

# An Evolution of Motor Vehicle Engines

*By Neville Barlow*

During the early part of the Second World War, petrol was severely restricted. This was extremely hard on people who lived in the areas of New Zealand far from their nearest town. I believe the ration was around 4 gallons a month per family. My Father, who was an industrious man decided there must be an alternative method to propel the family car. His idea was to use a coal gas producer. Anyone who had access to the marvellous Popular Mechanics magazine could surely make one.

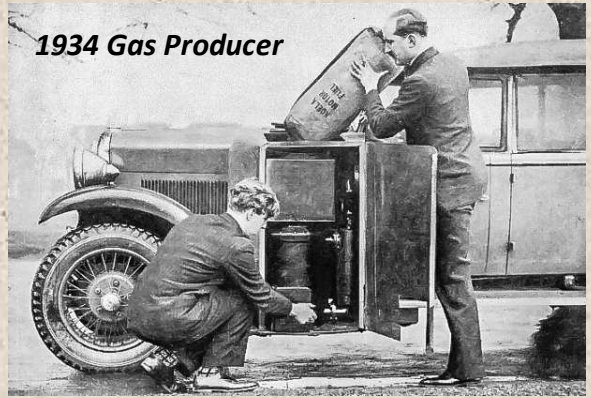
I do not remember how or what he did as I was not born even then! However, in later years he related what he did, and it sounded like a great idea.

A firebox was secured to the outside of the car. It was stocked with coal scrapped up from an old coal shed and set alight. The resultant gas was fed into the combustion chamber of the car engine. Amazingly the 1936 Wolseley started up and ran smoother than ever before. The car was driven into town (albeit with a few sparks flying everywhere) and back again. What a great success! Next morning the old Wolseley refused to start, the engine was completely seized. The coal gas had solidified into a glass like substance which spread like concrete all through the engine. It took about a week with hammer and chisel to remove it all before the engine could be started again. The idea was great but proper coke or charcoal was the required materials. That car still did great service until 1949.

In the early 1900's steam cars began to appear. Again, my father, told me that as a boy he had seen a strange car parked outside a business in Auckland making a hissing sound. A man came rushing out to the car, jumped in and away, with only a swish and disappeared like a ghost into the distance. That was a Stanley Steam Car. It is interesting to know that in 1906

a Stanley Steam Car held the World Land Speed Record with a speed on 127mph.

Electric cars were also tried. All had multiple lead cell batteries, much like the kind we find in our cars today. The weight of the batteries greatly diminished the range of these vehicles. 20 miles was about the maximum range and recharging took many hours.



**1934 Gas Producer**



**1918 Stanley Steam Car**

To say they suffered a quiet death, would be kind.

Many years ago, I read that Indian Poultry farmers were running their stationary 4 stroke engines on Methane that they produced by mixing poultry manure with water. All their heating and lighting needs were produced that way. I also read that some people were using huge balloons filled with methane and

that was what they were running their cars on. I was so intrigued that I filled a 40- gallon drum with equal quantities of fowl manure and water and attached a gas radiator on the top. It really worked. After a few days the radiator burned for several minutes. I forgot about my little experiment for some time but when I remembered it, I was surprized to see the drum I had used had exploded. In fact, it had one side demolished. Now that's real power.

I am reminded of a Gentleman in Nelson, in the 1960's, who was adamant that he had invented a car that ran on water. Simply poke the garden hose in the petrol tank and away we go. Fact or fiction? In any case it does not exist today. Some people say that the petroleum companies bought up all the patents and so killed the whole venture.

I remember talking to a friend, at about this time, who owned a Shell petrol station in Matamata, when LPG was regarded as the next new thing. He was installing tanks to store the LPG and was totally bemused by the extraordinary safety regulations that were required to carry this out. His comment was that if we already had LPG and wished to install a petrol system, it would be totally banned as petrol would be regarded as too dangerous.



***Gas Bag Car - India***

### ***Quant Sea Water Car***



In our Club Magazine in February 2015, in an article entitled Concepts and Oddities, I reported that a car had been developed to run on 'Sea Water'. It was called the Quant e Sportlimousine and was show cased at the 2014 Geneva Motor Show. Its power came from Nano Fuel cells technology, which stores energy in two, 200 litre tanks. The interaction of the sea water in the two tanks is said to create a reaction which produces the electric power to drive the car.

That was 7 years ago and the last reports I have of this car was in 2016.

Also, in my Concepts and oddities article of February 2015 I discussed a Solar- powered car called the XX1 produced by Christopher Pollard. It had photo-voltaic panels all around it on the outside shell. Energy generated during the day was stored in an on-board battery. Again, nothing has been heard of this vehicle since!

