo closed on Sunday 3rd February 1946. The railway was probably not operating at that time of the year - the zoo had been advertised each week in the *Paignton Observer & Echo*, up to and including Thursday 4th October 1945 - all these adverts mentioning the railway. There were no adverts of any sort after that. The locomotive and coaches were therefore returned to Chessington, probably around October 1945 - or by February 1946 at the latest. It is likely the track was also lifted, as this would have belonged to Reginald Goddard.

The last advert for the zoo under Goddard's control to appear in the *Paignton Observer & Echo* was this one, in the Thursday 4th October 1945 edition.



However, Barnards were still progressing Goddard's plans for a new 15" gauge locomotive, coaches and railway at Chessington. The locomotive was planned to be a model of the Southern Railway's streamlined 4-6-2 "West Country" class locomotives designed by O V S Bullied. In November 1945, they wrote to the SR requesting suitable drawings, which the railway supplied for a charge of £20. Things moved slowly on the project and by the summer of 1946, Goddard had not made a final decision and Barnards were pressing him for a choice of the gauge: 12" or 15". Sadly, what would have been a fine locomotive never saw the light of day. By September 1946 Reginald Goddard had fallen ill, and on 23rd November 1946 his son writing to Barnards, officially cancelled the order for the 15" gauge locomotive and the 500 yards of track for the new railway. Also cancelled was the order for the (no longer required) Ghost Train for Paignton.

In April 1946, Goddard formed a limited company; Chessington Zoo Limited, to run his business. The capital was £150,000 with a staff of 150. The reason for the move was apparently to do with taxation. Reginald Goddard died on Christmas Day, 25th December 1946. The zoo he founded at Chessington continued to develop, eventually becoming a major theme park - Chessington World of Adventures, with the zoo reduced in size. The 12" gauge railway and its two "Earl" class locomotives kept on running until the end of the 1984 season, when they were replaced by a 2ft gauge railway, which itself closed in November 1996. Paignton Zoo, as we will see, went on to see miniature railway trains running around its lakes again - this time to the smaller gauge of 10¼".



This photograph clearly shows "Princess Elizabeth", built by Barnards of Norwich in 1937. The position of the locomotive indicates the train was running in a clockwise direction. Note the wording on the tender and at the top of the cab side: "*Speed not to exceed 80mph*"! The lady driver (whose face on the photograph has been sadly defaced by the hands of a young child) was Madame Gena Mroczkowska from Poland, an accomplished equestrienne, who had performed with Bertram Mills Circus. Her son is sitting or standing behind her.

(Courtesy R Ellis. 1940)



This is the best view we have of the railway during its 12" gauge days under Goddard's control. It was taken to publicise the arrival at the zoo of "Samson" (Alexander Zass), reputedly the world's strongest man. Here we see him trying to impede the progress of one of the "Earl" class locomotives. The name is not discernible, but from the triangular shape of the starting handle bracket above the front buffer beam, we know this is (at least) the frames of "Princess Elizabeth". Also of interest is the "Gas Bag" above the first coach, with its advert "Visit Chessington Zoo and Circus". The train, on this occasion, appears to be travelling around the line in an anticlockwise direction. Despite being known as "Samson", Zass was in fact employed at the zoo as livestock superintendent - having an international reputation in the management of animals. Born in Poland in 1888, he died in Hockley, Essex in 1962.

(*Paignton News. 30/5/42*)

CHAPTER THREE

10½" GAUGE RAILWAY

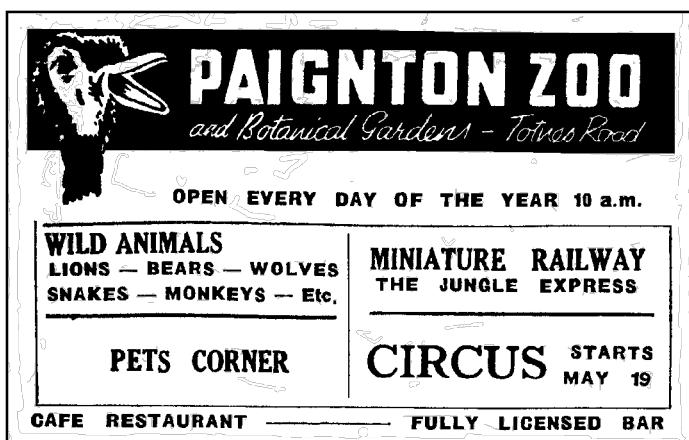
1947 - PRESENT DAY

Introduction

As explained in Chapter One, the zoo reopened under new management on Bank Holiday Monday, 5th August 1946. Right at the start thought seems to have been given to providing a new miniature railway to replace the 12" gauge line. The *Western Morning News* of Thursday 1st August 1946 (reporting on the forthcoming reopening) said "*Mr Parsons [the new manager] stated that there would be no circus or miniature railway, but the zoo would be run on similar lines to those of before. It was planned to reinstall the miniature railway in the future*". However, it was not until May 1947 that the zoo saw a miniature railway running through its grounds again - this time with a real steam locomotive hauling the trains.

A New Steam Railway - 1947

Initially, it seems the new management let a concession, or hired in the equipment, for the miniature railway. The new railway was 10½" gauge - due to the fact that this was the gauge of the equipment available. Just as with the first railway in 1940, the local press ignored the actual opening of the new railway and we have to rely on local newspaper adverts to judge when the first passengers were carried. It seems, therefore, to have opened in early May 1947. It was certainly after 3rd May, as the locomotive used was on display in Plymouth for two weeks up to that date. Various adverts for the zoo in the local papers up to Saturday 3rd May do not mention the railway. However, the first advert to mention the railway appears in the *Paignton Observer & Echo* of Thursday 8th May 1947. The name "Jungle Express" was perpetuated. The *Western Morning News* of Thursday 15th May carried a picture of the railway with the caption "*A party set off for a trip round the grounds on the miniature railway which has reopened at Paignton Zoo. It is a great attraction for young visitors*". The *Herald Express* of Tuesday 20th May 1947 had a similar picture. Here the caption read "*No cut schedules for this railway! The children's chief worry is whether the fathers and mothers will leave enough room for the younger passengers*". The "cut schedules" referred to the reduction of trains run by the mainline railway companies due to post war fuel shortages.



The first newspaper advert in May 1947 to list the miniature railway among the attractions on offer in the zoo. From the *Paignton Observer & Echo* of Thursday 8th May 1947.

It is unclear if at the time of opening the railway was a complete circuit as before, or whether it was later extended as such. It was almost certainly along the trackbed of Reginald Goddard's former 12" gauge railway. The owner of the locomotive and coaches was George "Archie" Dingle from Kelly Bray, near Callington in Cornwall - it is not known if he owned the track as well. It is possible, of course, the zoo merely hired the locomotive and coaches from Dingle, laying the track and operating the railway themselves. One visitor to the zoo after the war remembers seeing overgrown track, so it is possible Goddard's old track had been left in situ - but it would have needed regauging from 12" to 10½".

In the early years of the Second World War, Dingle had ordered a 7½" gauge locomotive from Travers John Thurston of Farnborough, Hampshire (a near neighbour of the well-known miniature locomotive builder, H C S Bullock). But during a visit to Farnborough to check on progress, he spotted a 10½" gauge 4-6-2 locomotive under construction and immediately ordered a similar engine. Dingle put this new locomotive to work on his temporary 10½" gauge line in Plymouth's Central Park. This railway opened on Monday 5th August 1946 and ran for the rest of the summer season, the track and all stock then being removed back to Kelly Bray. The railway, with the Thurston built 4-6-2, then returned to Central Park for the summer seasons of 1947 and 1948. Dingle also acquired Bullock's 4-6-2 No.1003 "Western Queen". This locomotive was built in 1934 and is believed to have run at Hilsea in 1946 (See Chapter Five for more details). Dingle displayed the locomotive at the Plymouth & District Society of Model & Experimental Engineers exhibition in Plymouth between Monday 21st April and Saturday 3rd May 1947. Immediately following this, he put "Western Queen" to work on the new railway in the zoo. The coaches used by Archie Dingle (and on his railway in Central Park, Plymouth) were from the Surrey Border & Camberley Railway. This short lived railway was located near Farnborough in Hampshire and had closed at the outbreak of the Second World War in September 1939. The photograph in the *Western Morning News* of Thursday 15th May shows a train formed of three of these coaches.

Bullock's 4-6-2 "Western Queen" presumably ran throughout the rest of the 1947 season. The *Western Morning News* of 16th September 1947, reporting on the season, said that the new Pets Corner had established itself as an attraction and went on "*So too has the working model Southern Railway train supplied by Messrs R Dingle and Son of Callington*". (The paper confused its Dingles! - see text in box above about G A Dingle). The locomotive was hardly "Southern" either, being much more Great Western Railway in outline. The railway was mentioned in the zoo adverts in the *Paignton Observer & Echo* every week, up to and including Thursday 30th October 1947. After that the zoo was still advertised, but without the railway mentioned - so it can be assumed the railway ran until around the end of October. Then No.1003 "Western Queen" and the coaches were presumably taken back by Archie

G A Dingle

George Archibald Dingle (1895-1976), generally known as Archie, was born on 28th June 1895 in Kelly Bray near Callington in Cornwall. His father, John H Dingle, was noted in the 1901 census as a "Builder & Timber Merchant". Archie seems to have taken an interest in model engineering - there is a letter from a G A Dingle (surely the same person) in the 10th July 1913 edition of "*Model Engineer*" describing a stationery horizontal steam engine and boiler, which he had built. He later appears to have taken over his father's business, as he subsequently owned a sawmill in Kelly Bray. In the 22nd April 1954 edition of "*Model Engineer*" he relates that he had just overhauled a Garrett traction engine (BJ5579), of which a picture clearly shows, has "J H Dingle Builder & Contractor Kelly Bray" on its roof valence. Archie Dingle was no relation to the Dingle family of R Dingle & Sons, a supplier of steam and later modern road making equipment and who now operate Dingles Fairground Heritage Centre near Launceston. Around 1970 he was still living in Kelly Bray, but he died in 1976.

Dingle to Kelly Bray. The track, no doubt, stayed in place; the photographs already referred to appear to show it was well laid and fully ballasted. It has been related before (*H C S Bullock - His Life & Locomotives* by Kenneth Bullock) that the piston valves of 1003 were damaged when children put sand down the chimney, while the locomotive was running in the zoo. Therefore, over the winter of 1947/1948 it was overhauled for Dingle by George Woodcock in Essex. He replaced the damaged piston valves with slide valves. Archie Dingle seems to have originally named his Thurston locomotive, "Tamar Queen" and then later exchanged the names between the two locomotives. Hence the Thurston became "Western Queen" and the Bullock "Tamar Queen". It would appear the swap of names occurred when Woodcock overhauled the Bullock locomotive - so when it ran at the zoo it was still "Western Queen" - but as "Tamar Queen", 1003 went to work for Dingle on a temporary line on Lowestoft's South Pier in May 1948. Both locomotives had "PMR" on their tenders - perhaps indicating Plymouth Miniature Railway for the Thurston and Paignton Miniature Railway for the Bullock.

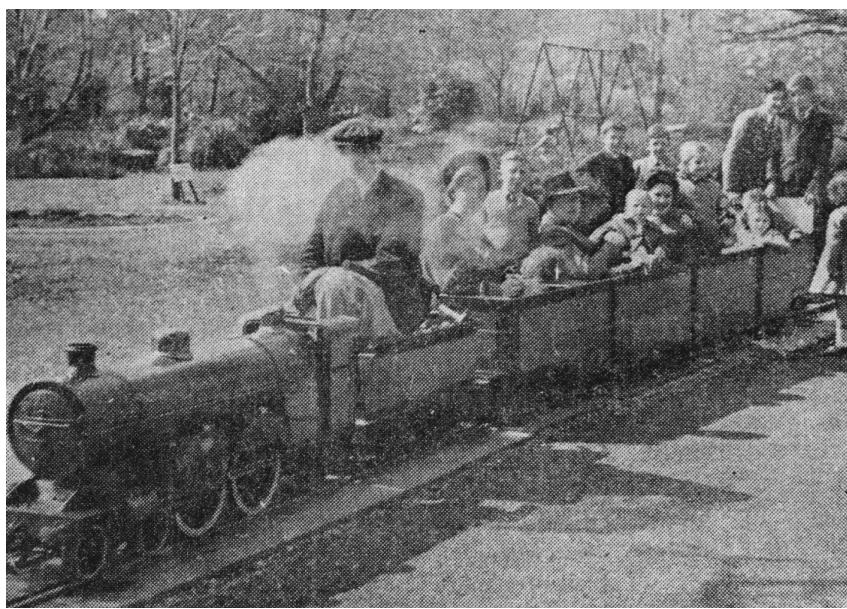
The End of Steam Operation - 1948

The railway seems to have opened for the 1948 season at Easter. The *Western Independent* of 21st March 1948 reported that the zoo was to officially open for the 1948 season on Good Friday, 26th March and added that one of the attractions was "*the half mile narrow gauge railway where the coaches are drawn by the 4-4-2 Atlantic engine*". Certainly the first advert to mention the railway in the *Paignton Observer & Echo* was on Thursday 25th March 1948. Given the length of "*half mile*" stated by paper, it would appear the railway was a complete circuit by at least this time - although the length quoted is an over estimate, the more correct figure being 520 yards. The locomotive quoted by the *Western Independent* was a Bassett-Lowke built 4-4-2, based on the Great Northern Railway Atlantic, originally designed by Henry Alfred Ivatt (1851-1923). This had been designed for Bassett-Lowke by Henry Greenly (1876-1947). According to George Woodcock writing in 1964 (*Miniature Steam Locomotives* David & Charles), this locomotive was "*a rebuilt Bassett-Lowke 'Atlantic' converted from 9½in [gauge]*". It is not known for certain, but it is possible this locomotive was again hired from (or through) Archie Dingle, although he is not known to have owned an example of this type of locomotive (Bullock No.1003 was not available as it was needed at Lowestoft). The exact identity and origins of the 4-4-2 are not known, but the type was a standard Bassett-Lowke product for some years.

The *Paignton Observer & Echo* of Thursday 29th April 1948 carried a picture titled "*Train The Govt Missed*" of the 4-4-2 locomotive on a train formed of a single coach, captioned "*Driver John d'Avila with a train load of happy visitors on the Paignton Zoo Miniature Railway (one of the un-nationalised railways of Great Britain). Since it was started last year, it has proved a great attraction, especially to children. The "Paignton Observer" understands that this steam train will probably be suplimented [sic] by a miniature Diesel engine later this year*". The picture shows that the coach was the same ex Surrey Border & Camberley Railway type that was used in 1947, suggesting the 4-4-2 may have come from Dingle. The title "*Train The Govt Missed*" refers of course to the nationalisation of the mainline railway system at midnight on 31st December 1947. The final comment pointed to the future type of traction to be used on the railway - much more practical and convenient for such a railway, if not so interesting. The picture shows trains ran in a clockwise direction at that time.



A two year old Frank Anstey is shown the finer points of Bullock's No.1003 "Western Queen", by his parents. This locomotive only ran at the zoo during the 1947 season - it was owned by George Archibald Dingle of Kelly Bray, Callington, Cornwall at the time.
(Courtesy F Anstey. 1947)



A Bassett-Lowke GNR 4-4-2 at work in the zoo in spring 1948, with one ex Surrey Border & Camberley Railway coach. The exact origins of this locomotive are not known and this is the only photograph discovered of it at the zoo. It only ran on the railway between March and July 1948. Note the wheel rims appear to be painted white or silver.

The caption informed us the driver was called John d'Avila.

(*Paignton Observer & Echo. 29/4/48*)

July 1948 saw Carnival Week in Paignton and on Wednesday 14th July the new Carnival Queen, "fair-haired" Wanda Sutton, was duly crowned. Friday 16th July 1948 was set aside as Paignton Zoo Carnival Day to "*Honour the Carnival Queen and to celebrate the Silver Jubilee of Paignton Zoo*" - as the orange coloured leaflet described it. The Carnival Queen was to leave "*Paignton Front (Palace Hotel) at 2pm and proceed to the Zoo where she will christen the new miniature railway*". The "*new miniature railway*" was in fact a bogie petrol locomotive and coaches that had been acquired from Dudley Zoo in Worcestershire.

Dudley Zoological Society was formed in 1935 by the Earl of Dudley; Ernest Marsh, a director of Marsh & Baxter, local meat producers; and Captain Frank Cooper, a director of the Oxfordshire jams and preserves manufacturers. Dudley Zoo opened in May 1937, with almost the entire animal stock coming from Captain Cooper's Oxford Zoo. The Dudley Zoo Railway opened on 14th July 1938, as a 10½" gauge line. Motive power was provided by a pair of 4-4-2 freelance locomotives designed by J N Maskelyne and built by G & S Light Engineering Company Limited (see Appendix One for more details of this company). In 1939 a petrol locomotive with a Singer engine was built by G & S Light Engineering Company Limited for the railway, and to assist with wartime traffic, another was constructed in 1943 by the same company. This was a bogie locomotive powered by a Lanchester petrol engine driving the rear bogie via a fluid flywheel. The body was in the form of railcar (suggesting perhaps a streamlined Great Western Railway unit) in maroon and cream livery. Following the 1944 season, due to the railway's popularity, it was decided to change from 10½" to 15" gauge. This was undertaken over the winter of 1946/1947 and the railway reopened on the larger gauge at Whitsun 1947. This meant the 10½" gauge equipment was surplus to requirements and was duly sold off. We shall meet the 1939 Singer powered locomotive again, but in July 1948 it was 1943 built Lanchester powered locomotive that arrived on the Paignton Zoo railway to be "*christened*" by the Carnival Queen. Five Dudley Zoo bogie articulated coaches were also obtained to accompany the "*new*" locomotive.

To return to the events of Friday 16th July 1948. After her arrival in the zoo, the "Queen" released 500 pigeons taking greetings to "*Zoos throughout the British Isles and the Continent*". Some 60 percent of these had been used as carrier pigeons during the war (part of the National Pigeon Service mentioned in Chapter One). Following this she "*christened*" the new locomotive and duly had a ride around the lakes on the railway. The *Western Morning News* of Saturday 17th July 1948 had a picture showing Wanda Sutton sat in the cab of the locomotive captioned "*Paignton Zoo Jubilee celebrations yesterday included the naming of a new engine for the miniature railway by the Carnival Queen, who is seen setting out for an inaugural trip*". Despite this, the locomotive does not actually appear to have had any name attached to it. The same paper also reported the "*miniature railway*" had cost £1,000, presumably referring to the cost of the locomotive and coaches.

