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INSTITUTE OF MARINE ENGINEERS  
INCORPORATED.

SESSION



1896-7.

BRISTOL CHANNEL CENTRE.

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*President*—PROFESSOR A. C. ELLIOTT, D.Sc.

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REPORT ON A VISIT

MADE TO

The Vale of Glamorgan Railway

ON

*SATURDAY AFTERNOON, 25th SEPT., 1897,*

Including a PAPER,

BY

**Sir JAS. SZLUMPER, C.E.**

(ENGINEER TO THE RAILWAY COMPANY).



## PREFACE.

35, STACEY ROAD,  
CARDIFF.

30th Sept., 1897.

By invitation of Mr. ARCHIBALD HOOD, J.P., Chairman of the Vale of Glamorgan Railway Company, the members of the Bristol Channel Centre of the Institute of Marine Engineers went over the new railway as far as Llantwit Major on last Saturday afternoon. The Office-Bearers of the Centre present were:—Professor Elliott, D.Sc. (President); Messrs. David Gibson, J. F. Walliker, and T. W. Wailes (Vice-Presidents); Messrs. H. Symonds, R. Williamson, T. A. Reed, and W. Simpson (Committee); Mr. George Sloggett, Hon. Secretary; and Mr. A. Smithson (Hon. Treasurer). The visitors also included Mr. Lewis Williams, J.P., Mr. Alex. Duncan, Mr. C. A. Heywood, Mr. Lascelles Carr, J.P., Dr. Treharne, J.P., Mr. W. Emsley Carr, Mr. R. Duncan, Mr. C. C. M'Nair, Mr. J. Rogers, Mr. Gwilym Evans, J.P., Llanelly, Mr. C. Radcliffe, R.N.R., Captain T. H. Sloggett, M.I.N.A., Captain H. Murrell, Captain Tom, Mr. T. Widdas, Mr. T. Mordey, Mr. H. Reed, Mr. R. Sanderson, Mr. W. H. D. Caple, Mr. W. T. Symonds, Mr. J. J. Richards, Captain Rosser (Dockmaster,) Cardiff, Mr. W. D. Rosser, Mr. G. A. Weichert, and Mr. J. Spence; and Messrs. Sidney F. Walker, J. Shearman, J. Brock, D. M'Callum, J. M'Callum, N. T. Daniels, Jones, W. D. Rosser, A. Kenrick, J. Tod, R. Field, W. Davison, H. Cambridge, Wm. Evans, C. Jones, R. Davison, etc. The party went by ordinary train to Dinas Powis, and then journeyed by special train, placed at their disposal by the Vale of Glamorgan Railway Company, over the new line. They were accompanied by Mr. Archibald Hood (Chairman of the Company), Mr. R. Evans (General

Manager of the Barry Railway Company), and Mr. C. Mein (Secretary. Arrived at Rhoose, a halt was made for light refreshments, provided by the Vale of Glamorgan Company, when Mr. ARCHIBALD HOOD read a highly interesting paper, describing the new line, prepared by Sir JAMES SZLUMPER, C.E., the Engineer, with brief supplementary observations by Mr. ROBINSON, Architect.

The following is the report containing the paper, which was listened to with great pleasure.

GEO. SLOGGETT,

*Hon. Secretary, B.C.C.*



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PAPER  
ON  
THE VALE OF GLAMORGAN RAILWAY,  
BY SIR JAS. SZLUMPER, C.E.  
(ENGINEER).

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READ BY MR. ARCHIBALD HOOD, J.P.  
(CHAIRMAN OF THE LINE).  
ON SATURDAY, SEPTEMBER 25TH, 1897.

CHAIRMAN :  
THE PRESIDENT OF THE CENTRE.

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In the year 1888, when the Barry Railway and Docks were approaching completion, it was felt by the coalowners and others interested in the Llynvi, Garw, and Ogmore Valleys that a better means of communication with the Barry Dock could be obtained than that provided by the junction with the Great Western Railway at Peterston, and accordingly plans were prepared and deposited in November, 1888, for the proposed Vale of Glamorgan Railway, and the Act was passed in the ensuing session. The line commenced by a junction

