



High & Dry Classroom in Mozambique - See P3

PARRY news



Compressed air tram in Nantes, France - See P4

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BOOST FOR LIGHTWEIGHT RAIL AS GOVERNMENT ACKNOWLEDGES THE ULR OPTION AT LAST

Current concerns about the scarcity of affordable housing coupled with the drive to improve the air quality in urban centres and relieve traffic congestion caused by excessive dependence on private cars for routine daily journeys has convinced the government more strongly of the case for light rail. A recent call for 'Expressions of Interest' by the Minister of State, Jesse Norman MP, for the first time describes not only the new major

tramway installations in the hand-ful of locations where they have been introduced, but alongside these mentions the Ultra Light Rail operation at the Stourbridge Branch and its potential in stretched form to provide more modern tram systems for smaller towns and cities. The Minister plans to visit Stourbridge in the coming weeks. A root-and-branch study of the Railways under the independent chairmanship of Keith Williams, a former Chief Executive

of British Airways, has been in progress for 5 months and Mr Williams has revealed some of the preliminary conclusions that had already been formed, including the unnecessary expense of a one-size-fits-all policy and rules and regulations-based culture which seemed to discourage otherwise talented and enthusiastic railway engineers from adopting innovative ideas.

Finance has been allocated for a major study of the 'corridor' between Bristol and Bath where campaigners are calling for trams, possibly an inter-urban system.

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THE SHAPE OF THINGS TO COME



Emerging out of 20 years experience building and supporting ultra light rail vehicles in demonstration and full passenger service, PPM's design work has advanced to the stage of being able to propose a 90 passenger unit the size of a motorway coach which will be equally suited to operate on street on embedded track or on a reopened former branch railway line.

Where will Britain's first modern inter-urban tramway be trialled?

FROM MACHINERY SUPPLIERS TO THE WORLD HAVE WE NOW BECOME JUST A NATION OF SHOPPERS?

A comment on the contemporary scene



John Parry

At a recent Rail Industry show at the NEC, the empty table alongside me became occupied by three marketing types who I recognised were from three major European rail businesses in Germany, France and Spain. They were speaking in English:- 'Well, here we are on Treasure Island again!' I realised what the joke meant was that they were in a country where the procurement executives look over the heads of local suppliers and to buy in the smartly packaged and promoted products from European firms. Kaiser Bill called Britain 'a nation of shopkeepers', but a nation of *shoppers* for a sales manager is **Treasure Island**.

Britain could be as important to the EU as China was to the East India Company in early Victorian Times. Malleable officialdom, easy money. Technical and regulatory alignment with European practices has been the gunboats which kept the trade routes open. Nothing to be proud of then, or now.

'The Mountains are Moving'

The Strengthening Profile of the Parry People Mover Brand is part of a much bigger picture.

The new Minister of State, Jesse Norman has put out a 'Call for Evidence on the Opportunities' -

of light rail with a hope for introducing many more systems into (Britain's) cities and towns'. He also referred to Government's industrial strategy. Having in mind the preponderance of foreign and foreign-owned businesses supplying almost all of hardware for the newly established light rail systems why, with all its talents can't this country make more rail equipment for its own needs?

Question:-

When we make most of our own buses and even have increasing success in *exporting* them, can't we do the same with trains and trams? The full government document can be accessed from

[Gov.uk/government/consultations/light-rail-and-other-rapid-transit-solutions-in-cities-and-towns-call-for-evidence](https://www.gov.uk/government/consultations/light-rail-and-other-rapid-transit-solutions-in-cities-and-towns-call-for-evidence)

Concurrent with this initiative on light rail, Mr Keith Williams, the Independent Chair of the Rail Review has now completed the first five months of his work which is centred on the main rail network. Having been invited to give the George Bradshaw Address at the Institution of Civil Engineers in February, he felt the need to indicate his team's preliminary findings considering the remit 'to bring in root and branch change'. This is for an industry which seems to have been losing public trust, all in spite of:-

- *doubling passenger numbers*
- *running more trains than at any time in the railways history*
- *whilst delivering improvements in safety*

- *and seeing more money spent than ever on improving the railways*

These are good things but what seems to have been neglected is the focus on the customer which Mr Williams, as a former Chief Executive of British Airways, says is of prime importance. But requirements are not static, they change. *In the rail industry there is little or no incentive to innovate in response to altering circumstances but over-concentration of short term thinking even trying to make one size fit all. As a result of that and other factors, 'passenger growth can no longer be taken for granted' and there is general frustration within the industry that rules and regulations are holding back innovation and problem solving*'.