As far as it is known the arrival of the petrol locomotive from Dudley Zoo brought an end to steam working, although as we shall see a steam locomotive did operate briefly on the railway many years later. With its new motive power the railway settled down to regular operation. In 1949 the railway appeared for the first time in the zoo guide book (there was a picture of one of the 12" gauge "Earl" locomotives in the 1941 edition, but this seems to have been taken at Chessington). This 3rd edition of the guide book published in April 1949, under the title "*Jungle Express*", gives a useful description of the railway and the route it took around the lakes "*On the right adjoining the drive, just past the Children's Playground is Lakeside Station, the Junction of the new Miniature Railway, a source of delight to young and old. This is a real railway in miniature, the track being laid with the same degree of*

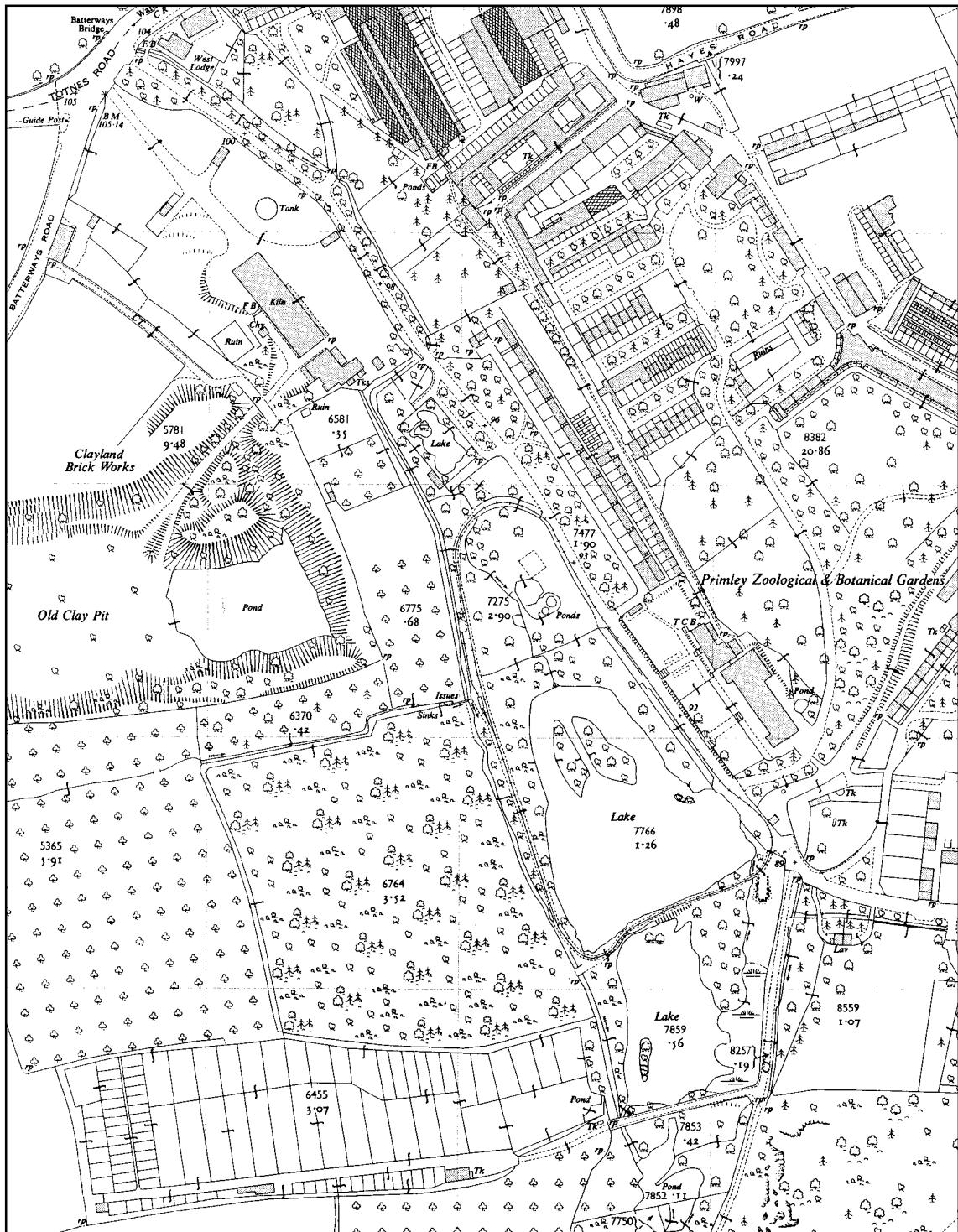
accuracy as a main line British Railway. The engine is a streamlined, powerful locomotive pulling several coaches with a capacity of about 75 persons. On this trip one will appreciate the considerable extent of the lakes. After proceeding alongside the drive the train takes a sharp bend over a bridge and a short distance further another bend, passes through almost jungle like country, round yet another bend and along a narrow peninsular between the upper and lower lakes. The circular trip brings one back to the main station and passengers disembark at Lakeside Station". From this we know trains now proceeded around the 520 yard circuit in an anticlockwise direction. The text was accompanied by a picture showing the locomotive being driven by a driver in uniform and cap - the train being formed of at least three coaches.

New motive power - 1952

In 1952 the railway was to see a new arrival in the form of a second locomotive. This was none other than the original petrol locomotive from Dudley Zoo, built by G & S Light Engineering Company Limited in 1939. It was powered by a 11½hp Singer engine, driving the rear bogie through a fluid flywheel. The single ended body had the outline of an American streamlined diesel unit then in use on some of the USA's luxury long distance trains. As with the 1943 built Lanchester powered locomotive, it became surplus when the Dudley Zoo Railway regauged to 15" over the winter of 1946/1947. The locomotive was acquired by Ernest Dove of Nottingham who operated a number of temporary railways around the country. He ran it on a railway at East Meadows, Edinburgh during the early summer of 1951, where it carried the name "The Pride of California". The locomotive was then sold to Paignton Zoo, probably arriving in early 1952.

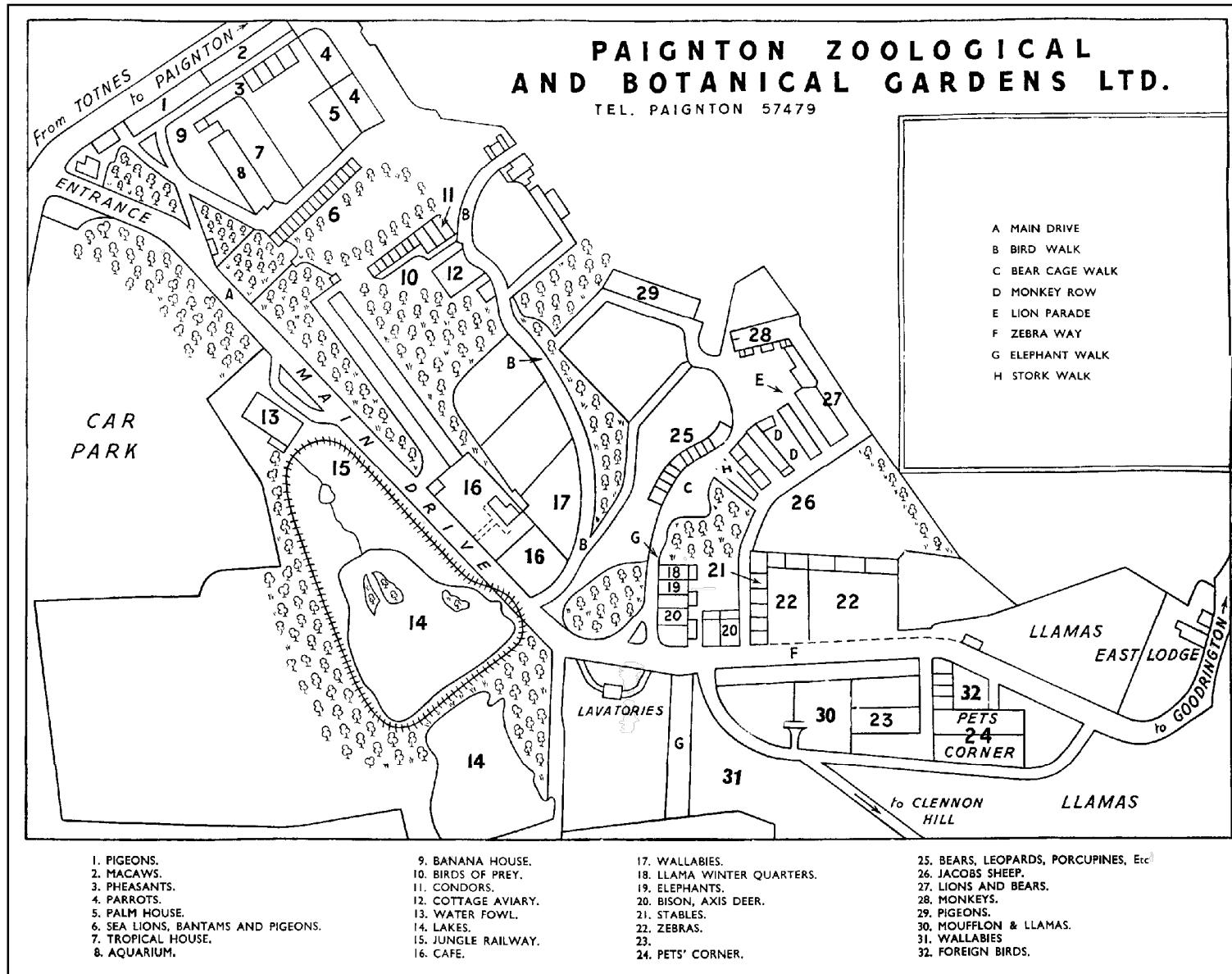
The 6th edition of the guide book, published in April 1952, along with a very similar description to that in the 3rd edition, added "*New rolling stock has been acquired this year, the powerful diesel engine is a scale model of the famous American diesel train, the "Santa Fe". This engine was specially built for and ran at the Edinburgh Festival of Britain Exhibition, 1951. It was made by the renowned maker of model locomotives, Mr Ernest Dove, of Nottingham*". From this guide book text, it would appear Ernest Dove had spun a number of yarns when he sold the locomotive to the zoo! The locomotive was not built by Ernest Dove, and certainly not specially constructed for his railway in Edinburgh (although he may have acquired it for that purpose). Also the Edinburgh line was not connected to the "*Edinburgh Festival of Britain Exhibition, 1951*". Dove's railway (which opened on 2nd May 1951) did operate during the period of the Festival, which was from 3rd May to 30th September 1951 - but the only official Festival of Britain events in Edinburgh during the time the railway was running were both inside, at the Royal Scottish Museum and the Signet Library.

The Ordnance Survey 25" map, revised in August 1952 and published in 1954 (see overleaf) shows the railway in detail. The platform (apparently without any building) at "Lakeside" station is at SX87795970. On the opposite side of the lake there is a two road shed at SX87715971, through which a long siding was reached. Presumably the two road shed held both locomotives, one on each road, while the coaches were stored on the siding in the open. Both were accessed by a trailing connection (trains ran anticlockwise at that time) from the running line.



An extract from an Ordnance Survey 25" Map revised in August 1952, published in 1954 and reproduced here approximately full size. It clearly shows the position of the railway, running around the large lake, in relation to the rest of the zoo. The main entrance is to the top left, off Totnes Road. The main driveway then runs diagonally down to the right. The track leading into the Clennon Valley leads out at the bottom, right of centre. The small locomotive shed can be seen on the west side of the lake, roughly opposite where Lakeside station was located. Note the alignment of the railway along the narrow causeway between the upper and lower lakes.

(Reproduced from 1954 Ordnance Survey map with the kind permission of the Ordnance Survey.)



A plan of the zoo from the April 1955 (9th edition) zoo guide book. The railway (15) can be seen clearly running around the upper lake (14). Although not shown, the station at this time was located in front of the Café (16), alongside the Main Drive (A).



This is the first photograph we have that shows a proper station platform. The ex Dudley Zoo Railway "Railcar" is at the head of the train. It was constructed in 1943 by G & S Light Engineering Company Limited. The coaches are also from Dudley Zoo. The car, visible behind the young hatted passenger, is parked on the main driveway.

(Courtesy D Whittham. c1951)



A view from the 1955 guide book - a well filled train is seen running alongside the main driveway. The location appears to be north of the station, before the line curves around the top of the lake. At this time trains ran in an anticlockwise direction around the 520 yard long circuit. Motive power is the same former Dudley Zoo locomotive as seen above.

(*Paignton Zoo Guide Book - 9th edition April 1955*)

The zoo now had both ex Dudley Zoo 10½" gauge petrol locomotives running on their railway. With the American outline locomotive, initially the name "The Pride of California" seems to have been retained at Paignton, but was dropped by 1964. Despite the new arrival, the guide books of the mid 1950s still contained a picture of the 1943 built locomotive. The *Paignton Observer & Echo* of 11th February 1960 reported that Norman Dixon, the then Managing Director had been appointed to the Board of Dudley Zoo. It was said this did not mean a merger, merely closer co-operation and joint purchasing of new specimens. Norman Dixon was a chartered accountant from Birmingham and one of the partners to whom Herbert Whitley granted a lease in 1946, allowing the zoo to reopen after Reginald Goddard's departure. It is interesting to speculate that Dixon's connection with the West Midlands was the reason that the zoo obtained the 10½" gauge petrol locomotives and coaches from Dudley Zoo. Dixon would have surely been well aware of developments at Dudley Zoo and the fact surplus equipment had become available.

Extension Plans

After Herbert Whitley died on Thursday 15th September 1955, the Herbert Whitley Trust (later Whitley Wildlife Conservation Trust) was formed to run the zoo - they produced their first annual report on 31st October 1957. This gave an interesting account of plans that Herbert Whitley had for the Clennon Valley. This was a wooded valley, to the south east of the zoo, which contained the stream that Herbert Whitley dammed to form the lakes. At that time it had a few tracks running down it, and there were some old quarry workings and lime kilns. The report stated "*The late Mr Whitley conceived the idea of running a light railway from the Zoo through the Clennon Valley down to the sea. Such a line would not spoil its beauties and would supply income to cover the proposed developments. However, capital would have to be found first*". The *Paignton News* of Saturday 29th March 1958 also outlined the scheme under the headline "*Zoo extension: local Whipsnade with a light railway?*". The 5th annual report for the period to 31st October 1961 also outlined the same plan and specifically stated it was intended to extend the existing railway "*It is hoped to run an extension of the Zoo light railway down it [the Clennon Valley] as a first step. The profits from the railway would then provide funds for developing the gorge step by step*". Sadly, nothing came of these plans to extend the railway and it remained a simple 520 yard circuit. The Clennon Valley remains an unspoilt wooden valley, although the lower end was later developed by the local council as a sports centre.

A "New" locomotive - 1960

The 1960 season saw the appearance of the locomotive, which was to define the railway right through until the mid 1990s. This was a replica of the then new British Railways Western Region "Warship" class diesel hydraulic locomotives. However, this was not actually a new locomotive as has always been recorded in the past, but a rebuild of the ex Dudley Zoo 1943 Lanchester powered locomotive with a brand new body. The zoo guide book from around 1965 supports this by stating "*The big engine has been rebuilt as an accurate model of a standard British Rail 2,000hp locomotive, of the Warship class (80 class) [sic]*".

The "new" locomotive was unveiled at a ceremony on a chilly but bright Saturday 9th April 1960, a week before Easter. The *Paignton Observer & Echo* of Saturday 14th April 1960 carried a full report of the event - but not a photograph of the locomotive! Pictured, however, was Lisa Gastoni (1935-) who christened the engine with ginger beer, which had been chosen "because it was primarily for children and champagne was not considered suitable". Miss Gastoni was an Italian born star of such films as "Doctor at Sea" and "Intent to Kill", as well as an "ITV panel girl". Christening the locomotive "*Miss Gastoni, dodging the foaming ginger-beer which was blown on to her black suede coat as she emptied the bottle over the front of the engine, thanked the Zoo authorities for asking her, and then moved round to take her place for the first trip*". For her ride on the train she was accompanied by Chumley the Chimp, "also a well-known television star". The train was dispatched from Lakeside station by the "*blowing of an official whistle*" by Paignton Stationmaster, Mr A E Pallett. Also present was Mr S Tregedeon, District Inspector, Newton Abbot. On her safe return, Miss Gastoni went on to open the new Ceylon Tea Garden by cutting a white ribbon. The *Herald Express* of Monday 11th April 1960 carried a picture of Miss Gastoni pouring the ginger beer over the front of the locomotive.

"Warship" Class Locomotives

The "Warship" class diesel hydraulic locomotives were based on the successful German V200 series. Authorisation to build three pilot locomotives at British Railway's Western Region workshops at Swindon, was given in January 1956 and the first, numbered D800, went into service in August 1958. D801 & D802 followed in October and December. The class later totalled 71 (D800-D870). The 2,000hp locomotives had a B-B wheel arrangement, with a maximum speed of 90mph and came into the "type 4" power rating. Weight was 78 tons. During their working lives the "Warships" would have been a common sight at Paignton, being mainly employed on West Country expresses to and from London Paddington. The class was later classified as 42 (locos with Mekydro transmission) and 43 (Voith transmission). Withdrawals started in 1968 as other locomotive types with electric transmission replaced them. The last examples were withdrawn in December 1972.



Advert from the *Paignton News* of Saturday 9th April 1960 publicising the visit of Lisa (or Liza, she used both versions) Gastoni to the zoo to inaugurate the "Warship" class locomotive and open the Ceylon Tea Garden.

British Railways supplied working drawings of their "Warship" class locomotives to aid with construction of the new body - the frame of which was made by the zoo's own staff entirely from teak ship's timbers. The panelling and painting were carried out by Eastern Motor Body Works Limited of Brixham Road, Paignton. Given the constraints of the gauge, the engine was a fair representation of the "Warship" class on which it was based. It featured a headcode frame on its nose, as did the first thirteen members of the class. The driver sat inside in the leading cab, looking out over the cab windows. The engine was numbered D801 (D801 was

one of the original pilot locomotives and entered service in November 1958 being named "Vanguard". It was withdrawn from service in August 1968). Livery was brunswick green, like the mainline version (although some were later turned out in a maroon livery). The name "Jungle Express" was carried on the side, spaced either side of an attractive roundel. It seems little was done to the "works" of the locomotive and, as we will see, these required major attention some years later. All in all it was an attractive machine and marked the start of locomotives at the zoo, which were modelled on British Rail types - something that remains the case today.

