

History of Petrol Stations – Part 3 Early Acts and Accidents

By Brian Baker

Britain 1862. Canadian Abraham Gesner had developed a process to distil kerosene (coal oil) from cannel coal and bituminous shale some 15 years previous in 1847. The Pennsylvania Rock Oil Company had been formed in

1854 and petroleum spirit had been in use for several years that overtook Kerosene and Whale Oil as the most favoured lighting medium across much of Europe and North America, mainly being imported into Europe by 42 gallon (159 litre) barrels. (Figure 1 Rock Oil Map)

Steam Traction was spreading all over Europe as the railways continued their relentless growth to as many towns and cities as fast as available labour could build tracks and steam engines together with the infrastructure to support this mass transport system, found popular by all who could afford to travel in such elegance.

It was therefore inevitable that the abundant use of coal and steam would lead to the early primitive “oils” being discovered through an extraction process.

Indeed, there were many strange inventions being made like the “Hippo-mobile” a steam driven “vehicle” that ran on hydrogen in 1860 that crawled along but never gained favour as it was difficult to steer. (Figure 2 & 3 Hippo-mobile Sketch and Horse Drawn Tanker Photo)

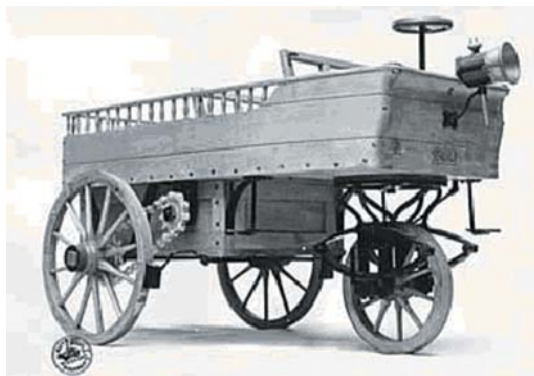


Figure 2 The Hippo-mobile c1860 This Truck ran on Hydrogen

An advertisement appeared in “The Times” in London on 15 November



Figure 1 Rock Oil Map

1862 for “Petroleum Candles” at one shilling and four pence per pound and they can be ‘white or yellow’. The advert goes on to quote “The great marvel of the day; clear as crystal and gives a magnificently brilliant light” produced by the London Soap and Candle Company, 76 New Bond Street.

However, some months earlier, concerns were being expressed of the ready ignitability of petroleum. A report, again in The Times on 24 March 1862 had the headline “The Combustibility of Petroleum” and goes on to state;



Figure 3 Horse Drawn Tanker

“Much discussion and diversity of opinion having recently obtained in Liverpool regarding the risk of storing petroleum now arriving there, some

experiments were made on Monday with a view to test the inflammability of the liquid. The experiments were undertaken at the instance of the Watch Committee of the Corporation, was superintended by Major Greig, the Head Constable. Five 30- gallon wooden barrels of crude petroleum, or Rock Oil from Canada and also from Philadelphia were burnt under different circumstances. In every case the combustion was rapid and fierce. In two of the experiments made in a confined chamber built for the purpose, Phillip’s Fire ‘annihilators’* extinguished the fire

in a few minutes. In another, in the same chamber, water thrown on the burning mass by two hoses extinguished the fire with considerable rapidity.

*A Phillips Fire Annihilator was invented by William Henry Phillip around 1850. It was a crude type of fire extinguisher that when hand pumped, emitted a jet of gaseous vapour (probably Carbon Tetrachloride otherwise known as “CTC”) This gas was still in existence until early 1971 when it was withdrawn as it was regarded unsafe. When mixed with water it produced hydrochloric acid and when used in a combined space, gave off phosgene gas, a poisonous gas used in World War 1.

Then two (Wooden) Barrels were ignited in the open air, one after the other. In the first, a fire annihilator which was brought to bear on it partially was thrown out of the conductor’s hand, he himself was knocked down and many of the crowd were overthrown in their anxiety to escape from the supposed danger. The Water Hose were then brought to bear on the burning, mass and they soon overcame the flames, which afterwards several times rekindled and re-extinguished”

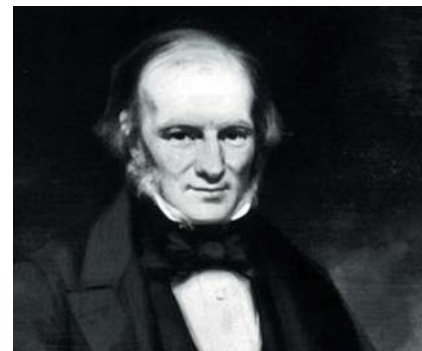


Figure 4 James Young

This piece established that a significant problem was known in the handling and storage of petroleum.

In the same year, James “Paraffin” Young wrote to The Times – (Figure 4 Photo of James Young)

“Sir, Recent lamentable events and the comments of the press having shown how much the public require information regarding the nature of the distinction between paraffin oil and petroleum and as I first introduced both these substances to the public as illuminating agents, I shall give you a few facts concerning the trade in these substances, the rapid development, of which is I believe, without parallel in the

history of commerce”

He goes on “In 1847 I received a letter from Dr Lyon Play-fair C.B. stating that a spring of petroleum had burst out in a coalmine, the property of his brother-in-law, Mr James Oakes, of Ridging Hall, Alfreton, Derbyshire. Dr Play-fair proposed that I should make a chemical examination of this body, with a view of its application to some useful purpose”

So Britain had an underground petroleum source as long ago as 1847 but the source found was soon depleted and ran out.