In response to a question from the floor, 'will the review concentrate only on the railway that exists rather than looking also at the deserts in the country where there used to be rail-based public transport, but now there is none?' Mr Williams said - 'very much so, because his team of independent experts have seen clearly that most customers make journeys from 'A' to 'B' to 'C' whereas the railways have only really looked at the A to B leg of the journey without thought being given to providing rail-type benefits to 'C'; reaching closer to end destinations'.

A job for the designers and engineers and for smaller firms to take the lead.

INNOVATING FOR THE HOME MARKET AND FOR EXPORT

The conventional wisdom that Britain does not design and manufacture anything any more, but factories assemble just the bits that others have created, is far from correct. Well known brands such as JCB and Salter are just two of thousands of examples where the original flair and skills still result in world competitive products. In rail vehicle manufacturing West Midlands-based firms are finding sales in unexpected places such as Arctic Russia, Canada and the Middle East as well as in the home market.

Clayton Equipment Ltd

A venerable locomotive-building firm, Clayton Equipment, founded in 1931 and at one time part of the Rolls Royce Northern Engineering Group, has since management buy-out and full independence demonstrated a capability to design and build 'bespoke', but carefully-engineered rail equipment for prestigious projects, such as Cross Rail where a fleet of 7 support locos has been moving materials from below London to surface workshops. The Company's products are in daily use in countries throughout the world.



Severn Lamb



A specialist in mass transit used in major visitor attractions, including North America and the Middle East, Severn Lamb are responsible to emerging opportunities such as currently having a works filled with double deck trams ordered by Middle East customers. Authoritative figures in the UK Tram industry have been heard to say 'Double deck trams should be confined to the museums', but this may turn out to have misjudged what changing tastes and attitudes might arise in the UK and elsewhere overseas.



Parry Building Products Ltd



Now separately owned, but sited alongside ULRPartners'/Parry People Movers Visitor Reception Unit at Stourbridge, Parry Building Products Ltd continue in the spirit of innovation to solve problems in low income countries. Applying the intermediate technology approach to ease the drudgery and risks to women and children using hammers to break rocks down into gravel, PBP's engineers are just preparing to announce a new manually-operated jaw-crusher which greatly speeds up the stone-breaking task and make it much safer. Using a flywheel mechanism to create inertia (part of the innovative concept) rather than ship a heavy flywheel across the world, it is seen as possible to use a small tractor tyre, the tread of which makes hand grips with which to rotate the mechanism.

Floods have again overwhelmed low lying areas of Mozambique, just as in year 2000. At that time MRDF, the development arm of the Methodist Church requested Parry to come up with a way of assisting communities, protect lives

and precious possessions. The outcome was the design of a low cost structure built on stilts strong enough to withstand the flow of water while providing sufficient space for everyone in the village to take refuge. Three examples were built using local labour and the accommodation proved suitable for use as a school classroom at normal time. The High & Dry Classroom. All flood plain villages should have one.

TECHNOLOGY DEVELOPMENT FROM BRISTOL TO BOGIES



The Bristol Electric Railbus during 2 ½ years of demonstration service in the City of Bristol achieved clean, safe and reliable operation with zero carbon emission



20 years later having undergone a comprehensive external and internal refurbishment, the Railbus stands ready to be fitted with a testbed driveline comprising the latest version of the PPM ultra clean technology.

Founded on over 20 years of experience with vehicles built subsequently for other operations, PPM's designers and engineers have been investigating three different approaches which can adapt the same basic layout and deliver different bands of performance to suit contrasting applications. These could include a) entirely urban applications, b) cross country systems, linking adjacent towns, c) level ground without gradients or d) hilly terrain. Such features will alter the choice of hybrid or 'tribrid' traction methods and to an extent the choice of prime mover fuel.