So much for the past. We are now faced with the conundrum of the electric car. It seems the world has been so taken by Elon Musk that many Governments cannot see the huge problems, not only now but in 10 years' time when we will be flooded with huge quantities of poisonous dead batteries. Lithium, Cobalt and other ingredients are difficult to handle. World supplies of these elements are already limited, and prices are going sky high. Electric cars already cost 30% more than Petrol or diesel cars and that gap will only increase. An example is a Nissan Leaf (electric car) retails at NZ \$63,000. A similar sized saloon, an MG 3 (1500cc petrol, automatic, 4 door saloon) costs NZ \$19,990. You could drive a long way for \$40,000! Many examples of a 10- year life span for comparisons between petrol and electric cars shows, the Internal Combustion Engine cars produced much less emissions and cost less to run and less to purchase.

Hydrogen Fuel cells in modern cars offer greater range and are truly zero emission vehicles. They also take only 4 to 5 minutes to recharge, compared to several hours on town chargers or 8 hours with a home charger.



**2021 Toyota Mirai - X Ray photo**

Toyota has just revealed its second- generation Hydrogen Fuel Cell car they have called the MIRAI. It is a medium sized saloon about the size of an X Type Jaguar. It does have a small battery which powers the radio, navigation system, lights, start mechanism and other technological requirements. The battery also gathers electricity from its

regeneration system. Recently a MIRAI travelled 1001 kilometres on a single tank of Hydrogen and required 4 minutes to re-fuel. Just recently Toyota reported their latest MIRAI achieved 1345 Kilometres on a single tank.

Jaguar Land Rover has announced that they are at present trialling a Hydrogen Fuel Cell Land Rover Defender. This vehicle is expected to be on sale later next year. Only available in Land Rovers, I wonder if one day we will see Hydrogen Fuel Cells in Jaguars. Hyundai, General Motors, Honda and Mercedes all have working Hydrogen vehicles either available for sale or out testing.

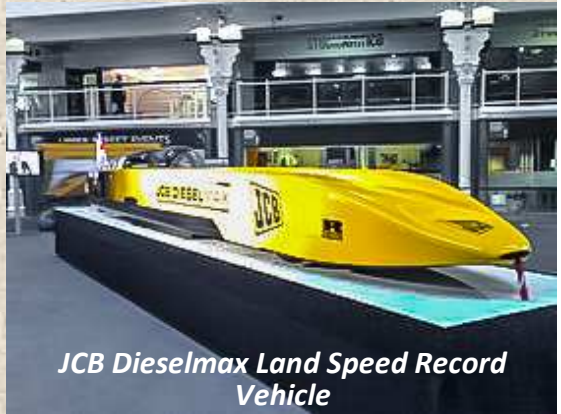


**Land Rover Defender**

It is possible that both electric and Hydrogen cars may be lost in the future. An English firm JCB excavators who make Bamford engines (a company that started in the 1700's) have come up with possibly a better idea. A Harry's Garage video is extremely revealing because it has an interview with JCB's Chairman Lord Bamford. This company, Joseph Cyril Bamford Excavators was founded in 1945 and continues to be owned by the Bamford family. In 1948 they had 6 people in the firm making tipping trailers. In 1957 the firm launched the 'Hydra-digger', which incorporated an excavator and loader all in one. By 1978 JCB had opened a factory in India. By 1991 they entered a joint venture with Samitomo of Japan to produce excavators and in 1998 built a new factory in Georgia USA. They now have 22 factories World - wide and employ 12,000 people. They sell their products in 150 countries. This is a big company.

In April 2006 JCB announced they were developing a diesel- powered Land Speed Record machine to be known as the 'JCB Dieselmex'. In August of that year, Dieselmex driven by Andy Green, broke the World record for diesel vehicles, achieving a speed of 350.052mph (563.418km/h).

This company is a big deal. Its current excavators include a 4- tonne electric excavator. They have found that even the huge battery that they are using will only give about 4 hours work when pushed hard, before over-night charging is required.



They have now developed diggers up to 28 tonnes and are using their diesel engines designed to run on pure Hydrogen. They have found a way of eliminating the Hydrogen Fuel Cell by using a specially designed combustion chamber easily fitted to any of their diesel engines. The excavator's normal diesel tank is replaced by a similar sized Hydrogen pressure tank which when filled can keep even the biggest digger going for 12 hours. A huge saving over the electric machine is that this new Hydrogen machine can be re-fuelled in 5

minutes.

This system works for these ultra- heavy machines, so why can't it work for all Internal Combustion Engines. Lord Bamford made the comment that 90% of all the World's motor vehicles are ICE's and he cannot see them all being dumped or replaced by electric vehicles, with their limitations. Perhaps here is the next chapter for our Internal Combustion Engines of all Types.

*Neville*