with the Llynvi and Ogmore branch of the Great Western Railway about one mile north of Bridgend station, thus catching at that point the large coal traffic from all the railways previously made, and avoiding the necessity of taking such coal traffic through Bridgend passenger station, which was a cause of great delay owing to the overcrowded state of the railway. Commodious and convenient interchange sidings have been provided at this junction, capable of dealing with a very large mineral traffic, which will, directly the line is opened, flow towards Barry. At this point an engine shed, coal depots, offices, and a tank capable of holding 40,000 gallons of water have been erected. The water supply for this tank is provided by means of a well sunk in the Ewenny Valley, where a pumping station has been erected and powerful pumps fixed to pump the water to the tank, a distance of over two miles, along which a line of 8in. iron pipes has been laid. The railway then proceeds southwards, crossing over the South Wales branch of the Great Western Railway a short distance south-east of Bridgend station, and a little south of this point a junction runs direct into Bridgend station to provide for the passenger traffic. After crossing the River Ewenny by a bridge of two 40ft. openings, the line enters the Glan Alun Dingle, up which it runs, curving in and out of the exceptionally hard mountain limestone rock cuttings. At the top or south-eastern end of this dingle a passenger station is provided, and named Southerndown Road, the station being situated two miles from the charming seaside resort of Southerndown, at which place is also Dunraven Castle, the Welsh seat of Lord Dunraven. From Southerndown Road the line continues in a south-eastern direction to Llantwit Major, where the station has been provided within easy and convenient access from the village. Llantwit Major, with its ancient church and curious old surroundings, being a very favourite resort for the people for many miles around, a considerable passenger traffic is anticipated from this station. The line then runs east to Gileston station, which is intended to serve the villages of Gileston and St. Athens, also the Leys. It then



crosses the River Daw near its mouth, and, passing over the Taff Vale Cowbridge and Aberthaw line, then enters Aberthaw. This station is situated just over the beach from which the world-celebrated Aberthaw line pebbles are obtained. About two miles further east another station has been constructed for the village of Rhoose and the surrounding district. After passing through a long, deep cutting, where the lias formation can be observed in most perfect form, the line then crosses Porthkerry Park by a viaduct of 16 arches, each of 50ft. span. The viaduct is a very handsome structure, built with limestone from the immediate district, and brick arches, the height from the bottom of the valley to rail level being 110ft., and the foundations of the piers being carried down some 30ft. below this. A tunnel 537 yds. in length brings the line on to the siding close to its junction with the Barry Railway, where, in addition to the two running lines, eight sidings, each of a length of between 500 and 600 yards, have been provided. The line then joins the Barry Railway a short distance west of the Barry Station. It was at first intended that only a single line of rails with passing places should be provided; but after consideration, and a knowledge of the great difficulty in working heavy mineral and passenger traffic over a single line of railway, it was decided to provide a double line throughout. With regard to the traffic to be expected, Mr. Forster Brown reported that the Llynvi and Ogmere coal district contains upwards of fifteen hundred million tons of coal, therefore more than even the Rhondda Valley district, out of which at the present time some eight million tons of coal are produced annually, chiefly for export, and he anticipated that the output of the Llynvi and Ogmere coal district will reach five million tons per annum. In addition to the export mineral traffic, the import traffic in pitwood, iron ore, and general merchandise in connection with the collieries and ironworks will no doubt be very considerable. The total length of the railway is 20 miles. The curves are all fairly easy, and the steepest gradient against the load is 1 in 140, this occurring from Ewenny up the Glan Alun Valley. There

are 55 bridges on the line, this being a rare or exceptional number for 20 miles of railway through an agricultural country. The greater portion of the cuttings is through the lias formation; in fact, with the exception of the mountain limestone before mentioned in the Glan Alun Dingle and a rather long clay cutting close by, the line is in the lias formation throughout. The weight of the rails upon the running line is 82 lbs. per yard, and upon the sidings, where they are flat-bottomed, 80 lbs. per yard. The works of the railway were commenced in the autumn of 1894, and are now practically completed.

The line of country through which the Vale of Glamorgan railway passes from Barry to Bridgend is one of singular and almost unique interest. Records and monuments of the past stand thickly around us; a veritable land of enchantment is it to the antiquary and historian. From the very dawn of history it has been the battle-ground of contending races. The Roman, Saxon, Dane, and Norman have each in their turn striven to possess this fruitful land, and swept back to the hills its Celtic owners. In Roman law and road and villa are the imperishable records of their presence. It has been said of the stern discipline of their cohorts, "They made a solitude and called it peace." They did something more than this; they left the seeds of Roman culture and civilization—seeds which have blossomed through each succeeding age until our own shows out the full fruition of their engineering genius. In Saxon place, name, and custom, in Danish "dun," in Norman castle, priory, and church have we monuments of each invading race, eloquent of the past to those who have eyes to see or minds to apprehend; and still through each succeeding age of turmoil and strife there runs a silver stream of Christian faith and teaching, exemplified by monuments at Llantwit, Llancarfan, and Merthyr-mawr. To each and all this iron road of ours gives readier access to the castles of Fonmon and East Orchard, to the manor houses of St. Donat's, Beaupre, and Llwnfihangel, to the grand old priory church of Ewenny,