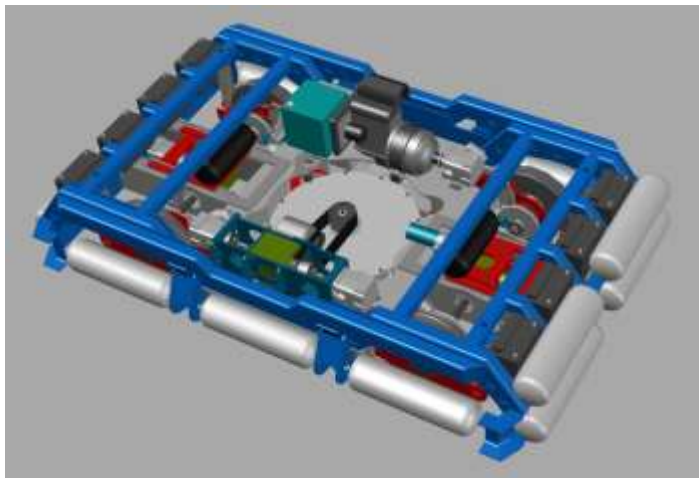
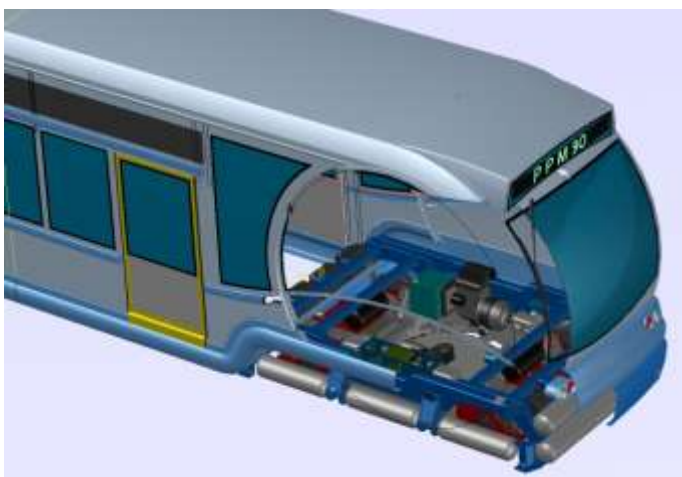


Illustration of Option 1 version of the Testbed, conversion of the Class 139 driveline to bio-methane fuel, ultimately powering the bogies of the Compact Tram Train.



The R&D programme has centred on the task of fitting everything that is needed into a bogie frame measuring 2.4m by 4.1m i.e to suit a small rail vehicle bogie. This will facilitate the driveline being tested in the original small railbus vehicle which formerly ran demonstration service in Bristol. Shake-down is essential for a vehicle being commissioned to enter service for the first time, or re-commissioned having been laid up for several years. Only after satisfactory trials can the engineering specification and design be taken to its ultimate stage and become the first of two bogies forming the running gear of a new longer railcar, the PPM 90, the Compact Tramtrain.

Conceptual designs have been prepared for three different traction options:-

1. Bio-methane - a widely distributed waste gas, normally uncollected, but recognised as harmful to the environment if simply left to dissipate from decaying refuse etc.
2. Hydrogen fuel cell - able to convert H² into electric current supplying batteries to power an electric motor.
3. Air under high pressure will deliver power to an air motor such as used as a starter for diesel engines and the jet engines of aircraft. In the late 19th Century most trams running in France were powered by compressed air including about 100 units in **Nantes**. The compressed air was produced by stationary steam engines at depots and termini and piped across to tanks on board the trams.

SOLUTIONS ARE COMING

Inter-connectivity turns small towns and villages from being 'far away places with strange sounding names' to somewhere that you regularly visit because they are easy and cheap to get to. This was part of the transformation of the Nation which happened as a result of the boom in construction of local railways and tramways in Victorian and Edwardian times, the Industrial Revolution.