The 1960s

It has already been mentioned that the Herbert Whitley Trust published their first annual report on 31st October 1957. From the 11th report (1968) until the 25th (1982), these "Annual Reports & Accounts" contained some detailed information on the operation and maintenance of the railway, which provide a very useful record of events during this time. Appendix Five gives a summary of the zoo visitor numbers and railway income taken from these reports.

The railway gets a mention for the first time (apart from the abortive extension plans recorded above) in the 6th annual report to 31st October 1962 "*The Jungle Railway continued to be an attraction to young and old alike and a useful source of revenue*". The railway was certainly carrying a good number of passengers - the period 1st February to 31st October 1963 saw 176,000 passengers. The fare was 6d at that time but was raised to 7d towards the end of the 1963 season. The 1963 report listed the dates of operation - with the railway "*running all day long and everyday in the summer*" and at weekends only "*spring and autumn*", but was "*closed for overhaul in the winter*". The report also notes "*Although frankly regarded mainly as an amusement by children, the railway does give views of the lower lake and of other features which are not otherwise visible to the public*". These comments sum up well the ethos of the railway - to amuse children, allow views not otherwise possible and to raise revenue for the zoo. The 1963 season saw the trial of a "Road Train". The report tells us this was an "*electric tug and a specially built open passenger coach to carry 24 persons*". It ran "*along the level Main Drive between the Main Gate and the Café*". As such it was therefore not in competition with the railway. However, it was less popular than anticipated carrying 7,600 passengers during the summer season.

The 50" Ordnance Survey map published in 1964, but revised in July 1963 from the original survey of August 1952, shows the station had gained the building housing the ticket office. The only other change was to the carriage siding, beyond the locomotive shed. This has been covered over, thereby allowing the coaches to be kept undercover, as well as the locomotives. A connection had also been installed at the northern end, effectively turning the siding into a long loop - albeit running through a shed. At some stage in the early 1960s, the station platform moved a little way north - but this cannot be clearly seen on the map. It was certainly at its new location (SX87775973) by 1965.

Pathe Films visited the zoo in the summer of 1964 and recorded a 2 minute 47 second long film about the zoo. Titled "Paignton Zoo", the railway featured in two sequences. The first, lasting 13 seconds, was of the American outline locomotive filmed from the lineside. The engine is in a mid blue livery, with gold lining - while the coaches are in a plain dark red. It can be seen the locomotive is no longer named "The Pride of California". The second

sequence, 10 seconds long, was filmed from the train. Motive power this time was the "Warship" locomotive in its brunswick green livery. In this sequence a model signalbox is visible where the line turns away from the main drive to head across the northern edge of the lake. The trains proceeded anticlockwise around the circuit. However, after this the direction of operation was switched to clockwise (which seems to have remained the case to the present time). The earliest photograph, which shows a clockwise train, dates from summer 1965. This also shows the coaches were in a light blue livery. A picture also appeared in the *Paignton News* of Saturday 28th May 1966, which was taken on the occasion of a visit by the Walt Disney publicity department. It shows a number of animal characters sat on the train facing ready for a clockwise journey; although the locomotive is not visible.

The *Herald Express* of Wednesday 29th March 1967 reported an amusing story about the railway. Apparently the train came across a goose sitting "*fairly and squarely in the middle of the line*". It went on "*Don Kinghele, driving the miniature train tooted. Still the goose sat there*". Eventually, after edging even closer, Don alighted and the goose dashed off, leaving behind an egg. The egg was taken to the zoo kitchen, were it was yet to be decided "*whether we should cook it or keep it for a souvenir*".

The coaches came in for some attention over the winter of 1967/1968. The 1968 report stated that the annual winter inspection revealed that three of them had "*rotted away in many places and were unsafe*". The report went on to say "*Three new ones were completely made by our own Maintenance section, and both these three and the remaining two others were painted*". It is assumed the report was referring to the coach bodies, as opposed to the frames and bogies. The 1968 report also carried an interesting paragraph on the apparent popularity of the "Warship" locomotive D801 "*It is interesting to note that the darker of the two engines caused quite a stir of interest to many people who, strangely enough, come into the Zoo for the very purpose of train spotting. It is, as most people know a replica of the British Railways Diesel 2,000hp locomotive of the Warship class*". Apart from letting us know the 1939 built American outline locomotive was also in a green livery, one wonders exactly how many people did actually visit the zoo just to see the railway. It does show that interest in miniature railways is not new! The report went on "*In this age of photography great credit must go to the driver of the Miniature Train, especially during the height of the season, when he stopped and allowed visitors to take pictures of the various water birds on the lower lake and the Gibbon with its baby on the big lake*". It ended by noting the railway ran daily from Easter until the end of September.

Pathe Films visited the zoo again - presumably in the summer of 1968, the film being released in November 1968 and titled "West Country Idyll". The zoo is one of a number of locations visited in this travelogue, but the railway features in a 4 seconds long clip. The American outline locomotive is seen in its light green livery (as alluded to in the 1968 report) with cream trimmings. The coaches are in a matching plain green livery. In the out takes from this film, a full 27 second long sequence shows a well loaded five coach train passing. According to the 1969 report, the 1960s ended with the railway doing record business. It detailed that the train carried between 24 and 36 persons on each trip and ran at intervals of about 10 minutes, from 10.00 until 18.00 - daily from Easter to the end of September.



This view (from a postcard) is the earliest we have of the American outline locomotive at the zoo. It was built by G & S Light Engineering Company Limited in 1939 for Dudley Zoo. The name "The Pride of California" is displayed in the window adjacent to the cab. The wording around the "PZR" circular device reads "World Renowned Model Railways" no doubt applied by its previous owner, Ernest Dove. Livery is Santa Fe's "Warbonnet" red & yellow. The location is the station alongside the main driveway - the train is ready for an anticlockwise journey, which was normal when this photograph was taken - around the mid to late 1950s.

(Brunswick Printing Co Ltd, Teignmouth)



The 1943 ex Dudley Zoo locomotive poses with its new body - modelled on a British Railways Western Region "Warship" class diesel hydraulic engine. The station platform can be clearly seen right, while behind the train is the main driveway and beyond that, the café building. Livery was brunswick green. The name "Jungle Express" is carried in the centre of locomotive, either side of an attractive roundel. The train seems lightly loaded.

(J Meredith. 19/6/61)

The 1970s

During the height of the 1970 summer season, D801 the "Warship" class locomotive gave "engine trouble". The 1970 report said on checking it was found "*that the engine driving it, an old Lanchester engine at least 30 years old, at last had worn itself out*". The comment about the Lanchester engine confirms that D801 was merely the 1943 built ex Dudley Zoo locomotive, with a new body constructed in 1960. Anyway, the zoo called in Moxhams of Torquay Limited, the local Austin distributors for Torbay. They took the locomotive to their large repair workshop at Combe Road, Watcombe, on the northern outskirts of Torquay. Here, the old engine was removed and a new Austin petrol 1200cc power unit complete with alternator and ancillary electrical equipment installed. The existing transmission was also modified. Moxhams were a long established firm - formerly Charles Moxham & Company Limited, they were taken over by the Barlow Motor Group around 1969. They also had premises on Torwood Street and Babbacombe Road in Torquay.

In 1971 it was the turn of the American outline locomotive to get a new engine. The 1972 report noted that "*As in previous years the two trains were alternated week by week. The replica of the BR 801 Warship class, pulled the 5 large carriages one week, much to the delight of the many ardent train spotters who recognised this machine, and the freelance with its new BMC Gold Seal engine fitted last year by Moxhams of Torquay running the second week*". The zoo was obviously pleased with Moxham's work, both on D801 and this locomotive and the report went on "*It was interesting and pleasing to report that the new engine performed magnificently throughout the long and arduous work it had to do throughout the summer and Messrs Moxhams should be well satisfied with their Engineers who undertook this difficult and unusual task of fitting an engine to a train*". BMC like many firms did an exchange scheme for worn engines; one was the Gold Seal - a completely reconditioned engine ready to fit and painted gold in colour. The report went on to list the various wildlife that could be seen from a trip on the train: ducks, geese, black swans, pelicans, moorhens, cranes and storks. On the island in the middle of the lake, which the railway circumvented, Lar Gibbons lived free and bred regularly. Also visible were Chinese water deer, wallaroos and a vast collection of flowering plants and exotic trees.

The Ordnance Survey 50" map, revised in March 1971 and published the same year, shows the section of the line along the south shore of lake had been realigned since the July 1963 revision. The narrow strip of land between the upper and lower lakes had been widened and the railway straightened. It is believed this work was carried out around 1967. The 1973 season was very wet in April and May, but this gave time for the driver, a Mr Kemp, to experiment with a public address system on board the train. Apparently, Mr Kemp fitted the six speakers and wired the train in his spare time. A compact amplifier was fitted into a portable case for easy transportation from one locomotive to the other. Now, with the aid of a microphone, the driver could give his passengers a running commentary as the train proceeded around the railway. The 1973 annual report concluded its review of the railway by adding "*We are grateful to Mr Kemp for his charm and the hard work he puts in, helped by his always willing wife*".



An extract from an Ordnance Survey 50" Map revised in March 1971, published in 1971 and reproduced here approximately full size. The siding beyond the locomotive shed has been covered over to form a carriage shed and has been extended into a loop. Note the causeway between the lakes has been widened and the railway realigned over this section - the only significant alteration to the track layout.

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The 1974 report tells us that a Mr Jim Clarke was the zoo's engineer, and he undertook the servicing of the locomotives and the greasing of the bogies on the coaches. It went on to add that with the care the driver took of the train "*few if any breakdowns occurred*". The ex Dudley Zoo coaches had now been in use for many years and during the 1974 season showed signs of wear. Therefore, during September 1974, engineers H Beare and Sons Limited of Salisbury Road, Newton Abbot were called in and following discussions with the zoo, produced drawings for all metal coaches. The plans were approved and within just a few weeks, Beare and Sons delivered one coach for inspection. The seats were placed seven inches lower than before and this gave a more stable ride. The frame was constructed using 3" x 2" hollow steel box and formed a frame on to which the seats were welded. Sheet metal was screwed to back and sides to complete the coach. The existing bogies were retained, but with the wheels retyred in steel. The locomotive bogies were also retyred in steel and the brakes of the "Warship" engine renewed. The report adds that H Beare and Sons appear to have made a "*first class job*" of all this work.

The 1975 season saw a 15.3% drop in visitors to the zoo (down to 294,116). However, once again the money raised by the railway (£6,387 - see Appendix Five) was useful, the report adding "*Thanks to devotion of those in charge the car parks and the miniature railway ran well, giving satisfaction to the visitors and providing some profit for maintaining the collections*". Worse was to come in the 1976 season with a drop in visitors to 275,116, but the railway made a profit of £6,860 for that season.

The 1980s

The 1980 report contained a useful round up of the railway "*The Miniature Train did very good business. Many enthusiasts of the Train Spotters World came to the Zoo and were thrilled to recognise one of the engines pulling the 5 coaches around the 10½" gauge track, as the replica of the BR801 Warship class. The latter engine originally was the first steam train [sic] to arrive at Paignton Station from London. Our Miniature Train though is powered by a petrol engine. We alternate the 801 class with a freelance fitted with a BMC Gold Seal engine and each runs week about normally from Easter throughout the holiday season*". One wonders exactly what was meant by the "*first steam train to arrive at Paignton Station from London*"! The diesel powered "Warships" first came on the scene in 1958 and had been withdrawn around eight years when his report was published.

During the 1982 season it seems both bridges carrying the railway over the stream, required attention. The report said "*Both bridges over the stream carrying the railway track were found to have cracks in them and the track was just beginning to move slightly. Early morning work by Maintenance enabled the train to continue running with much care*". One of the bridges was then completely replaced with four concrete pipes, each 3' x 12". These were laid and a side wall of thick concrete was made, with a top wall of concrete holding the track. The smaller second bridge was dismantled and a new concrete one made by shuttering up the sides with a 12' x 2' concrete wall over the top. The report adds "*The work was carried out in the late afternoon and was ready by lunchtime next day*". The speedy completion of the work is very commendable and one perhaps the national railway system should aspire to! The 1982 season also saw the lowest ever number of visitors to the zoo at 246,117 - but the railway made a creditable £10,256 profit. The fare for all passengers at this time was 20p. See Appendix Six for a list of fares along with zoo admission rates.



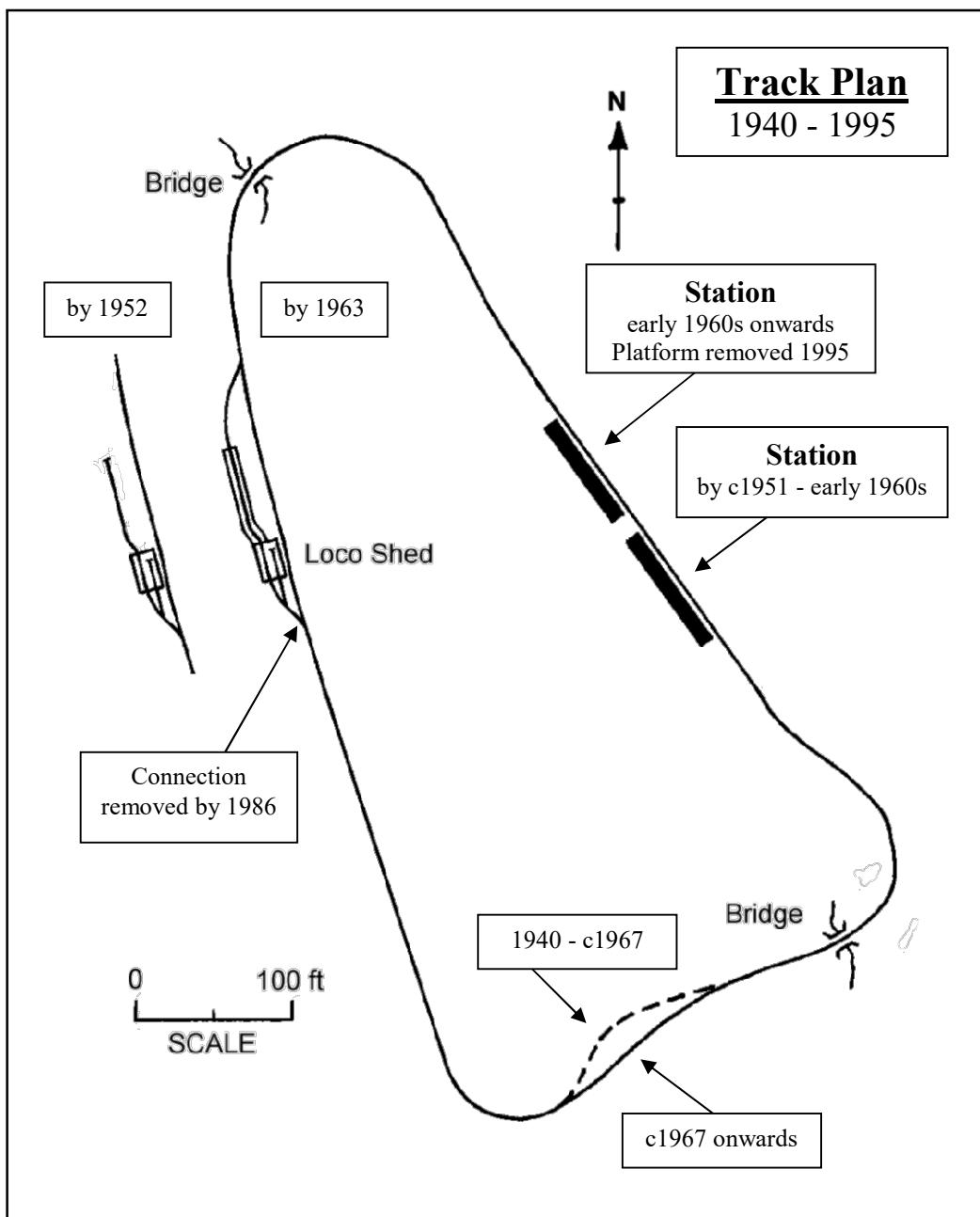
This photograph was taken at the completion of the installation of a new Austin 1200cc engine in the "Warship" locomotive by Moxhams of Torquay Limited. Left to right are: R Grosvenor (Moxhams Garage Group Director), W E Francis (Zoo General Manager) and K Gale (Moxhams Service Manager). The location is Lakeside Station.

(Courtesy K Gale. 1970)



The American outline locomotive rests in the station, while the driver collects fares from the seated passengers. The locomotive is, by this time, in a smart plain blue livery - with the coaches green. This view did not change much between the 1960s and the 1990s.

(D Holroyde. 19/6/83)



Derailments - 1984 & 1985

For a railway operating inside a reasonably secure location, vandalism has not normally been a problem. However, 1984 and 1985 were to see two such incidents. As far as is known these are the only such serious occurrences and strangely happened in consecutive years. On Monday 30th April 1984, the "Warship" class locomotive was derailed by vandals who deliberately placed a 5 foot long, 2 inch thick tree branch on the line, causing the engine to turn on to its side. The 57 year old driver, Philip Carr, was thrown out of the locomotive and suffered a grazed ankle and shock. He had, apparently, only recently taken up the job of train driver. The *Herald Express* and the *Western Morning News* of Tuesday 1st May 1984 reported the incident, as did the national daily press. The train was reported to be carrying 40

passengers, none of which were fortunately hurt - the coaches remaining upright. The train was passing around "*the first tight bend*" and this curve helped the coaches come to a stand. D801 was badly damaged and was replaced by the American outline locomotive, while it received "*a costly overhaul*". The incident could have been much more serious if the coaches had turned over as well. The *Herald Express* also reported the zoo said "*that it was not the first time objects have been deliberately put in the path of the train. On one occasion a woman broke her leg when the carriage toppled over on her*". The curve concerned was where the railway turned away from the former driveway to run along between the upper and lower lakes.