and the one-time royal castle and demesne of Ogmere. Enduring records of the storied past surround us on either side, worthy of investigation. Situated in picturesque and beautiful scenery, they invite each and all to come and to remain and ponder the history they have to tell, and return thankful that modern enterprise has placed them within such easy reach.

**LLANTWIT MAJOR.**—The spot was originally called *Caer Wrgan*, but the name was changed to *Llaniltyd* in honour of *St. Iltud* (in Latin form, *Iltutus*), who was appointed to preside over the College, and held that post to a very advanced age. *Llaniltyd* has “*vawr*” (great) added to it, to distinguish it from other places in the county of the same name. The school attained a high degree of celebrity amongst the seats of learning of the period. The College began to decline when *Robert Fitzhamon*, after the Norman Conquest, transferred much of its revenues to *Tewkesbury Abbey*. Some idea may be formed of the importance of the monastery in its day by the statement which is on record that it consisted of seven halls and four hundred houses. *Llantwit* also possesses a curious town hall, the remains of an old castle, and two churches, which are objects of interest to archæologists.

**ST. DONAT'S CASTLE.**—The earliest mention of the Castle of *St. Donat's* is A.D. 57, when it was called *Abergwirydwr*, and was at that time the palace of *Caradoc*, or *Caractacus*. *Owen*, his grandson, built a castle and named it *San Dunwyd*, between 173 A.D. and 180 A.D. *Aulus Plautius*, the first Roman general after *Julius Cæsar*, landed in 43 A.D. A number of Roman coins have been dug up here, and at *Llantwit* and *Boverton*. There are no authentic records of castles for centuries. In A.D. 1009 the castles of *San Dunwyd* and *Dendryven* (or *Dunraven*) were burnt down by the Saxons. A stone castle was built the same year as the castle of *Sengenith* (or *Caerphilly*), which was about 1060 A.D. Subjugation of district, 1090 A.D., by *Robert Fitzhamon*. *St. Donat's* fell by lot to one of his

knights, namely, Sir William Esterling (or Stradling). It is now the property of the Carne family.

Professor ELLIOTT proposed a vote of thanks to the chairman and directors of the Vale of Glamorgan Railway Company. He asked why they, a band of marine engineers, were there?—what had they come to see? The sea-serpent, a wreck to be sold, or a railway engineer stealing a leaf from the book of his brother of the deep? The question was suggested, what could be common between marine engineering and railway engineering? His reply was, there was very much in common between all branches of engineering. There was first the divine gift,—the God-like, creative gift of mechanical invention and of constructive design; there was the common sway of the laws of mechanics that operate not only on the emotions of things mundane, but on the universe in general, animate and inanimate. Having taken so high a platform, one must needs descend. He would descend and illustrate, if he might. They were looking forward to the time when the denizens of busy Cardiff would be able to make long or short holiday by the sea resorts on either side of the Bristol Channel, secure of boat trains at convenient times in the morning and evening, or, at least, in the late afternoon. If their sympathy could strengthen the hands of the Barry Railway Company in realising that project, he might assure them that that sympathy existed widespread amongst them—that they hoped when this dream was realised it would be a reflex of what had ruled for the last 50 years on the river and the estuary where steam navigation had its birth: he referred to the Clyde. Many would remember the strike of drivers and firemen on the Caledonian Railway some 15 or 20 years ago—the disastrous strike which was marked by a terrible attack upon the Scottish express at Motherwell, culminating in a collision at Eglinton Junction, where many people, unfortunately, lost their lives. When the storm had burst on the Sunday, a boat arrived at Prince's Pier, Greenock, laden with men of business eagerly returning to the city. The boat