Trams have now begun to return but just in eight places, Manchester, Sheffield, Croydon, Nottingham, Birmingham, Edinburgh, Blackpool and Dublin in Ireland. A century earlier without any form of 'Master Plan' everything just seemed to become connected up and not 8, but 200 systems came into operation.

Then along came the private car which demanded some much space even to park and take trivial journeys, that local tram and train lines became 'uneconomic' and were ripped up.

If public transport returns to a function of being frequent, reliable and cheap many short journeys by car would not be made.

The Vision could become reality as a result of creating an Intermediate Rail Mode which comprises elements of the three existing modes of transport: trains, light rapid transit and buses. Treated as a Town and Country facility the services would operate day and night bringing in produce from the farms and market gardens in neat stockroom containers and even taking away rubbish for recycling.



A town centre interchange where several modes meet; heavy rail, buses, tramtrains and even driverless 'pods'.

(Model constructed by PPM's Head of Design, Paul Davis)

Intermediate Mode

A secondary network of well connected but generally non-interoperating lines could be run on less exacting rules than those that are needed for faster, heavier rolling stock. Instead the trams are dimensionally more similar to buses, but are speed restricted.

- Line of sight operation
- Track unfenced and well lit during hours of darkness
- No gated level crossings just traffic lights. Public can cross or walk alongside the track
- Road/rail transport inter-changes have public amenities and parking

LOCAL INITIATIVE TO REVIVE A MORIBUND LINE



Folkestone Harbour Line is one short Branch where the local promoters of the Remembrance Line are considering a Class 139-based service.

The harbour and rail line were used intensively in the Second World War, but have lain unused over recent decades. With plans for the harbour to be converted into a marina and development of highly desirable residential apartments, use of the mothballed branch line to provide a link to the Dover to London main line less than a mile away will benefit the whole locality.

Computer-generated visualisation produced by local architect for the Remembrance Line Association.

HOW THE ORIGINAL CLASS 139 LIGHT RAILCAR CAN FUNCTION AS A PATHFINDER AND RESEARCH VEHICLE FOR BRANCH LINE REVIVAL

A farsighted intervention by the railway branch line reopening firm, Lightweight Community Transport Ltd, has resulted in a transformation of a prototype railcar into a form which matches extremely closely the two PPM60 Class 139 light railcars which are in service on the Stourbridge Town Branch.



Originally No 12 in the sequence of prototype and demonstration vehicles the 'first Class 139' is being described as 'No 139000' seeking approval to enter into passenger service as a result of comprehensive refurbishment and upgrade work, carried out mainly at the Works of Trailways in Bloxwich. Trailways is a skilled bus and coach repairer and builder which had worked on several past projects for the PPM Company.

There is a crucial difference introduced on the rebuilt vehicle in response to the views of the owners and operators of privately owned and managed lines. They control preserved and heritage railways and regard the fuel used on the Stourbridge Branch, lpg as being inconvenient to provide, but all have *diesel* fuelling facilities. Accordingly, with the assistance of a Coventry-based engine supplier, in place of the Ford lpg engine used in the 139001 and 002, a modern Ford diesel engine has been installed in 139000 together with the latest catalytic exhaust equipment.



Originally manufactured 18 years ago, PPM railcar No 12, the prototype of Class 139. It was used for periods of demonstration service on privately owned lines in Staffordshire, Leicestershire, North Yorkshire and Worcestershire where, courtesy of the Severn Valley Railway, it was used for crew training in preparation for the Stourbridge Branch line public rail service. Now with refurbished coachwork it is being prepared to leave the Bloxwich Works.



The railcar interior has been retrimmed with dark blue seats and the floor panelling has been reconfigured to provide clear access to driveline equipment situated below the floor.



The driver's cab layout in the original prototype was improvised as the design progressed. During the current refurbishment LCT instructed that identical controls and instrumentation of the in-service Class 139s should be installed.

Why a Diesel engine?