The second, potentially more serious, incident occurred on Sunday 14th April 1985, a week after Easter. This time the locomotive involved was the American outline 1939 built ex Dudley Zoo engine. The *Herald Express* of Monday 15th April 1985 carried a full report. The engine was started up by some youths and the train set in motion down the line, while the driver "*was down the platform*". Executive Director Peter Stevens said "*It is not straight forward to start the engine. We will have to find out how it happened and take whatever precautions are necessary to make sure it does not happen again*". It was fortunate there were no passengers aboard at the time, nor were any pedestrians knocked down. The train ran for about 70 yards down the line, reportedly reaching a speed of 25mph, before derailing "*at a bend and careering into a stream*". This was presumably the same curve where the 1984 derailment occurred. The locomotive turned on to its side and was badly damaged, the paper reporting the cost as being £1,000. The railway was closed for "*one or two days*" while the damage was assessed and repaired. A large crane was required to recover the engine and the "Warship" class locomotive then took over all services, as the damaged locomotive was removed for a major rebuild. It would appear it did not take long to find out who was responsible, as three youths were helping police with their inquiries and appeared before Torbay Magistrates on Monday 15th April, only the day after the incident. In fact one, 21 year old Ian Derek Coupland of Brent Road, Paignton was accused of criminal damage and was granted bail until 22nd April 1985. It was not recorded in the local paper what his final fate was.

A "New" locomotive - 1985

The badly damaged American outline locomotive was rebuilt with a new body. The *Herald Express* of Monday 19th August 1985, reporting the locomotives return, added the work had been undertaken by staff at the Park Road Garage in Torquay, in conjunction with the Rogers Garage in Paignton. The *Narrow Gauge News* (No.163 page 9) reported the work was done by a C A Ford-Hutchings. In fact, Park Road Garage in Havelock Road, St Marychurch, Torquay was owned by C A Ford-Hutchings Limited. Rogers Garage had premises in Bishop's Place and Palace Avenue, Paignton. The chassis, bogies and wheels were retained. Following on from D801 the "Warship" class locomotive, the new body was styled on the British Rail class 46 locomotive, but with a cab and nose modelled at only one end. These would have been a common sight at Paignton on cross country trains to and from the Midlands and north of England, although by 1984 they had all been withdrawn, having been first introduced in 1961.

Class 46 Locomotives

The class 46 diesel electric locomotives were constructed at British Railway's workshops at Derby. Numbered D138 to D193 the 56 locomotives were constructed between November 1961 and January 1963. The 2,500hp locomotives had a 1Co-Co1 wheel arrangement, with a maximum speed of 90mph and came into the "type 4" power rating. Weight was 138 tons. The class were virtually the same as the class 44 & 45s, but with different electrical equipment. All three classes were known as "Peaks" after the names bestowed on the class 44 locomotives - the first to be introduced. During their working lives the class 46s (and 45s) would have been a common sight at Paignton, hauling cross country trains to and from the Midlands and north of England. Withdrawals started in the summer of 1980 and the last class 46 went in November 1984, with the last class 45 in the summer of 1988. All the class 44s had been withdrawn as early as November 1980.

wooden body from the old train and presenting it to a school for handicapped children to use as an item of play equipment". It is not known whether this did happen, but it does go to prove the adage that miniature railway locomotives are rarely completely scrapped. The zoo now had two locomotives styled on British Rail mainline diesel types.

By at least August 1986, the connection to the shed and sidings at the south end had been removed. A photograph taken at this time shows this had been done sometime before then - it of course had the benefit of eliminating a pair of facing points. The railway was now in a phase of little change. Although the locomotives were reportedly used alternately, photographs of the period seem to favour the "Warship" locomotive. By the summer of 1986, the coaches had been painted a bright red, yellow and blue livery. At sometime during this period (after April 1984 and by May 1989) the "Warship" locomotive received new nameplates. Previously these had "Jungle Express" with a roundel device between the two words. The new brass plates had "Jungle Express" in large letters, with "Emma & Hannah" in smaller letters above. These were two grand daughters of a gentleman who made a sizeable donation for the up keep of the railway.

A New locomotive - 1995

Over the winter of 1991/1992 the "Warship" locomotive seems to have been repainted - still in the same shade of green - but losing the D801 numbers in the process. By the 1994 season this locomotive had been at work on the railway since July 1948, firstly in its original guise of a railcar, and from 1960 as a replica of a BR "Warship" class engine. Before this it had seen around four years work at Dudley Zoo. Despite being re-engined in 1970, the locomotive was showing its age from all the hard work. Therefore, the zoo decided to have a new locomotive built to work alongside the more recently re-bodied class 46 locomotive. This was to be the first truly new locomotive to run on the railway, all previous motive power being second hand. Once again, a British Rail diesel engine was to be the basis of the new locomotive. The chosen prototype was the class 37 diesel electric locomotive, one the most successful and reliable types ever built in this country. Though not originally based in the West Country, they were a common sight there from the early 1980s.

The rebuilt engine arrived back at the zoo on Friday 16th August and went into service on Monday 19th August 1985. The cost of the rebuild was said to be £1,500. Livery was British Rail blue, with a full yellow nose - the same as the mainline types at that time. The zoo staff were reported by the *Herald Express* of Monday 19th August 1985 as "yet to think of a suitable name". By the summer of 1986, no name seems to have been applied. It was also said that both locomotives were still to be used alternately each week. The *Western Morning News* of Saturday 17th August on reporting the locomotive's return added "*Paignton Round Table is looking into the possibility of restoring the badly damaged*



Here we see the 1939 built (formerly American outline) locomotive with its new class 46 body. This is a rare view on the west side of the lake - the train is about to pass the shed. Note the siding ending in the right foreground. This used to continue and join the running line, forming a long loop through the shed. The locomotive had been with its new body for almost exactly a year when this photograph was taken - it carries no name or number.

(J Powell. D Holroyde collection. 13/8/86)



The new class 37 is seen here, when just a few months old, in the station. Note the platform has been removed to accommodate the wider locomotive. This was the last season passengers had no protection from the elements - roofs being added ready for the 1996 season. The view behind the train would also change in 1996, with the construction of the elevated wooden walkways. The station building is out of sight behind the photographer.

(P Scott. 16/9/95)

The locomotive was constructed by David Nicholson, operator of the Bickington Steam Railway. This 10½" gauge railway runs through the grounds of the large Trago Mills shopping complex at Stover, between Bovey Tracey and Newton Abbot in Devon. The new locomotive was mostly built in the railway workshop at Trago Mills, although the body was constructed by Chris Wedgewood (David's cousin) in Shrewsbury. Power was supplied by a Lister Petter 4 cylinder watercooled diesel engine, driving one bogie via a torque converter gearbox and prop-shaft. The body was double ended, with a sit in cab at one end. It was numbered 37 401 and turned out in British Rail "InterCity" livery of two tone grey, separated by red and white bands. The nose was painted yellow and mini snowploughs were fitted - probably of more use in the warm climate of Torbay for diverting objects off the track than for ploughing snow! The full size 37 401 started life as D6968, being delivered to Darnall depot in Sheffield on 20th February 1965 in British Railways green livery. Renumbered to 37 268 in 1974, it became 37 401 when rebuilt with electric train heating supply in 1985. It received the British Rail "InterCity" livery in 1988.

The completed locomotive was very impressive and a good likeness of a full size class 37 diesel, with a number of additional fittings to enhance its appearance. It was on display at Trago Mills on the occasion of a visit by the Heywood Society on Saturday 13th May 1995 and was in service at the zoo by Monday 22nd May - on which day it was photographed by the *Herald Express* (although it seems these photographs were not used by the paper). Since then it has been the first choice motive power, the class 46 locomotive becoming a standby. The station platform was removed over the winter of 1994/1995 to accommodate the new class 37 locomotive - it being somewhat wider than previous locomotives on the railway. As the coach seats were fairly low anyway, this would not have caused a problem. In fact the removal of the platform took away a potential trap for children's feet.

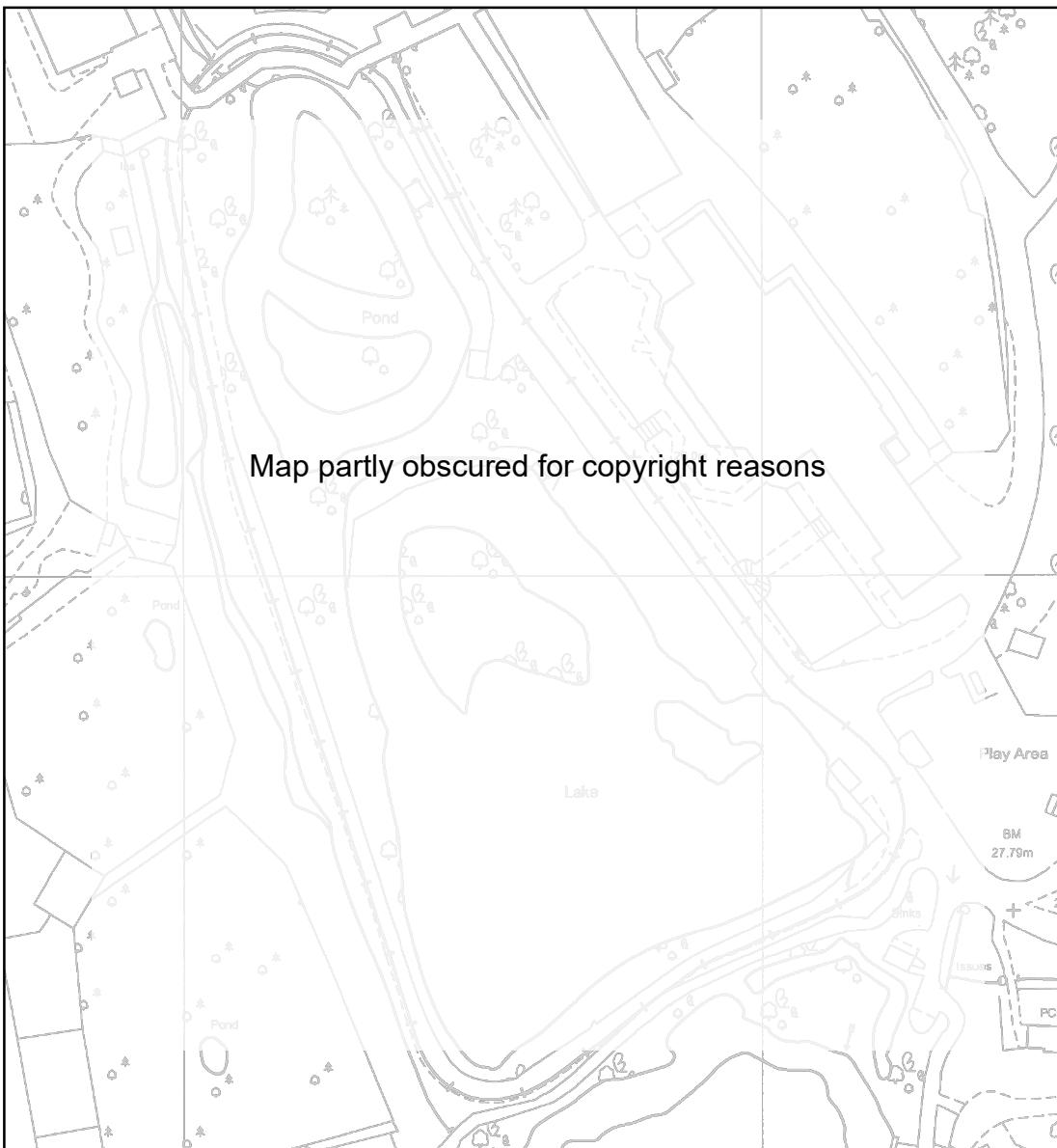
Class 37 Locomotives

Based upon the larger class 40 locomotives, the first batch of class 37s was ordered from the English Electric Company in 1959. The first locomotive, D6700, emerged from the company's Vulcan Foundry at Newton-le-Willows in November 1960. The class later totalled 309 (D6600-6608, D6700-6999) being delivered over a five year period. The 1,750hp locomotives had a Co-Co wheel arrangement, with a maximum speed of 90 mph and came into the "type 3" power rating. Weight was 105 tons. In their early years, the locomotives were allocated to the Eastern & North Eastern Regions, but later found work across almost the entire network. Rebuilding and modifications in the 1980s saw at least seven sub classes formed. The first major withdrawals took place in the 1990s, but some saw service in France, Spain and Italy on new railway construction projects. A small number remain in active service in 2008.

The 1990s

The mid 1990s saw major redevelopment work at the zoo, which was renamed Paignton Zoo Environmental Park in 1996. The zoo entrance was moved to a new large building with offices, shop and reception, which was opened in June 1996. After passing through this building and paying their admission, visitors now passed over the railway twice at its northern end on a wooden elevated walkway. This also took them over the former driveway and prospective passengers had to then walk back down to reach the railway station, which was still in the same location as before. Following this, the railway saw some alterations to its track layout. The old shed and siding on the west side of the lake were removed, the space being required for a new aviary. A new siding, trailing for clockwise trains, was laid practically on the old driveway - with a small shed under the wooden walkway. This work was probably carried out over the winter of 1996/1997. There was also talk at this time of

extending the railway, but sadly nothing came of this and the line remained a simple 520 yard circuit. Roofs offering some protection for passengers were fitted to the coaches ready for that start of the 1996 season. This was the first time since the wartime gas bag was carried over the front coach that any protection from the elements was provided for passengers.



An extract from the Ordnance Survey National Geographic Database, downloaded on 11th January 2008. Reproduced here approximately full size, the scale is 50", but exact revision date is not recorded. However, it can be dated to between 1996 and 2005. The new entrance building and elevated walkways over the railway, installed in 1996, can be seen at the very top. The new siding, replacing that on the west side, can be clearly seen. The siding is shown as it was before the station was moved to that area, thereby shortening it. This was undertaken during the winter of 2004/2005.

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The "Warship" class locomotive, laid aside in May 1995 when the new class 37 arrived, was initially parked outside at the rear of the shed. By May 1996 it had been moved away from the railway and was stored on the eastern edge of the zoo near some toilets. In October 1996 it passed into private ownership and was removed, initially being stored at the South Devon Railway, Buckfastleigh. By September 1997 the class 46 locomotive had been named "Marie". This was an unofficial, temporary, naming by one of the drivers - "Marie" being his then girlfriend. The nameplate was laminated cardboard, fixed to the locomotive with "blutack". It was in place for two seasons, being removed by October 1999.

In late 1996, fail safe air brakes were fitted to all five coaches (six bogies). An electric air compressor was fitted to the class 46 locomotive at the same time, to allow it to work the brakes. The station building was demolished around the winter of 1997/1998 and for the start of the 1998 season the station itself was moved, although by then of course there was no platform. The new location was on the curve at the south end of the former driveway (SX87825966), where the line curved away to cross between the two lakes. There was a shelter here and the new station was called "Lake View".

2000 to the Present

After over fifty years, steam power returned to the railway briefly in 2000. The locomotive concerned was a privately owned LMS 4-6-0 parallel boiler "Royal Scot", numbered 6100, in LMS red livery. The locomotive was obtained in an uncompleted state by local man Mel Sherwood. It was finished around September 1999 by Prestige Engineering of Newton Abbot, Devon. It operated some trial trips on the railway in March 2000, including hauling a few passenger trains, but regrettably found the curves too tight for its liking. Despite a hopeful report in the *Narrow Gauge News* (No.239 page 16) about easing the curves, it did not enter regular service on the railway and internal combustion motive power remained the norm.

By the 2003 season the locomotives and coaches had been repainted. Both locomotives were now in a British Rail green livery with full yellow noses and a "Dart Rail" logo on their sides - the Paignton & Dartmouth Steam Railway (owned by the Dart Valley Railway Company) sponsoring the railway. The coaches carried advertising on their roofs for the railway. These were repainted into a Great Western Railway style livery - chocolate for the coach bodies and cream for the roofs and supports. In making these livery alterations, the railway had gone back to the British Railways Western Region livery of the 1950s. The two locomotives also received new numbers to match their green livery. The class 37, formerly 37 401, became D6718 - while the class 46 lost its identity and became D6719 - another class 37! The full size D6718 was put into service on 5th June 1961, later becoming 37 018 and then 37 517. It was withdrawn and stored in September 2007. D6719 was delivered on 27th June 1961, later becoming 37 019. It was stored in 1994 and cut up in 2004.

A zoo press release in April 2004 contained some interesting information about the railway at that time *"For the first time maintenance is being carried out in-house by train driver Mark Lewis. Mark is a former ship's engineer who has worked on tugs and passenger boats and operated the fuel barge at Dartmouth. The trains attract a lot of interest. The main diesel engine was built especially for Paignton Zoo in 1995 by Dave Nicholson at Trago Mills. It can carry 1,500 passengers 9 miles on just five gallons of diesel. It is a reproduction of a British Rail Class 37. The reserve unit is petrol driven and dates from the late 1930s. The bodywork and engine have been replaced but it still has its original chassis, Lanchester*

radiator and pre-selector gearbox. The starter motor was finally replaced just last year after 53 years of service. Recently the front drive bearings were replaced after more than 35 years. The ten and a quarter inch gauge tracks run for a third of a mile around the lake. The little trains clock up over 80 miles a week during the summer season and over 2,000 miles in a season. About 120,000 visitors ride the line each year". The press release concluded with a small but amusing anecdote "[Mark Lewis] and relief driver Pete Busby try to answer the questions of interested visitors, although on one occasion Mark was amazed to be asked: "Does this train go to Torquay?".

During the winter of 2004/2005 the station was moved back to the north end of the railway. This was carried out following a Health & Safety review, which determined it would be better to segregate the waiting passengers and also protect visitors from moving trains. Therefore, the section of line through the former station site and running parallel to the old driveway was moved slightly closer to the lake and fenced off - previously it ran "tramway" style along the edge of the driveway. The new station did not have a platform, but merely a fenced off area and queue system, with an entrance gate at the north end and an exit gate at the other. The new station was located at SX87755976, just to the south of where the wooden walkway crossed overhead and where the siding trailed into the line - this being shortened somewhat to accommodate the new station. The car park style ticket machine was moved close to the entrance of the queue point. The station was named "Lake View" as before.