disembarked her passengers, who hurried to the already crowded train. There was a train, there were plenty of passengers, and there was an engine, but there was no driver and no fireman. These men had been "called out," and, forgetful for the moment of the watchword of the engineer—"Duty"—they had incontinently turned their backs upon it. But the captain of that steamer was a man of resource, as was also his brother, the chief engineer. The services of that chief engineer were offered to the officials of the railway company, and that train was driven in safety to Glasgow. That chief engineer was a member of the Council of the Bristol Channel Centre. He (Professor Elliott) had spoken sometimes of Isambard Brunel—Brunel, the son. Brunel who was not the knight, who was a railway engineer and a marine engineer. As a railway engineer he would place him as high as it was possible to place anyone. Brunel held forth high ideals to the people who were interested in the railways of those dates. He told them that if they had a 2ft. gauge their commercial speed would be about 25 miles an hour; if a 4ft.  $8\frac{1}{2}$ in. gauge, their commercial—their paying—train would run from 50 to 60 miles an hour. Fifty-three miles an hour was about the average on the Great Western. Brunel also said—"If you had a 7ft. gauge, you might look for a speed for your paying train of from 80 to 85 miles an hour." He was laughed at and derided; and in the result we were left with the 4ft  $8\frac{1}{2}$ in. gauge, and a limit of speed of 60 miles an hour. In marine engineering, Brunel taught the doctrine—the bigger the ship the less was the resistance per ton of cargo; that if they wanted a flourishing commercial trade they must have a big ship and a good speed. He put upon the Atlantic the fastest steamer of her day, the *Great Eastern*, and she accomplished very wonderful work. He (the speaker) would be told that the broad gauge was a failure; that the *Great Eastern* was a failure. He denied both of these statements. If the Liverpool and New York Dock Authorities had done their duty the *Great Eastern* would not have been a failure. If Liverpool had risen to the occasion, as it had done when



it had been face to face with the possibility and with the fact of the Inman Company going from Liverpool to Southampton, the *Great Eastern* would not have been a failure. As to the broad gauge, he did not say anything. Possibly they might have the broad gauge back again. His honoured friend, Mr. Hood, was a man who took an interest almost in everything. *Par excellence*, he was, of course, an engineer; but they found him one day presiding at a meeting of the Barry Railway directors; another day, he was holding eloquently forth to a purely Welsh audience, possibly at an Eisteddfod, eking out his modest Welsh by large appeals to his Scottish doric. At another time they might find him smoothing the waters of a troubled sliding scale committee meeting, and perhaps the same evening descending enthusiastically upon the Scottish poets, and Burns in particular. He was a past-president of the South Wales Institute of Engineers, which he dearly loved, and which dearly loved him; and, altogether, Mr. Hood was a man to whom South Wales owed very much, because he stood in the fore-front of promoters of schemes for enlarging dock and railway accommodation in the district, and in developing the vast riches of South Wales. This suggested the jealousies between Cardiff, and Barry, and Bristol; but they, as marine engineers, had nothing to do with these miserable, petty jealousies. What they wanted to see was capital wisely sunk, to bring remuneration to the capitalist—not only a decent, but an ample remuneration—and more men employed, more machinery required, more ships running; in fact, our commercial empire extended. In regard to the Vale of Glamorgan Railway, they were assured that it would be a success in respect of mineral traffic. The Barry Railway directors and shareholders would not have touched anything that was deficient in that respect. But the railway had another feature: it would open up to the denizens of Cardiff, and to the teeming population of the districts surrounding Cardiff, a very romantic part of South Wales. Why should Cardiff people flock to North Devon when there was within a shorter reach, as the crow flies, more bracing, more diversified shores

from Barry to Nash Point, from Nash Point to Port Talbot? It was possibly because none of our novelists had sung of it. It was true that Blackmore, who had done so much for North Devon, had done equally well for the beautiful corner of Glamorgan in which they now stood; but his efforts had come to little for the want of the accommodation which had now been so well provided by the Vale of Glamorgan Railway Company.

Mr. J. F. WALLIKER spoke in endorsement of the sentiment, as also did Dr. Treharne, J.P. Mr. Hood acknowledged the compliment, and remarked that if the proceedings that afternoon were due to one person more than another, that person was the hon. secretary of the Bristol Channel Centre, Mr. George Sloggett.

On the proposition of Mr. David Gibson, seconded by Mr. T. W. Wailes, and supported by Mr. Lascelles Carr, a vote of thanks was passed to Sir James Szlumper for his paper. A similar compliment was paid to Professor Elliott, on the initiative of Mr. Lewis Williams, J.P. The party continued the journey as far as Llantwit Major, where time was allowed for a visit to the ancient church. The visitors returned to Cardiff about 6.30 p.m.