In a heritage railway environment authenticity is important and so despite all the difficulties, enthusiasts manage to provide the experience of viewing historic locomotives in steam, a main aspect of the attraction. The industry comprises over 90 working standard gauge lines and many more that are narrower gauge. The majority of train services are, however, hauled by *diesel* locomotives which are easier to maintain and cheaper to run. There are also a handful of diesel rail buses. The diesel/flywheel traction of the third Class 139 rail car may set the standard for energy efficiency for a diesel rail vehicle by having a very much smaller than normal engine, having energy-recovery during braking and being able to operate for short periods using just flywheel power. For a short stop the railcar can enter and leave a station with no fumes being emitted, engine not running, just the flywheel.

PPM'S STRENGTHENING PROFILE

How can it be that the smallest railway operation within the national network has become such a major talking point?

Introduction in 2009 of a train service on a track which is less than a mile long using two bus sized railcars would normally be unnoticed in Britain's massive nationwide industry. However, there is something about the Stourbridge shuttle operation which has brought about a growing profile over the years. The view that its differences from what passengers normally expect, the informality, the lack of fuss and above all the sense that it is both clean and very economical and the all round visibility has generated affection, also the feeling that, developed further, it could be applied to solve very many local transport needs. Filling in the gaps. The public recognised what the transport planners did not.

A new book 'The Railway Adventures' written by Vicki Pipe and Geoff Marshall - (the railway travelling duo who visited all the stations of the Network), describes special aspects of the service:-

Today a ten-minute shuttle service (fifteen minutes on a Sunday) operates between the two Stourbridge stations, which is serviced by the most unique class of train in the entire country - a Class 139 Parry People Mover, or as Vicki likes to describe it, 'The cutest train I've ever seen!' and -

'This is a great example of cost, efficiency and environmental concerns all magically aligning to provide the perfect solution to the question of, 'How can we quickly and efficiently move lots of people a very short distance?''

Meanwhile, in complete contrast and concentrating on the innovative use of flywheel energy storage in order to increase efficiency, Dr Armin Buchroithner of the Energy Aware Systems Group of Graz University of Technology has sent the following message -

'I am working on a scientific book on flywheel energy storage and alternative propulsion systems for vehicles, which will be published with Springer media this year. During my research I came across some extremely relevant projects by PPM, which I would like to include in my book, since they show excellent examples of this technology. Would you be so kind to provide some information/photo material of your flywheel powered railcars that I could include in my book? Thank you in advance. Kind regards from Austria, Armin Buchroithner'.

TV crews have frequently visited the Stourbridge Branch. Michael Portillo featured a trip on the Shuttle in one of his Great Rail Journeys and the Tomorrow's World Producers paid close attention to how a flywheel delivers energy and performance advantages and powers the People Movers.



Image from the DfT 'Expressions of Interest' document: photo courtesy UK Tram

Anyone listening to BBC Radio 4 just before 2 p.m. on 17th February would again have found themselves riding on the Shuttle on the Stourbridge Branch line.



The BBC's Mishal Husain, the Programme Presenter, introduced the piece -

'Leeds Supertram, Edinburgh's trams, London's Cross Rail—3 recent examples of ambitious public transport projects which ran into difficulty of one sort or another. Time perhaps to think on a more modest scale like the unique and very successful train service that Adrian Goldberg has been on in the West Midlands'.

Adrian Goldberg's piece in 'From our Home Correspondent' was conducted at a breathless pace, peppered with descriptions of the 'oily sheds' of Black Country industry and inventors' dreams of doing great things in a national environment where there are 99 people looking for problems for every one looking for solutions. He concentrated on the People Mover which he described as 'an ingenious piece of kit' referring to its unique transmission which used regenerative braking using a flywheel to boost acceleration using recycled energy.

Despite the modest surroundings, Goldberg commented on the significance of the high reliability of the Stourbridge service and obvious popularity with passengers now taking around 600,000 journeys a year. Finally, he pointed out that the technology seemed suited to being adapted to tram technology running on street. He quotes John Parry as seeing 'its potential for joining up smaller towns and cities to the larger transport network in the UK and abroad'.