In 2006 the class 37 locomotive was converted to run on environmentally friendly bio-fuel, made out of recycled vegetable based cooking oil. The zoo issued a press release in August 2006 titled "*Paignton Zoo's cooking oil express!*". It explained "*The fuel is supplied by Plymouth Bio-Fuels Ltd, who also supply conversion kits to improve the running of diesel engines on bio-fuel. Jonathan Stromberg, of Plymouth Bio-Fuels Ltd, explained: "Our bio-fuel is not only a renewable material, it is also recycled, carbon neutral and cheaper than diesel. It is less polluting and there is no waste. All fossil fuels produce carbon emissions and so contribute to global warming."*" Paignton Zoo spokesperson Phil Knowling said: "*The train does not use that much fuel, but we do around 2,000 miles a year, so every little helps. It is all part of our commitment to being an environmentally-responsible organisation*". Plymouth Bio-Fuels Limited were based in Plympton, just east of Plymouth. The press release went on "*The Paignton Zoo narrow gauge railway is better known as the Jungle Express. The ten and a quarter inch gauge tracks run for a third of a mile. The little trains clock up over 2,000 miles in a season. About 120,000 visitors ride the line each year. The carriages are painted in the chocolate and cream livery of the Paignton & Dartmouth Steam Railway, who sponsor the service*". On 7 June 2007, Virgin Trains claimed to have run the first bio-diesel fuelled train. Formed of a class 220 "Voyager" unit, this ran from London Euston to Llandudno, but only used a mixture of diesel and 20 percent vegetable oil. On 14 September 2007, EWS Railways operated the Royal Train to Scarborough with a class 67 locomotive wholly fuelled by bio-fuel. Prince Charles was aboard, who it was claimed, was the "first passenger in Britain to travel on a loco-hauled train fuelled by 100 percent bio-fuel". In both cases, it appears these claims were incorrect - Paignton Zoo had beaten them to it by a year! The standby ex Dudley Zoo locomotive being petrol, was not suitable for conversion to bio-fuel operation. The bio-fuel storage tank is located adjacent to the points where the siding joins the running line, near the station.



In its 60th year the class 46, ex Dudley Zoo locomotive stands in the new station. This was used between 1998 and 2004. There was no platform - just the shelter, some seats and the ticket machine. To the left the line runs between the upper and lower lakes. The former main driveway is to the right, behind the train. Note the coach roofs added for the 1996 season.

(D Holroyde. 6/10/99)



Steam returned to the railway all too briefly in 2000. Here we see "Royal Scot" at the same location as above - but this time looking across the lake. Finished by Prestige Engineering, the locomotive found the curves too tight and it did not enter regular service. Note the ticket machine covered up behind the locomotive and the information board on the shelter.

(M Sherwood. 3/00)



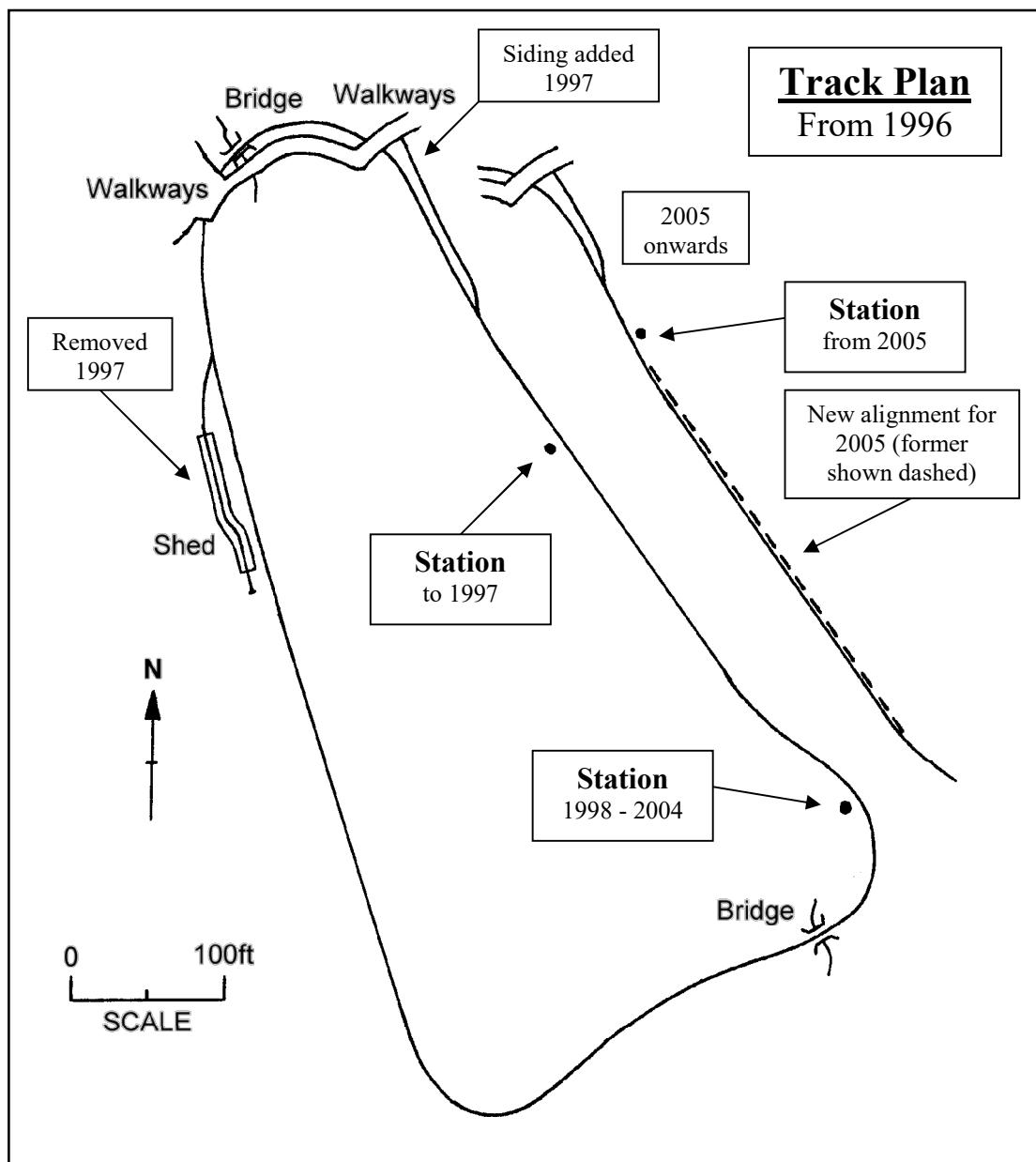
Both locomotives pose for the camera - the class 46 (left) is on the running line, while the class 37 is in the siding laid in 1997. Note the elevated walkway behind the locomotives. The former main driveway was immediately to the right of the class 37 locomotive.

(D Holroyde. 6/10/99)



The area shown in the top photograph became Lake View station in 2005. Here we see the class 37 (now in green livery) at rest during the lunch break - between 13.00 and 13.40 as can be clearly seen from one of the many signs! Passengers enter to the right and pass down the queue line to join the train. Alighting passengers depart through the (closed) gate by the rear of the locomotive. The ticket machine is just out of view to the right.

(P Scott. 14/2/07)



In December 2006, the zoo operated Santa trains for the first time. These were marketed as "Santa's Ice Express". The trains ran on selected days from Sunday 10 December to Sunday 24 December 2006, with departures half-hourly from 10.30 until 15.30 (with an earlier finish on Christmas Eve). The zoo's press release of 28 November explained *"The experience begins at the Magic Ticket Office where one of Santa's elves will hand passengers their magic ticket for the journey. Santa's reindeer will then guide them to pick up the train. Once aboard, passengers can listen to the storytellers' magical Christmas tales and they will travel through the ice tunnel and stop to feed the ice animals with snowballs. Passengers will alight at the Ice Station, where Santa will be waiting"*. "Santa's Ice Express" was operated again for Christmas 2007, this time with a "Magical Breakfast with Santa" before the ride on the train.

Over the winter of 2007/2008, the class 37 locomotive was repainted into a slightly darker shade of green, but retaining the full yellow nose. For the first time a name was applied - "Peter" and an entirely fictitious number - 4808. By this time the standby ex Dudley Zoo class 46 locomotive had been renumbered from D6719 to 6700. (D6700 was the pioneer BR

class 37 locomotive being delivered on 2nd December 1960. It later became 6700, 37 119, 37 350 and then back to D6700. It is now preserved as part of the National Collection). 6700 is still used occasionally, but being less powerful than the class 37, only at times when traffic is lighter, or when the class 37 is not available.

After over sixty years of operation, the railway continues to run around the lake just as it did when it first opened in May 1947. Over the years many thousands of passengers have enjoyed a ride behind the petrol and diesel locomotives around the 520 yards of track. The income from the fare charged for a ride brings much useful additional revenue for the zoo. This, the fact the railway provides amusement for the many children who visit the zoo, and that it allows views not possible except from the train - has ensured its success and its continued existence.



The class 37 locomotive was repainted into a darker shade of green over the winter of 2007/2008, and was given a name for first time - "Peter". The fictitious number 4808 was also applied. Here we see the locomotive at 10.10am, quietly waiting at Lake View station for another busy day. The first train ran just before 11am, after the author, assisted by the driver, measured up the locomotive for Appendix Two of this book. The zoo logo is applied to the sides, at front and rear. The driver sits right inside the leading cab.

(P Scott. 15/4/08)

CHAPTER FOUR

PAIGNTON ZOO RAILWAY

OPERATION & TICKETS

Operation

The operation of the railway has always been simple, with only one train ever running on the line at one time. Indeed, despite two locomotives being available since 1952, there has only ever been one set of coaches. As far as is known the railway has always been staffed (for the running of the train) by just a driver with no guard - although at one time tickets were sold from an office on the platform at Lakeside station. Later, the driver sold tickets to the waiting seated passengers. In more recent years, after a ticket machine was provided, the driver merely collected the passenger's tickets before starting the journey. There has only ever been one station, variously called "Lakeside", "Lake Side" or "Lake View". By 1964, a model signalbox was located close to where the railway curved away from the driveway to pass around the northern end of the lake. There was also a model semaphore signal adjacent. The signalbox was still there in 1981, but seems to have gone by at least 1989.

Minor repairs and attention to the track, locomotives and coaches has usually been undertaken by the zoo's own engineering staff. If specialist railway expertise was required, this was brought in as needed. Larger tasks, such as major locomotive overhauls and rebuilding, were let out to local firms. Generally, the railway has operated daily from Easter until September - although in recent times those dates have been extended to include the school half term weeks. Times of operation and frequency of service have been dependant on how many visitors were in the zoo. At quieter times trains ran at specific intervals or times, while at busy times trains ran continuously. Trains were usually formed of all five coaches, although at times only four were employed. On the wartime 12" gauge line, trains seem to have run either way around the circuit. Photographs of steam operation in 1947 and 1948 seem to show trains ran in a clockwise direction. The 1949 zoo guide book describes an anticlockwise journey and this was then the case until 1965. Then a clockwise journey again became the norm and is still the case today.

In the 1960s the railway saw some 170,000 passengers each season (see Appendix Six). Nowadays that figure is a lower, but still very respectable, 120,000 or so. To put that number into perspective - the standard gauge Kent & East Sussex Railway and East Lancashire Railway both have figures of 110,000. The 15in gauge Ravenglass & Eskdale Railway carries 120,000 and the 2ft gauge Ffestiniog Railway 140,000 passengers each season. A more meaningful comparison may be made with the Great Whipsnade Railway. This railway runs in a circuit of 1½ miles through Whipsnade Wild Animal Park in Bedfordshire. With admission numbers similar to Paignton Zoo, it carried 130,000 passengers during the 2007 season - but on the much larger gauge of 2ft 6in. The number of passengers and therefore income generated, will of course depend on the overall number of visitors to the zoo, but will also be affected by the weather. The railway must be the most intensively worked 10¼" gauge line in the country. A larger gauge (15in or 2ft) would be more usual for railway in a similar establishment - but the larger gauge would probably entail a larger circuit with less tight curves. Indeed all the other existing railways in such locations are much younger, being constructed in a different era - generally the 1970s.

A trip on the railway today (see photographs on pages 55-58) will begin with the prospective passenger buying his or her ticket from the machine close to the entrance to Lake View station. It will then be necessary to join the queue of other expectant passengers. When the train has arrived back in the station, the driver will open the exit gate at the forward end of the platform to let the alighting passengers leave the station. After the last of these have left, the exit gate will be shut and the driver will walk to the back of the train and open the entrance gate (close to the last coach of the train) to allow passengers to board - those near the front of the queue having their choice of seats. Once the train is full, or the queue has been exhausted - the driver will collect the tickets (probably starting from the front of the train), check the chains are fastened across each seating "bay" and then lock the entrance gate. The locomotive is then started and slowly pulls the train out of the station - a short recorded safety message is played to the passengers. The train soon passes through the site of the original station and the upper lake becomes visible right; left is the restaurant building and the former driveway. A pleasant area of grass runs between the railway and lake. The railway now takes a very gentle curve to the left, before curving sharply to the right and passing the station site used between 1998 and 2004. Those with a seat towards the rear of train will get a good view of the locomotive at this point. The line now runs along a narrow strip of land between the upper lake (right) and lower lake (left). A pathway also follows the railway to the left. Here there is a view to the right, back over the lake towards the restaurant. The railway turns to the right again and enters an area only visible by taking a ride on the railway. The upper lake is to the right - this is area where in 1940 the path for the railway had to be chopped out of a veritable jungle. Left, one of the zoo's lions may be visible. The line now runs more or less dead straight, with one slight curve to the right. As the train approaches the end of this straight section, the area of the former shed and siding is passed on the left (nothing visible remains). The train now turns on a continuous right hand bend, passing twice under the wooden walkway. As the station is neared, the siding is on the left where the spare locomotive will be parked and perhaps a maintenance wagon. All too soon the train draws to a halt back in the station and everybody must vacate their seats for the next load of passengers. The trip will have taken about 5 minutes.

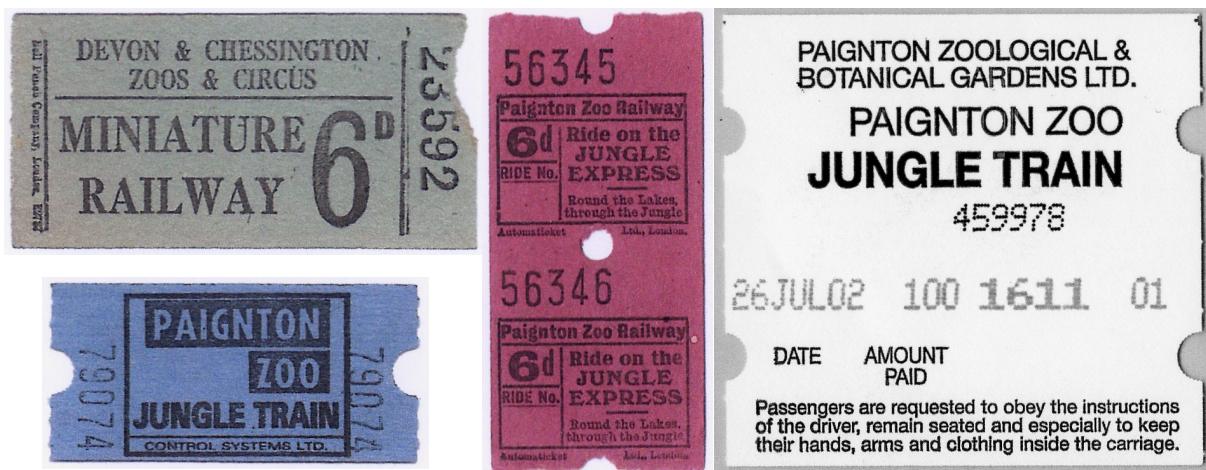
Tickets

Appendix Five contains a table showing zoo visitor numbers and the income received from the railway, while Appendix Six has a table showing the railway fares and zoo admission rates. There is also a small table showing yearly passenger figures, although these were only rarely recorded in the past.

A ride on the railway has always been charged over and above the entrance fee to the zoo. This was the case right from opening under Reginald Goddard's control in 1940 and up to the present day. The revenue raised from the railway has always been viewed as a very useful source of additional income for the zoo. This can be seen from the accounts, between 1962 and 1986 during which time the railway income was recorded (Appendix Five). In 1962 this figure was £3,065, rising to £20,527 in 1986. In 1962 a ride on the railway was 6d, while in 1986 it was probably 30p (see Appendix Six). As far as is known, there has only ever been one fare for the ride of one circuit around the lake - the same for adults and children.

Tickets have always been issued. In Reginald Goddard's days, it is believed these were sold by the driver. From the 1950s a ticket office was provided on the platform at Lakeside station. However, by 1973 tickets were being sold by the driver to passengers who had

already taken their seats for the trip. From the 1994 season onwards, a ticket machine has been provided at the station. Passengers now purchased a ticket from this machine before boarding the train - the driver then merely checking and collecting the tickets before departure. This has the advantage of the staff not having to handle any money - although passengers require the correct change. The machine is similar to those found in car parks, dispensing a square paper ticket.



A selection of tickets as used on the railway. Top left (No.23592) dates from the time of Reginald Goddard's control between 1940 and 1946. From the title on the ticket - "Devon & Chessington Zoo & Circus" - the ticket could have been from either Paignton or Chessington. Tickets titled "Devon Zoo & Circus" were also used by Goddard. Middle (Nos.56345 & 56346), judging by the 6d fare, must date from before the 1964 season when the price was increased to 7d. The 6d fare seems to have been in force since the 1940s until 1963. However, the next twenty years saw plenty of fare increases, which probably explains why the fare does not appear on the ticket bottom left (No.79074). This is thought to date from at least the 1980s through to the introduction of machine issued tickets in 1994, of which the one right, is an example (No.459978). The amount paid (£1.00) shows the ticket is valid for two people. The issuing machine is similar to the type found in some car parks. Note the safety message at the bottom of the ticket.

(Courtesy M Freeman Collection)



A Newspaper advert for the zoo from the Paignton News of 22nd March 1975.

A trip around the railway



We start our trip around the railway with a view of the station from the elevated walkway. In the siding can be seen the front of the class 46 locomotive, safely covered over with the ballast wagon in front. Adjacent to the points is the bio-fuel tank. Lake View station lies beyond, with the queue area to the left. The class 37 is at the head of a four coach train.

(P Scott. 14/2/07)



This was the site of the station until the 1998 season, when it moved to the curve at the south end of the lake. The class 37 can just be seen in the present station, Lake View.

(P Scott. 17/4/07)



Now named "Peter", the class 37 locomotive runs through the site used for the station between 1998 and the end of 2004 season. At this point the track curves out to the right, to swing to the left and run along between the upper and lower lakes.

(P Scott. 15/4/08)



Here the train is passing along the reverse curves on the causeway between the upper and lower lakes (left and right respectively). This was the section realigned in the 1960s.

(P Scott. 15/4/08)



We are now looking north along the west side of the upper lake. This is the section that was cut out of a "Jungle" in 1940 and gave the railway its name.

(P Scott. 17/4/07)



Emerging from the Jungle! At the end of the straight section on the west side of the lake, the line passes under the elevated walkway, from which we see the class 37 and a five coach train. The area of the former shed and siding is immediately to the right of the coaches.

(P Scott. 15/4/08)



Having passed under the elevated walkway once, the line turns through 180 degrees and passes under the walkway a second time. Between the two walkway "bridges" we see the class 37. Out of sight towards the rear of the train is where the line crosses the stream.

(P Scott. 15/4/08)



Journeys end! The class 37 (then running as D6718) enters the station at the end of the trip.
The elevated walkway can be clearly seen behind the train. The siding is right.

(P Scott. 17/4/07)

CHAPTER FIVE

THE LOCOMOTIVES & COACHES

SUMMARY & LIFE HISTORIES

Introduction

In this Chapter there is a summary and subsequent history of all the locomotives and coaches, which have operated on the Paignton Zoo Railway. These comprise: one or possibly two 12" gauge steam outline locomotives, three short lived 10½" gauge steam locomotives and three internal combustion locomotives - the latter, between them, providing all services from 1949 onwards. They are listed in chronological order of their construction. See Appendix Two for a table of dimensions.

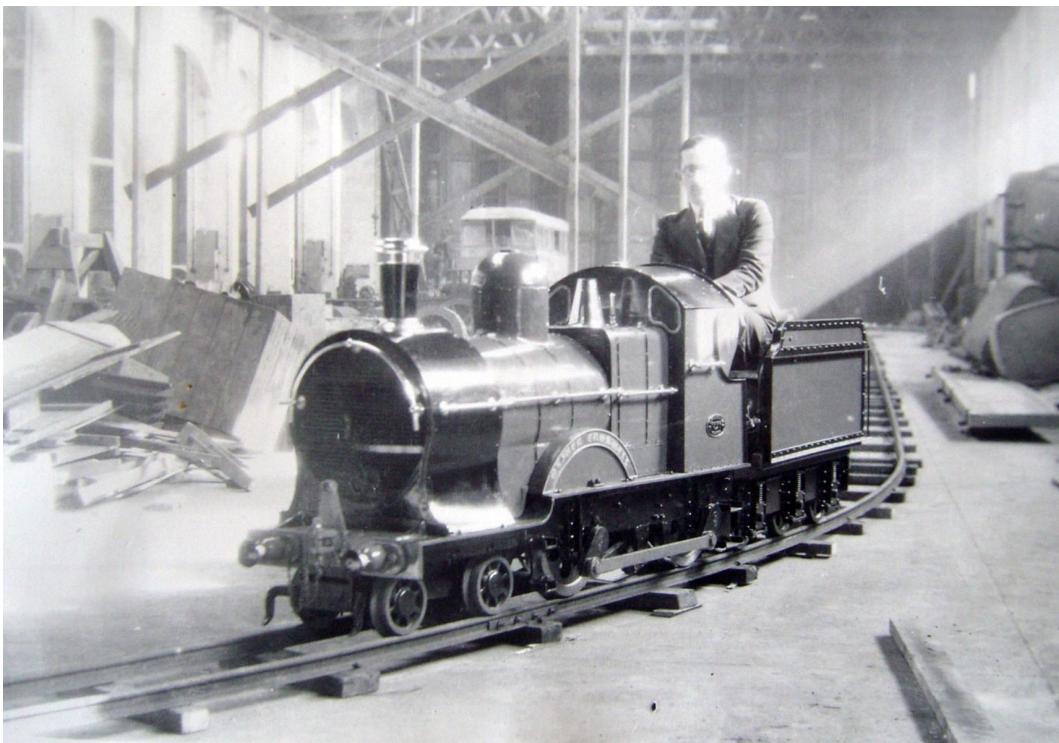
Locomotives: 12" Gauge

4-4-0 "Oliver Cromwell"/"Princess Elizabeth"/Queen Elizabeth"
Barnards Limited - No.4. 1937

4-4-0 "Queen Elizabeth"/"Princess Margaret"
Barnards Limited - No.5. 1937

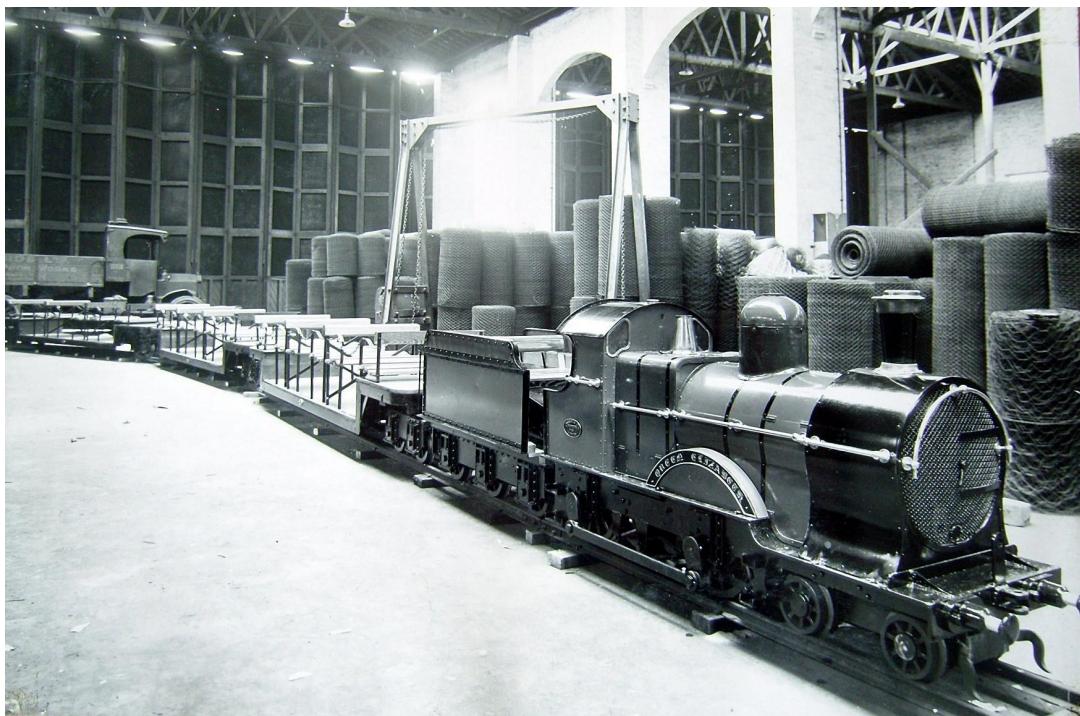
These two steam outline locomotives, modelled on the GWR "Earl" or "Dukedog" class, were ordered by Reginald Goddard for his existing 12" gauge railway at Chessington. They were constructed by Barnards Limited of Norwich - the firm, which had supplied animal cages, fences and the like for Chessington Zoo. No.4, named "Oliver Cromwell", was completed first and delivered to Chessington around March 1937. No.5, named "Queen Elizabeth" (after Queen Elizabeth I) followed in May 1937. The names chosen by Goddard reflected his version of the history of Burnt Stub, the mansion in whose grounds the zoo was located. Very soon after arriving at Chessington, Goddard renamed the locomotives - no doubt acknowledging the Coronation of King George VI on 12th May 1937. Therefore, "Oliver Cromwell" became "Princess Elizabeth" and "Queen Elizabeth" became "Princess Margaret", after the two Princesses. The locomotives had removable bodies and a few photographs show that they did swap them a few times. If one assumes the frames identify the locomotive, then the actual example can be determined by the shape of the starting handle bracket on the front buffer beam. No.4 ("Oliver Cromwell"/"Princess Elizabeth") had a triangular bracket, while No.5 ("Queen Elizabeth"/"Princess Margaret") had a straight one.

As explained in Chapter Two, "Princess Elizabeth" was sent to Devon to open the new railway at Paignton Zoo in September 1940. In later years it is possible that "Princess Margaret" visited Paignton for at least one season. After Goddard surrendered the lease of Paignton Zoo in February 1946, both locomotives were reunited at Chessington. Here they operated the 12" gauge railway faithfully for many years, covering hundreds of miles around the ¾ mile circuit of track. "Princess Elizabeth" was renamed "Queen Elizabeth" - after Queen Elizabeth II, whose Coronation took place on 2nd June 1953. The renaming presumably took place around the same time.



"Oliver Cromwell" A view taken inside Barnards works at Mousehold, Norwich of No 4. Note the triangular shape of the starting handle bracket above the front buffer beam.

(Norfolk Record Office, BR 220/182. c3/37)



"Queen Elizabeth" Here we see the second of the two locomotives, No 5 - again inside Barnards works at Mousehold in Norwich. Note the straight starting handle bracket. The three new coaches are attached to the locomotive. Note the rolls of wire netting stacked all around and the lorry parked by large folding doors.

(Norfolk Record Office, BR 220/187. 5/37)

"Queen Elizabeth" and "Princess Margaret" ran at Chessington until the end of the 1984 season, when the 12" gauge railway was replaced by one with a larger gauge of 2 foot. Both locomotives then passed into private hands. In May 1985 "Queen Elizabeth" (No.4) was purchased by Ken Bean and from 8th July 1985 operated on the Littlehampton Miniature Railway in West Sussex, before arriving in October 1986 on Ken Bean's private railway in Surrey, where it is still located. "Princess Margaret" was sold at auction by Pearsons at Thruxton, Hampshire on 11th May 1985, to a private owner in Cublington, Bedfordshire. By December 1986, he had moved to Stony Stratford in Warwickshire. The locomotive was then auctioned by ATS Auctions on 24th March 1990 - being sold to a new owner in Milton Keynes. However, he did not keep it long as by June 1990 it had been acquired by a private owner at Norton, near Evesham, Worcestershire. He moved near Mablethorpe in Lincolnshire in August 1999, where "Princess Margaret" still resides; but has on occasions visited Ken Bean's railway, so reuniting the two locomotives.

Locomotives: 10½" Gauge

4-6-2 "Western Queen"/"Tamar Queen" Bullock - No.1003. 1934

This locomotive has had a nomadic life and only spent one season at Paignton Zoo, opening the new 10½" gauge line in May 1947. It was built in 1934 by H C S Bullock of Farnborough and named "Western Queen". It first ran on a line at Burnham-on-Sea in Somerset, which opened on Whit Monday, 21st May 1934 - although still owned by Bullock. It ran there for the 1934 and 1935 seasons, and around October 1935 "Western Queen" returned to Farnborough. Here it was used to help build the Foxhill Miniature Railway, which was opened by Bullock on Saturday 30th May 1936. The locomotive then transferred to the Surrey Border & Camberley Railway, which opened on Saturday 30th April 1938. This railway closed at the outbreak of the Second World War and "Western Queen" seems to have been stored at the railway. By the summer of 1943, it was reported as being acquired by Charles Lane who had a line at the Royal Anchor Hotel in Liphook, Hampshire. From there it is believed to have been used on a new railway at Hilsea Lido, which opened in the summer of 1946 - probably being hired out to the operator by Charles Lane.

George Archibald Dingle of Kelly Bray, Cornwall then acquired the locomotive. He displayed it at the 1947 Plymouth & District Society of Model & Experimental Engineers exhibition, which was held in the showrooms of the Barton Motor Company Limited at the corner of Hyde Park Road and Mutley Plain in Plymouth. The exhibition took place between Monday 21st April 1947 and Saturday 3rd May 1947 - the *Western Morning News* of Tuesday 22nd April, claimed that "Western Queen" had been "*made by Mr G A Dingle of Kelly Bray*"! Immediately following this, Dingle employed it on the new railway in Paignton Zoo, which opened in May 1947. There, it is said, children put sand down the chimney and damaged the piston valves, so Dingle sent it to George Woodcock in Essex for an overhaul over the winter of 1947/1948. Woodcock replaced the damaged piston valves, with slide valves and in doing so raised the running plate to accommodate them. It would appear the swap of names with "Tamar Queen", the Thurston 4-6-2 also owned by Dingle, was undertaken at the same time. Therefore, the overhauled "Western Queen" emerged as "Tamar Queen" - but still with "PMR" on the tender side.

So as "Tamar Queen", Dingle put the locomotive to work on his new 10¼" gauge railway in Lowestoft, Suffolk. This temporary "end to end" line ran for ¼ mile along the South Pier and opened on Whit Monday, 17th May 1948. A wooden platform and a signal were also provided and the line proved very popular, making Dingle £815 by the time the line closed at the end of September 1948. The railway returned to the South Pier, along with "Tamar Queen" for the summer seasons of 1949, 1950 and 1951. Towards the end of the 1951 season Lowestoft Council considered buying "Tamar Queen" and the coaches - but decided against this. In turn in January 1952, Dingle decided not to renew his agreement for the railway on the South Pier. He then sold "Tamar Queen" to Maurice Densham - Dingle agreeing to take Stanley Battison's 7¼" gauge GWR 4-6-0 "King George V" in part exchange (This locomotive was later acquired by Walt Disney and shipped to the USA). Maurice Densham owned the private North Tawton Miniature Railway at North Tawton near Okehampton in Devon. In the late 1950s (around 1957) "Tamar Queen" changed hands again, this time passing to a private owner in Cornwall, where it still resides. Therefore, the locomotive has not been seen on a public miniature railway since September 1951 at Lowestoft.

4-4-2
Bassett-Lowke

Very little is known about this locomotive. According to George Woodcock writing in 1964 (*Miniature Steam Locomotives* David & Charles), the locomotive was "*a rebuilt Bassett-Lowke 'Atlantic' converted from 9½in [gauge]*". Designed for Bassett-Lowke, the well-known model makers from Northampton, by Henry Greenly (1876-1947) - the locomotive was based on the Great Northern Railway 4-4-2 Atlantic, originally designed by Henry Alfred Ivatt (1851-1923). The first example was built in 1909 to a gauge of 9½", and it became a standard Bassett-Lowke product. In Bassett-Lowke's *Model Railway Handbook* the locomotive is quoted as having 2¾" x 4" cylinders, with 13¼" diameter driving wheels. Length was 8 feet, with a weight of 12 cwt. The price was stated to be around £450 in 1940.

The origin of the locomotive is not clear, but it was probably hired by the zoo from (or through) George Archie Dingle. It ran on the Paignton Zoo Railway from March 1948 until the arrival of a petrol locomotive in July the same year. Apparently, it was later sold overseas to the USA. A similar locomotive is known to have worked on the Cleethorpes Miniature Railway, which opened in July 1948. A photograph of this locomotive appeared in *Miniature Railway* (No.5 October 2007 page 14) - and this looks very much like the Paignton Zoo locomotive. It has the same white or silver painted wheel rims. Tracing the Bassett-Lowke GNR Atlantics is somewhat fraught, with gauge conversions, rebuilds, locomotives assembled from castings and similar engines built by others than Bassett-Lowke.

4-4w "The Pride of California"/"Marie"/D6719/6700
G & S Light Engineering Company Limited. 1939
Re-built: C A Ford-Hutchings Limited. 1985

This locomotive was built in 1939 by G & S Light Engineering Company Limited for the Dudley Zoo Railway. It was powered by a 11½hp Singer petrol engine, driving the rear bogie through a fluid flywheel. The single ended body had the outline of an American streamlined diesel unit, with livery being silver and blue. When the Dudley Zoo railway was regauged from 10¼" to 15" over the winter of 1946/1947, the locomotive became surplus to

requirements and was later sold to Ernest Dove from Sherwood, Nottingham. In 1951 he employed it on his temporary railway in Edinburgh, which operated in the East Meadows on the south side of the city. This 10¼" gauge, 100 yard long, double track line opened on Wednesday 2nd May 1951 and ran until the end of July. By now the locomotive was named "The Pride of California" and was reported being in a yellow livery. It shared duties with a Dove built 4-6-4 steam locomotive named "Commodore Vanderbilt". Fares from the railway went to improve a new Children's Shelter in the city. There was also an associated exhibition of models.

Ernest Dove

Following the Second World War, Ernest Dove operated a number of temporary 10¼" gauge railways around Scotland, the Midlands & Northern England. The takings went to charity. He also constructed some nine steam locomotives, mainly of 10¼" gauge.

Ernest Dove then sold the locomotive to Paignton Zoo where it had arrived by April 1952. The first livery at Paignton, probably retained from Dove's ownership, seems to have been a representation of the Santa Fe Railway's "Warbonnet" red & yellow colours - with the Santa Fe name across the nose. A hand coloured postcard from the 1950s depicts the locomotive in this livery. Another (black & white) card shows the locomotive with "The Pride of California" name carried in one of the "windows" on the body side. Also visible is a roundel device with "PZR" in the centre and the words "World Renowned Model Railways" around the outside - no doubt another throw back to Dove's ownership! By summer 1964 livery was mid blue and gold, but the name "The Pride of California" was no longer carried - a blank plate appearing in its place. Livery was changed to light green and cream by the summer of 1968. In 1971 the locomotive received a new engine (a BMC "Gold Seal" factory reconditioned unit), fitted by Moxhams of Torquay Limited. Livery was still light green in 1973, but by 1983 was plain mid blue again, with white trimmings. In 1984 livery was again green with red lining.

On Sunday 14th April 1985, the locomotive was badly damaged, when in an act of vandalism, it was set off on an empty, but driverless train. It derailed and turned over after reputedly reaching 25mph. The locomotive was rebuilt with a new body by staff at C A Ford-Hutchings Limited, Park Road Garage in Havelock Road, Torquay - in conjunction with Rogers Garage in Paignton. The chassis and bogies were retained. This time the body was styled on a British Rail class 46 locomotive - but still single ended with only one cab. It returned to service on Monday 19th August 1985. Livery was British Rail blue with a full yellow nose. No number was carried - just the BR "barbed wire" symbol.

After the arrival of the class 37 in 1995, the locomotive seems mainly to have only seen use as a standby. By September 1997, it was still in BR blue with a full yellow nose, but had also gained the name "Marie". However, by October 1999 the name had been removed - livery was still BR blue with a yellow nose. By 2003 the locomotive was repainted into BR green livery, with a full yellow nose. The number D6719 was applied; meaning the locomotive was now a class 37, as opposed to a class 46! A "Dart Rail" logo was applied to the side in recognition of the fact the Paignton & Dartmouth Steam Railway sponsor the railway. By early 2008 the locomotive was still in BR green with a full yellow nose - but numbered 6700, after the pioneer BR class 37.