STORING ENERGY FROM WIND, SOLAR AND OTHER NATURAL SOURCES

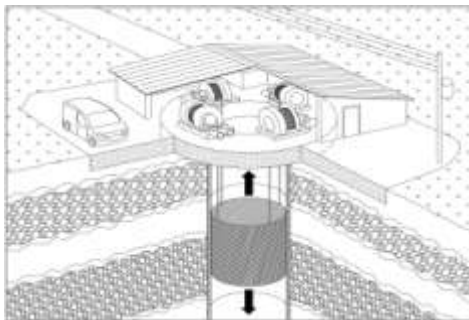
The role envisaged for a mechanical means of using potential energy to store electricity

They say that the batteries that are already in use and the even better versions 'just around the corner' will provide the answers. Not all of them, we think. The perfect battery does not exist and is not even on the horizon; 'perfection' requires virtually unlimited numbers of charge - discharge cycles giving decades with little or no special requirements to control temperature or humidity which affects the performance. Curiously, lead-acid batteries are nearer to reaching 'fit and forget' robustness, but on their own as a source of traction energy their weight limits how far the vehicle can go before recharging. International development experience contains endless examples of generous assistance given to poor communities to install a piece of equipment to improve matters, but when a while later a spare part is needed or whole replacement, the original donors are not around and it finishes up broken down and unused even if all that is needed is a replacement battery.

Mechanical equipment; trains, ferries, the engines of 'posho-mills' grinding cereal into flour are kept going for many years. During periods of economic isolation, the Tamil area of Sri Lanka had plenty of 50 year Morris Minors still in daily use as they were built so that they could easily be repaired.

A British marine engineer, Prof Peter Fraenkel MBE, an old friend and colleague of John Parry, has, together with other business associates formed a company, Gravitricity Ltd, as an energy-storage specialist which can deliver an alternative means of storing energy without requiring the mining of scarce minerals such as cobalt. It uses mechanical means to store energy. Gravitricity has gained £650,000 UK government R&D support for developing a pathfinder example of 'falling weight'

technology. This stores and releases *potential* energy in an installation comprising a massive weight hanging in a deep shaft which is winched up when energy is in surplus supply, then is lowered, generating electric power when this is not available from wind and solar sources.



Gravitricity energy-storage installation

In earlier years, Prof Fraenkel had been the founder-CEO of the intermediate technology company, IT Power Ltd, which working in developing countries introduced the means of capturing some of the kinetic energy of a river using a run-of-stream turbine and gearing system to generate electricity with an alternator. Then, more recently, in a leap of ambition, working with a Newcastle University team of scientists, Peter began to study a concentrated source of *tidal* energy such as that which twice a day flows in and out of Strangford Lough, a large inland lake which connects to the Irish Sea.



The SeaGen Tidal Power Station at Strangford Lough, Northern Ireland in a 9 year pathfinding operation proved the prospect of generating quantities of electricity larger than

any similar installation in the world and equal to the power requirement of 1500 households annually.

Tidal energy can turn into electricity some of the kinetic energy available from the spinning of Planet Earth (an enormous flywheel rotating once every 24 hours). When coupled with gravity from the Moon this raises and lowers the sea level, causing millions of tons of water to flow in and out of estuaries and coastal lagoons. Power from tidal energy might thus be considered to be a 'form of Gravitricity' depending as it does on the Moon's gravitational attraction coupled with the totally-reliable kinetic energy available from our own planet's rotation. Why not capture more of it?

CAES and Gravitricity

Captured 'free' energy needs to be stored in order to realise its value.

Considering the investment needed to create the means of lifting and lowering heavy weights down a shaft in the ground, one's mind turns to the other forms of mass which could be moved vertically but not so much. Pads like mini hovercrafts are used to lift very heavy machinery around factory floors using compressed air. So why not lift up a complete building two or three feet using compressed air? Counterbalanced hydraulic systems lift whole ships from low to high level in the new Three Gorges Dam on the Yangtze River and on a smaller scale at Falkirk in Scotland. A large quantity of energy is needed to lift a ship. A frame and slide mechanism which would permit the lifting and lowering function for a complete building, weighing over a thousand tonnes. A wacky notion? A lot of engineering breakthroughs start out this way!