6700 is one of the oldest internal combustion miniature railway locomotives in the country - although it has a much newer body. It still sees occasional use on the railway, if the large class 37 is not available or if traffic is light. Otherwise, it is normally parked in the siding near the station.



"Tamar Queen" Still lettered "PMR" on its tender, we see the former "Western Queen" on the South Pier at Lowestoft - running on Dingle's temporary railway. Note the ex Surrey Border & Camberley Railway coach. Also of note is the raised running plate over the cylinders, following rebuilding by George Woodcock. Compare to picture on page 25.

(S Townsend collection. 14/9/49)



6700 The G & S Light Engineering Company Limited locomotive built in 1939 in its present form - rebuilt with a class 46 style body, but now numbered 6700. Here, standing spare in the siding, it is still used on occasions. Previously it had an American style body.

(P Scott. 15/4/08)

4-4w Railcar/D801 "Jungle Express"
G & S Light Engineering Company Limited. 1943
Rebuilt: Eastern Motor Body Works Limited/Paignton Zoo. 1960

This locomotive was built in 1943 by G & S Light Engineering Company Limited for the Dudley Zoo Railway, to assist the 1939 built American outline locomotive with the wartime traffic. A photograph shows it was complete by 4th April 1943. It was powered by a 10hp Lanchester petrol engine, driving the rear bogie via a fluid flywheel. The body outline was in the form of a streamlined railcar, suggesting perhaps a Great Western Railway unit of the early streamlined type. However, livery was maroon and cream. When the Dudley Zoo railway was regauged from 10 $\frac{1}{4}$ " to 15" over the winter of 1946/1947, the locomotive became surplus to requirements and was later sold to Paignton Zoo. It was unveiled at the zoo on Friday 16th July 1948, by the Carnival Queen of that year. Photographs of the locomotive at work on the zoo railway are scarce, and no colour ones have come to light, so livery is unknown - although a two-tone scheme was retained. A windscreen seems to have been mounted on the front of the cab, giving the locomotive a rather odd appearance. No name appears to have been carried.

In 1960, the locomotive was extensively rebuilt - based on the British Railways Western Region "Warship" class diesel hydraulic locomotives. A completely new body was provided with the frame being made by the zoo's own staff. Panelling and painting were carried out by the Eastern Motor Body Works Limited of Brixham Road, Paignton. Little was done to the bogies, underframe or engine at this time. It was numbered D801 and the name "Jungle Express" was carried on the side, spaced either side of an attractive roundel - livery was brunswick green. The "new" locomotive was unveiled at a ceremony on Saturday 9th April 1960, by Italian born film star Lisa Gastoni. In the summer of 1970 the old Lanchester engine was replaced by an Austin 1200cc petrol engine by Moxhams of Torquay Limited at their premises in Torquay. The existing transmission was also modified. The locomotive seems to have carried a green livery throughout its time at the zoo, although in later years the shade appears to have been a little lighter. It later (after 1984, by 1989) had new nameplates with the names "Emma & Hannah" added above "Jungle Express". It lost its D801 number over the winter of 1991/1992 following a repaint.

In 1995 it was replaced by the new locomotive based on a British Rail class 37. Being in poorer condition than the older 1939 built locomotive (by then with a body based on a class 46 engine), it was put aside. It was noted in September 1995, stored outside at the rear of the shed and in May 1996, stored away from railway on the eastern side of the zoo. The locomotive passed into the hands of a zoo employee who worked on the railway. In October 1996 it left the zoo and was stored alongside the shed and workshop on the South Devon Railway at Buckfastleigh. Here some restoration work had been undertaken by August 2003. But in May 2004 the locomotive was moved to the Great Western Hotel in Belle Vue Road, Paignton - but still with the same owner. Here it was stored in the car park. The proprietor of the hotel was Mel Sherwood, the owner of the "Royal Scot" locomotive, which ran some trials on the railway in March 2000. After a few years stored at the Hotel, the "Warship" changed hands. The new owner was Stuart Madgin, operator of the Knebworth Miniature Railway in Hertfordshire. The locomotive was moved to its new home, in the grounds of Knebworth House, on Tuesday 11th December 2007.



Railcar Here we see the Railcar style locomotive built by the G & S Light Engineering Company Limited in 1943, on the turntable at the Dudley Zoo Railway. This came to the Paignton Zoo Railway in 1948 and replaced steam motive power.

(L Perkins. D Holroyde collection. 4/4/43)



"Jungle Express" In 1960 the above locomotive was rebuilt with a new body in the style of the British Railways "Warship" class diesel hydraulic locomotive. It was numbered D801 and named "Jungle Express". Here we see it in the station awaiting departure. Compare to the photograph on lower half of page 55 - taken from the same view point.

(P Scott. 13/5/89)

4-4w 37 401/D6718/4808 "Peter"
D Nicholson/C Wedgewood. 1995

This is the only locomotive built new especially for the zoo. It was mainly built in the workshop at the Bickington Steam Railway at Trago Mills, Stover, near Newton Abbot in Devon by David Nicholson, operator of that railway. The body was constructed by Chris Wedgewood in Shrewsbury. The locomotive is modelled on a British Rail class 37 engine and is double ended, but with a driving position at one end only. Power is provided by a Lister Petter 4 cylinder watercooled diesel engine, driving one bogie via a torque converter gear box and prop-shaft. The completed locomotive was turned out in the British Rail "InterCity" livery of two tone grey separated by red and white bands, with a yellow nose. It was numbered 37 401 and went into service in May 1995. Altogether it was a very impressive machine and well represented the full size version.

By 2003 the locomotive was repainted in British Rail green livery and numbered D6718. A "Dart Rail" logo was applied to the side in recognition of the fact that the Paignton & Dartmouth Steam Railway sponsor the railway. In 2006 the locomotive was converted by Plymouth Bio-Fuels Limited of Plympton, Devon to run on environmentally friendly bio-fuel. This fuel is made out of recycled vegetable based cooking oil. Over the winter of 2007/2008, it was repainted into a slightly darker shade of green and renumbered 4808. The name "Peter" was also applied. As such the locomotive is still with the zoo and is now the first choice motive power.

4-6-0 6100 "Royal Scot"
Completed: Prestige Engineering. 1999

The exact origins of this locomotive are not known. The *Model Engineer* of 5th April 1985 carried the following advert for sale from Swaffham, Norfolk "*10½" Royal Scot part built to Greenly design with drawings, frames assembled, smokebox and boiler/firebox outer shell (steel). Full set of castings*". As such it was acquired by John Henry Boughton of Little Chalfont, Buckinghamshire. John Boughton (1918-1992) was a director of T T Boughton & Sons Limited and an OBE. He found the original wheels were incorrect and acquired new ones. Sadly, he passed away on 13th July 1992 with the locomotive still uncompleted. Ownership passed to John's brother, Trafford Boughton from Dartmouth, Devon and the unfinished locomotive was moved there in 1993 and stored in a warehouse. The whole was advertised for sale in *Engineering in Miniature* in April 1998 as "*Royal Scot, 10½" gauge, completed tender, rolling chassis, boiler, most motions and engine parts completed*". All the components were acquired in 1998 by Mel Sherwood, from Paignton, who had the locomotive completed by Prestige Engineering of Abbotskerswell, Newton Abbot, Devon. It was finished around September 1999.

The steel boiler was apparently constructed by Walter Gower of Bedford and many of the parts were Bassett-Lowke castings. It was modelled on a London Midland & Scottish Railway 4-6-0 "Royal Scot" class locomotive, un-rebuilt with a parallel boiler. The engine was numbered 6100 and named "Royal Scot", after the first member of the class. Livery was LMS red with gold and black lining. It underwent some trials on the railway in March 2000, including a few passenger trips. However, it was found the curves were too tight for the 4-6-0 and the locomotive never went into regular passenger service. Mel Sherwood then stored it at

the Great Western Hotel in Belle Vue Road, Paignton (SX892603) where he was proprietor, before putting it up for auction.

It was auctioned on 28th March 2002 by Taylors of Honiton, Devon and was purchased by a P James in Stamford, Lincolnshire. He sadly passed away after only owning the locomotive a short time and it was again auctioned on 7th August 2004 by Lacy Scott, Bury St Edmunds, Suffolk - but was not sold at the time. It was then acquired by the Eastleigh Lakeside Railway in Hampshire, where it arrived in August 2004. Here some of its components - frames (but lengthened), cylinders, smokebox and front pony truck were used in the construction of a new Southern Railway 4-6-0 locomotive, 850 "Lord Nelson". The two types were of course very similar, as the LMSR based their "Royal Scot" locomotives on the successful SR "Lord Nelson" class. The locomotive was constructed by Jesse Moody for the Eastleigh Lakeside Railway and was unveiled and named on Sunday 11th November 2007 at the railway.

Coaches: 12" Gauge

Ex Chessington Zoo Railway (1940-1946)

Three new bogie coaches were built in 1937 by Barnards Limited of Norwich to accompany their two new steam outline 4-4-0 GWR "Earl" class locomotives supplied to Chessington Zoo. They arrived there in May 1937 along with the second of the locomotives. A further three coaches of the same design were constructed over the winter of 1937/1938. The coaches were 16 feet in length, with the bogies containing 9" diameter wheels, set 12' 6" apart. Width was 2' 6". The frames were dropped down almost to track level between the bogies (like a well wagon), giving a low centre of gravity and hence a stable ride. Each carriage could seat twelve people, two abreast in three bays

Three of the coaches were sent from Chessington to Paignton Zoo for the new railway, which opened in September 1940. They then ran at Paignton Zoo for the rest of the Second World War. During the war, probably over the winter of 1941/1942 or early 1942, one of the coaches, marshalled immediately behind the locomotive, had a gas bag built over it, providing wartime fuel for the engine and also a handy roof in case of poor weather!

At some stage, the seating capacity was increased by four passengers for each coach. This was achieved by adding two seats, facing outwards, above the bogie at the end of each coach. It is not certain when this was carried out, a picture taken at Chessington in 1943 shows the extra seats in use, while one taken at Paignton in 1942 shows there were no extra seats at that time. The extra seats were potentially dangerous, given they had foot rests overhanging the bogies. Therefore, guard rails were added - these being in place by at least 1952. When Reginald Goddard relinquished the lease for the zoo in February 1946, the three coaches in use there returned to Chessington Zoo. Here, all six ran in faithful service until the end of the 1984 season, when the 12" gauge railway was replaced by one of 2ft gauge.

Of the six coaches - two are now resident on Ken Bean's private railway in Surrey and one is with "Princess Margaret" in Mablethorpe, Lincolnshire. The other three passed into the ownership of Arthur Maxfield, who then operated the Littlehampton Miniature Railway. Between June 1987 and November 1991 they were in use on a short 12" gauge railway inside the Butlin's Holiday Camp at Bognor Regis (then known as Southcoast World). Two were employed on the passenger train hauled by 4-4-2 "Prince Edward" (Built by George Flooks in

1935), while the third was fitted with a Honda petrol engine (from a go-kart) to form a sort of railcar. All three coaches returned to Littlehampton when the Butlin's line closed in November 1991, but were sadly later scrapped - although one underframe was later used for a new covered coach.

Coaches: 10½" Gauge

Ex Surrey Border & Camberley Railway (1947-1948)

In May 1947, to accompany Bullock's 4-6-2 locomotive No.1003 "Western Queen", George Archibald Dingle provided three ex Surrey Border & Camberley Railway coaches. These were owned by Dingle and photographs show three coaches were used. Examples of these coaches were constructed for the Foxhill Miniature Railway, Farnborough Miniature Railway and the Surrey, Border & Camberley Railway (SBCR) between 1936 and 1938. They were open bogie coaches of varying capacity and design, with a wooden body and a number of solid wooden seats. Length varied from around 11 feet to 18 feet. The coaches were not uniquely identifiable, so it is not possible to say exactly which ones ran at Paignton. One of the same coach or coaches, (or similar ex SBCR examples, Dingle also used them on his temporary railways in Central Park, Plymouth [1946-1948] and on Lowestoft South Pier [1948-1951]) returned for the first part of the 1948 season - this time hauled by a GNR 4-4-2 Bassett-Lowke locomotive. The only known photograph of the 4-4-2 shows it hauling one coach. It is likely that Dingle originally obtained the coaches from Charles Lane at the Royal Anchor Hotel in Liphook, Hampshire, or direct from the defunct SBCR at Farnborough during the Second World War. Dingle probably sold them on to Maurice Densham, as they saw use on his private North Tawton Miniature Railway at North Tawton near Okehampton in Devon.

Ex Dudley Zoo Railway (1947-Present)

In 1948, along with the 1943 built petrol locomotive, the zoo acquired a five coach bogie articulated set of coaches from Dudley Zoo. Presumably, these were originally constructed by G & S Light Engineering Company Limited, sometime between 1937 and 1946. The coaches were designed to be assembled into a five coach rake, with each coach sharing a bogie with its neighbour - the end coaches having a bogie fully under the end of the coach. Each coach had three "bays", seating four small children or two adults - giving a theoretical capacity of twelve children or six adults for each coach and sixty child or thirty adult passengers on a train of five coaches. The coaches were fully open with no roofs - the high "windows" at each end in use at Dudley seem to have been removed before use at Paignton. These were no doubt viewed as not necessary with the lack of steam motive power.

The five coach set went into service in July 1948, replacing the ex Surrey Border & Camberley Railway coaches. The 1949 zoo guide book commented the train had "*a capacity of about 75 persons*", which seems a little over stated for the reasons given the above. By 1959 the sides and seats seem to have been rebuilt. Previously the sides (seat supports) were flush with the outside of the coach - but now the sides were fitted over the outside of the coach. By this time, livery was probably red with a yellow or gold stripe (if a tinted postcard is to be believed). However, by the summer of 1964, the livery was a plain dark red. By 1965

this had been changed to a light blue and according to *Miniature Railways* by Robin Butterell (Ian Allan 1966), livery was "*blue and yellow*".

The zoo annual report tells us that three coaches had their bodies replaced over the winter of 1967/1968, and all five coaches were repainted - to a plain light green - at the same time. Over the winter of 1974/1975, the coaches were extensively rebuilt, in fact only the bogies and wheels were retained. New metal frames, side and seat supports were constructed by H Beare & Sons Limited of Salisbury Road, Newton Abbot. The frames were dropped down between the bogies, giving a seat position seven inches lower than before, entailing a much more stable ride. The frames were constructed using 3" x 2" hollow steel box and formed a frame on to which the seats were welded. Sheet metal was screwed to the back and sides to complete the coach. On each end vehicle an extra pair of seats were provided over the bogie, in a single "bay". Thus increasing the capacity on each train by four small children or two adults. Livery following this work is not known, but by the summer of 1981 was a plain green, perhaps a shade darker than that of 1968.

Over the years the coaches have carried a number of liveries and it is not possible to determine all of them - colour photographs being the only guide available. In 1984, the livery was still a plain green, but by the 1986 season the coaches were painted in a colourful red, yellow and blue livery. The middle side seat supports being yellow or blue - with end supports and ends being red. The same livery was still in use during in the 1992 season, but by summer 1995 this had given way to a plain blue colour scheme.

Over the winter of 1995/1996 roofs were fitted to the coaches, to afford the passengers some protection from the elements. These were painted white, with white supports. At the end of the 1999 season, the livery was still blue with white roofs and supports. In late 1996 fail safe air brakes were fitted to all five coaches. By 2003 the coaches had been repainted into a Great Western Railway style livery - chocolate for the coach bodies and cream for the roofs and supports. On the roofs, advertising for the Paignton & Dartmouth Steam Railway was carried. The present livery carried is this attractive chocolate and cream.

Although these coaches could be said to have arrived on the railway in 1948, little if anything remains of them - possibly only the bogies and wheels. However, they still serve the railway well, as they have done over many years - carrying around 120,000 passengers each year.

Wagons

As far as is known, the railway has never been used for anything other than passenger traffic - so wagons were not required except for maintenance purposes. In April 2008 a smart bogie open wagon was stabled in the siding near the station. This was also present in February 2007. No photographs have been found showing any other wagons.



37 401 Before delivery to Paignton Zoo, we see the class 37 locomotive outside the shed and workshop on the Bickington Steam Railway at Trago Mills. Livery was the BR InterCity scheme. Later it was numbered D6718 and then 4808.

(S Townsend. 13/5/95)



"Royal Scot" A locomotive with a somewhat complex history. It ran on only a few occasions on the Paignton Zoo Railway, finding the curves too tight. Here it rests at its then home, the Great Western Hotel in Paignton. Note the model railway running above the locomotive.

(M Sherwood)



The rather attractive bogie open wagon, stabled on the siding.

(P Scott. 17/4/07)



A selection of logos used for promoting the zoo. Left, the circular device dates from 1989. Middle, "We've put the OO! Back in Zoo" comes from 1992. The present day (2008) logo is right - this is used on the side of the class 37 locomotive.

Appendix One

Barnards Limited

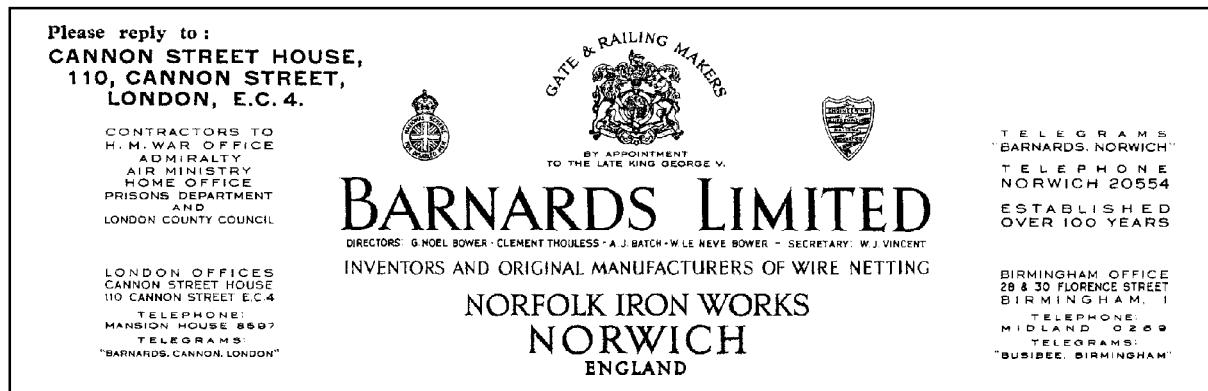
The founder of Barnards Limited, Charles Barnard, was born on 26th March 1804 in Norfolk. On 9th November 1826 he established an ironmongery, oil and paint business in the Market Place, Norwich. In 1838 he put the first patent mangle put on the market and around 1840, a patent noiseless lawnmower. He formed a partnership in 1846 with John Bishop, an ironfounder from St Ives, Huntingdonshire. Charles had by this time moved into the ironfounding business and in 1844 had built the first patented wire-netting loom. As Barnard and Bishop the business expanded first from Pottergate to St George's Colegate and then, in 1851, to what became the Norfolk Iron Works (TG229089) at St Miles Bridge on Coslany Street in the centre of Norwich. The firm would later open offices and showrooms in both Birmingham and London. Barnard and Bishop (from 1859 known as Barnard, Bishop and Barnards with the addition to the directorship of Charles' sons, Charles and Godfrey Barnard) swiftly acquired a reputation as manufacturers of fine wrought ironwork including gates and railings, wire netting and domestic and agricultural implements. In 1887 the business was incorporated with limited liability under the Companies Act. In December 1907 the management, under James Garton Bower junior, purchased the old firm's assets and liabilities and established the new firm of Barnards Limited, which was incorporated on 3rd December 1907.

In 1921 the company purchased the Household Estate off the Salhouse Road in the north east of Norwich. The estate contained an empty First World War munitions factory (TG251106) and was put to use for the storage of wire netting and other products. Part of the site was sold off in the 1930s and Barnards Limited engineering section was moved there in 1935, followed by other departments over the ensuing years. The original site at St Miles Bridge was not finally vacated until the late 1950s, being later demolished.

The company seems an unlikely builder of miniature railway locomotives and rolling stock, but appears to have entered this market solely due to their business connection with Reginald Stuart Goddard, the founder of Chessington Zoo. He contracted Barnards Limited to supply the new zoo with iron gates, fencing, railings and animals cages – and subsequently six 12" gauge internal combustion locomotives and accompanying rolling stock. The first four locomotives do not seem to have been a great success and were very short lived, but the final two ran at Chessington Zoo for many years and can be deemed to have been a very successful product. These were based on the "Earl" (also known as "Dukedog") class 4-4-0 tender locomotives of the Great Western Railway. The first two locomotives were built at the St Miles Bridge site, with the later locomotives being built at Household.

During the Second World War, part of the Household site was requisitioned for the Air Ministry and on 9th July 1940 there was a destructive air raid, which appears to have led to the loss of some of the Company's records. At the start of the war, a short 2ft railway was built around the works, being removed by the early 1950s. Air raid shelters were produced in large numbers during the war. After the war, diversification was introduced in an attempt to fill the order books - it was at this time that a controlling interest in the London bakery equipment manufacturer Pelkman Brothers Limited was acquired. Barnards would take on virtually any engineering work - school chairs & desks, wheel barrows, sack trolleys, hand carts, wooden seats & benches, aircraft passenger steps, greenhouses, sheds, cold frames,

beach huts, bird boxes and even coach building. They also built a number of "Road Trains", consisting of petrol or diesel engined streamlined tractors pulling a number of trailers. Whipsnade Zoo was one customer, as well as a number of Butlin's holiday camps. In 1950 part of the Household site was sold off. However, with the company in decline, in 1955 it was taken over by the Sheffield based company - Tinsley Wire Industries Limited. Under new management Barnards Limited continued to operate from its Household site with the Barnards name, although with all but its wire netting and chain link fencing departments closed down. Barnards Limited finally ceased to trade in early 1991.



Barnards Limited wonderful letterhead (reproduced approximately full size) taken from a July 1945 letter from them to Reginald Goddard.

(Norfolk Record Office, BR 220/7)

Sadly despite some interest, apart from Chessington, Barnards Limited did not manage to obtain any other orders for miniature railway equipment. In January 1938 they did bid to construct a new 2ft gauge locomotive for the Trentham Gardens Miniature Railway near Stoke-on-Trent. Barnards quoted £720 for a "scale model of a LMS loco", a "4-4-0 express tender engine". One assumes this would have been a LMS version of the GWR "Earl" class supplied to Chessington. However, the order went to E E Baguley Limited of Burton-on-Trent, Staffordshire, which already had two of its products at work on the railway.

In October 1938 a specification and drawing were produced for a 15" gauge version of the "Earl" locomotives in use at Chessington Zoo. This would have measured 15' in length, with a width of 2' 6" and a height of 3' 6" above rail level. The locomotive was to be powered by an Austin 10HP 4 cylinder petrol engine as used in the Chessington locomotives. The specification was drawn up for a London based company, apparently for a customer abroad. As well as the 15" gauge locomotive (cost £531 packed for export and delivered), Barnards also quoted for a 12" gauge version (£505) and for rolling stock of both gauges. Nothing seems to have come of this potential order. In July 1946 Barnards received interest from another potential overseas customer, who got in touch via Chessington Zoo (Reginald Goddard asked for 7½%-10% commission on any order!). The customer was Amusement Parks Limited in South Africa and Barnards supplied full details of the 12" gauge "Earl" locomotives and rolling stock. Unfortunately, by September 1946 they could not give a firm quote for the locomotive, as Austin's were unable to give a price for the petrol engine - possibly due to shortages following the war. Annotations on the relevant 1938 quote would indicate the price would have been in the range £1,500-£2,000. Presumably due to this delay, nothing seems to have come of this interest from overseas either.

As with a number of manufacturers of steam outline internal combustion miniature railway locomotives, this was only a very small part of Barnards Limited business. It was probably brought about by their being contracted to provide and erect fencing and animal cages at the new Chessington Zoo in 1931. Nevertheless, they built two very successful locomotives, which served their owners very well over the years.

G & S Light Engineering Company Limited

Herbert Trevor Guest (normally known by his second name) was born on 24th February 1906 into a family who owned a building contracting firm called A H Guest Limited, located at Amblecote just north of Stourbridge in Worcestershire. His father died prematurely in 1924 and Trevor, along with his brother, became involved in the family business - looking after the timber side of the concern.

In 1935 Trevor Guest met a near neighbour, Raymond Saunders, who was building a 2½" gauge steam locomotive. Together they decided to build a larger engine and asked J N Maskelyne for a suitable design. He produced a design for a 10¼" gauge freelance 4-4-2 locomotive. For reasons of economy, they decided to build two identical locomotives and formed G & S Light Engineering Company Limited to do so. The G & S referred, of course, to Guest & Saunders. The G & S works (SO883849), consisted of a few small buildings located in A H Guest Limited's sand quarry, which was situated behind Trevor's house, "Coppice Corner" in Ridge Street, Wollaston just to the north west of Stourbridge. The site was owned and the staff employed by A H Guest Limited, with the railway work booked out to G & S.

In September 1937, one of the two 4-4-2s went to work on a railway in the grounds of the Crown Hotel at Wychbold near Droitwich, Worcestershire. This railway was short lived and the railway, together with the 4-4-2 locomotive, were moved to a new railway at Dudley Zoo, which opened in July 1938. Here the second 4-4-2 was put into service. Initially, the Dudley Zoo Railway was operated by G & S Light Engineering Company Limited, possibly later trading as Guest Engineering & Maintenance Company Limited. In the mid 1950s, Raymond Saunders left the company and Trevor Guest ran G & S on his own, operating the Dudley Zoo Railway - as well as building locomotives and rolling stock. The Dudley Zoo railway was sold to the zoo in June 1968 and G & S Light Engineering Company Limited was finally dissolved in July 1970. Trevor Guest died in April 1986.

Trevor Guest and his company built a good number of steam and internal combustion locomotives - totalling twenty (eight 10¼" gauge and twelve 15" gauge). He also started two 7¼" gauge locomotives that were finished by others. For more details of his locomotives and the Dudley Zoo Railway, the article in *The Narrow Gauge* No.158 (Autumn 1997) is recommended.

Appendix Two

Details of Locomotives mentioned in Text

NUMBER	NAME	BUILT	BUILDER	GAUGE	WHEEL ARGMT	DESIGN BASED ON	LENGTH	WIDTH	HEIGHT	WHEEL BASE	WHEEL DIAMETER
4	Oliver Cromwell/Princess Elizabeth/Queen Elizabeth	1937	Barnards Limited	12in	4-4-0	GWR Earl class	12ft 6in	2ft 0in	3ft 6in	5ft 0in	14in Coupled
5	Queen Elizabeth/Princess Margaret	1937	Barnards Limited	12in	4-4-0	GWR Earl class	12ft 6in	2ft 0in	3ft 6in	5ft 0in	14in Coupled
1003	Western Queen Tamar Queen	1934	H C S Bullock	10½in	4-6-2	GWR style	14ft 3in	1ft 9in	2ft 6in		12in Coupled
			Bassett-Lowke	10½in	4-4-2	GNR Ivatt Atlantic	9ft 8in	1ft 4½in	2ft 2¾in	4ft 5in	13½in Coupled
D6719 6700	The Pride of California/Marie	1939	G & S Light Engineering Co Ltd (1)	10½in	4-4w	American Streamliner BR class 46	13ft 6in	2ft 4in	4ft 2in	8ft 8in	9½in front 12in rear
D801	Jungle Express	1943	G & S Light Engineering Co Ltd (2)	10½in	4-4w	GWR Railcar BR Warship	13ft 11in	2ft 3½in	4ft 5in	7ft 4in	9½in front 12in rear
37 401 D6718 4808	Peter	1995	D Nicholson C Wedgewood	10½in	4-4w	BR class 37	15ft 10in	3ft 0in	4ft 11in	9ft 8in	12in
6100	Royal Scot	1999	Prestige Engineering	10½in	4-6-0	LMS Royal Scot class	12ft 1in	1ft 7½in	2ft 7in	3ft 0in	15in Coupled

The dimensions should not be taken as an accurate record of the various locomotives, but merely as a guide to allow comparison.

(1) - Rebuilt 1985 by C A Ford-Hutchings Limited as BR class 46. Dimensions are for locomotive as rebuilt.

(2) - Rebuilt 1960 by Eastern Motor Body Works Limited/Paignton Zoo as BR "Warship". Dimensions are for locomotive as rebuilt.

Appendix Three

List of Known Postcards

Below is a list of known postcards published showing the railway. The date shown relates to the approximate date the photograph used was taken, as opposed to the date(s) the card was published and/or available.

<u>Number</u>	<u>Title on Card</u>	<u>View Depicted</u>	<u>Approx Date of View</u>
	<u>The Brunswick Printing Co Ltd, Teignmouth (Monochrome)</u> No visit to Paignton Zoo is complete without a ride on the Jungle Express	American locomotive in Lakeside station (See page 35)	1950s
	<u>Harvey Barton and Son Ltd, Bristol (Tinted)</u> 57110 Paignton Zoo - The Jungle Express 57111 Paignton Zoo - Miniature Railway	American locomotive in woods American locomotive arriving at Lakeside Station	1950s 1950s
	<u>William Chudley and Son Ltd, Exeter (Colour)</u> The Miniature Train at Paignton Zoo	Warship locomotive in Lakeside Station	Early 1960s
	<u>ETW Dennis & Sons Ltd, Scarborough (Colour)</u> 89 "The Jungle Express", Paignton Zoo	Warship locomotive with five coach train	Late 1960s
	<u>Harlequin, Exmouth (Colour)</u> Paignton Zoo	Warship locomotive on west side of lake (part of multiview)	Early 1990s

Appendix Four

Chronology of Important Dates

2nd January 1886	Herbert Whitley born in Halewood, Lancashire
27th August 1890	Reginald Goddard born in Battersea, London
1904	Whitley family move to Paignton
July 1923	Zoo opens to the public as Torbay Zoological Park
21st March 1924	Zoo closes to the public
6th June 1927	Zoo reopens to the public as Primley Zoological Gardens
17th May 1937	Zoo closes to the public
24th August 1940	Zoo reopens to the public as Primley Zoological & Botanical Gardens, under Reginald Goddard's control
September 1940	Railway opens as 12" gauge line
24th May 1945	Children hurt in derailment
October 1945	12" gauge railway runs for the last time
3rd February 1946	Zoo closes to the public. Reginald Goddard removes his animals
5th August 1946	Zoo reopens to the public as Paignton Zoo & Botanical Gardens
25th December 1946	Reginald Goddard dies
May 1947	10¼" gauge railway opens with Bullock's "Western Queen"
March 1948	Bassett-Lowke GNR 4-4-2 takes over from "Western Queen"
16th July 1948	Ex Dudley Zoo Railway petrol locomotive takes over
April 1952	Second ex Dudley Zoo petrol locomotive arrives
15th September 1955	Herbert Whitley dies
9th April 1960	1943 Dudley Zoo locomotive rebuilt as BR "Warship" class
Summer 1964	Railway appears in Pathe film
Summer 1968	Railway appears in second Pathe film
Summer 1970	"Warship" locomotive re-engined
1971	1939 Dudley Zoo (American outline) locomotive re-engined
Winter 1974/1975	Coaches rebuilt by H Beare & Sons Limited
30th April 1984	"Warship" locomotive derailed by tree branch
14th April 1985	American outline locomotive maliciously started and derailed
19th August 1985	American outline locomotive rebuilt as BR class 46
May 1995	Class 37 locomotive enters service. "Warship" locomotive laid aside
Winter 1995/1996	Coaches fitted with roofs
1996	Zoo renamed as Paignton Zoo Environmental Park
June 1996	New entrance building and elevated walkways open
October 1996	"Warship" locomotive leaves for storage at South Devon Railway
1997	Shed and siding removed, new siding provided on east side of circuit
Winter 1997/1998	Station moved to curve at south end of lake
March 2000	"Royal Scot" locomotive on trial
Winter 2004/2005	Station moved to north end of circuit. Track fenced off from path
August 2006	Class 37 locomotive converted to run on bio-fuel
Winter 2007/2008	Class 37 repainted and named "Peter"

Appendix Five

Zoo Visitor Numbers and Railway Income

These figures are taken from the Annual Reports and Accounts of the Herbert Whitley Trust (later the Whitley Wildlife Conservation Trust) and/or Paignton Zoo. The Railway Income figure shown is the excess of income over expenditure - these figures only appear in the accounts between 1962 and 1986 - beyond that no detailed information was given.

Year	Zoo Visitors	Railway Income (£)	Year	Zoo Visitors	Railway Income (£)
1958	301,299		1983	246,866	11,754
1959	308,384		1984	264,166	14,733
1960	327,023		1985	341,537	20,297
1961	329,027		1986	354,669	20,527
1962	346,751	3,065	1987	343,154	
1963	353,849	3,587	1988	351,398	
1964	333,726	3,964	1989	304,044	
1965	359,962	3,356	1990	310,598	
1966	357,446	5,028	1991	270,877	
1967	354,368	4,976	1992	253,016	
1968	361,464	5,494	1993	276,242	
1969	372,565	5,664	1994	276,688	
1970	358,982	6,498	1995	279,151	
1971	368,424	6,674	1996	297,706	
1972	387,145	7,143	1997	337,739	
1973	364,410	7,214	1998	371,489	
1974	341,743	8,237	1999	421,094	
1975	294,116	6,387	2000	444,936	
1976	275,116	6,860	2001	399,586	
1977	294,246	7,678	2002	475,177	
1978	314,087	10,304	2003	457,539	
1979	317,147	10,870	2004	486,728	
1980	305,320	12,860	2005	448,329	
1981	260,765	11,784	2006	463,546	
1982	246,117	10,256	2007	507,068	

For the years 1983 to 1986 the Railway Turnover was also detailed and these are shown below - along with the Income figure shown above.

Year	Railway Income (£)	Railway Turnover (£)
1983	11,754	14,946
1984	14,733	17,945
1985	20,297	25,443
1986	20,527	24,667

Appendix Six

Railway Fare, Zoo Admission Rate and Passenger Numbers

These figures have been compiled from a number of sources. Such details were not usually quoted in the Annual Reports, so there are a number of gaps. However, the steady rate of increase in the zoo admission rate will be noticed, while the railway fares seems to rise more slowly - especially in more recent years.

Year	Railway Fare	Adult Zoo Admission	Year	Railway Fare	Adult Zoo Admission
1955	6d	2/-	1982	20p	
1956	6d	2/6	1983	20p	
1957	6d	2/6	1984		
1958	6d	3/-	1985		
1959	6d		1986		
1960	6d		1987		
1961	6d	3/-	1988	30p	£2.90
1962	6d	3/-	1989	35p	£3.30
1963	6d	3/6	1990		
1964	7d		1991	40p	£4.90
1965			1992	40p	£5.40
1966			1993	40p	£5.50
1967			1994	40p	£5.75
1968			1995	40p	£5.95
1969			1996	40p	£5.95
1970			1997	40p	£6.60
1971	5p		1998	40p	£6.75
1972	5p	45p	1999	40p	£7.00
1973	5p	45p	2000	50p	£7.50
1974			2001	50p	£7.70
1975	15p		2002	50p	£8.00
1976	15p		2003	50p	£8.25
1977	15p		2004	50p	£8.50
1978			2005	50p	£10.00
1979			2006	50p	£10.30
1980			2007	50p	£11.35
1981	20p		2008	70p	£11.90

Passenger numbers were not always recorded each year, and are only rarely mentioned in the Annual Reports. As can be seen, the railway no longer carries as many passengers as in the 1960s, but still moves around 120,000 passengers each season.

Year	Passengers	Year	Passengers
1962	172,000	2004	119,745
1963	176,000	2005	115,959
1968	166,147	2006	117,825
1983	74,730	2007	122,504

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British Pathe Limited (www.britishpathe.com). *Paignton Zoo* (Film ID 287.09) released 30/08/1964 - 2m 47s long colour film about the zoo. Two sequences showing the railway totalling 23 seconds. Out takes from above (Film ID 293.05). Two sequences showing railway totalling 11 seconds. *West Country Idyll* (Film ID 469.05) released 21/11/1968 - 8m long travelogue colour film about Devon during holiday time. The zoo features, with the railway showing in a 4 second long clip. Out takes from above (Film ID 471.02). One sequence, 58 seconds long, of railway. Both films: Pathe Colour Pictorial.

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