In 1863, at the mouth of the Mersey River, Liverpool, a ship called “The Hindoo” under Captain Murphy having sailed from Canada, had been partially destroyed by heavy storms. Having lost two of its (sail) masts, it was driven against the shore and began sinking off Taylor’s Bank near Formby. The ship was carrying 3,000 barrels of “Rock Oil” and a fire broke out on board that led to 5 members of the crew being killed in the fire with the rest having to abandon ship and swim to the shore, several crew-members suffering extensive burns.

The same year, American papers reported another ship fire on board the L.H. Colton near Cleveland, Ohio. Having loaded her cargo of petroleum bound for Liverpool, England, she set sail and after three miles, an explosion took place that engulfed the whole ship and its contents and the crew had to abandon ship though no loss of life was reported.

Accidents involving petroleum were increasing. The London and North Western Railway Company issued a notice banning the transportation of petroleum, Rangoon Oil, Burmah Oil and any product that is a bituminous substance (including gunpowder) between Holyhead and Dublin as the country became nervous and suspicious of its application. The use of section 329 of the then Merchant Shipping Act 1864 that allowed for specific exclusions where a company can refuse to carry dangerous goods. (Figure 5 St Ives Fishing Fleet)

Onto Southwark Bridge Road in London (a location where a more defining moment in our history would take place in the mid 1960’s) and the premises of John Tilleard & Son, oilmen of Great Suffolk Street where in 1864 an explosion took place injuring several persons. They were retailing petroleum products including benzene that was being pumped in the basement of this Wholesale Shop when it ignited and



Figure 5 Lamp Oil being delivered to a Fishing Fleet in St Ives, Cornwall

within a few minutes the building itself blew up followed by the explosion of the gunpowder store. It took three hours to extinguish.

The same types of incidents were occurring in Europe, notably a large fire and explosion in Antwerp, Belgium where fire had broken out on board yet another ship at 10 o’clock in the evening that was in dock that not only ignited but leaked a considerable amount of petroleum in the port as well!

A report, yet again in The Times in November 1864, showed the massive increase in the imports of petroleum in the space of a few years from 755 tonnes in 1862 to 30,899 tonnes in November 1864 from the USA alone, whilst the total amount being imported was over 361,000 tonnes at the end of 1864

Much later in 1908/09, The First Departmental Committee Report for the Home Secretary were to list the various uses of petroleum other than the infant motoring of the day. They were;

- Dry Cleaning
- Manufacture of Helmets
- Manufacture of Tennis Shoes
- Manufacture of India-Rubber Goods
- Glass Silvering
- Manufacture of Paints
- Manufacture of Asbestos Packing
- Tyre Making and Repair

The Committee of that time went on to register concerns on the use of petroleum spirit in a domestic environment and in particular hairdressing!

(Note; This Report will be covered in more detail in a later issue of the Bulletin)

In 1862, the British government decided to react and the world’s first laws on petroleum spirit came into being on 1st February 1862 that was aimed at the safe keeping of petroleum “and other substances of a like nature” (Petroleum Mixtures). Known as the “Petroleum Act 1862 it came into effect on 29th July that year. The new laws stated that no petroleum is to be kept, OTHERWISE than for private use, within 50 yards of a dwelling house or a

building in which goods are stored, EXCEPT in pursuance of a LICENCE given in accordance with the Petroleum Act 1862, issued by the local authority. Any petroleum kept in contravention would be forfeited and in addition the occupier would be subject to a penalty not exceeding £20 for each day during which it is being kept in contravention!

There was a section dealing with the sale of petroleum for illuminating purposes and no person could offer for sale or expose for sale that gives off flammable vapour at a temperature of 100 degree Fahrenheit’s thermometer, (38 degree centigrade) unless the bottle or vessel containing petroleum has a label attached in legible characters as follows;

“Great care must be taken in bringing any light near to the contents of this vessel, as they give off flammable vapour”. Any person acting in contravention of this section shall for each offence be subjected to a penalty of 5 shillings.

Section 5 gave powers for Local Authorities to grant (petroleum) licences

– “if signed by two or more Persons constituting the local authority and may be for a limited time and annex thereto any Conditions as to Renewal or otherwise which the Local Authority thinks necessary for diminishing the Risk of Damage from Explosion or Fire: and any Licensee violating any of the Conditions of his licence shall be deemed to be an unlicensed person”

Under Section 9 – “Petroleum may be searched for in the same manner, under the same Warrants, and subject to the same Conditions in, under, and subject to which Gunpowder may be searched for.” (Undisputable proof of the connection between petroleum and explosives that still exist in the title of our Association today).

“Inspectors of Weights and Measures are empowered to test petroleum and offences are to be tried at the



Figure 6 Sir Frederick Abel (1827 – 1902)



Figure 7 The Abel Closed Cup Apparatus (Modern Version)

Magistrate's Court and penalties enforced. The mode of testing was recorded in the Schedule"... and reference to Sir Frederick Abel's Closed Cup Apparatus was NOT mentioned having been invented the device back in 1856. It was not until an amended Petroleum Act of 1868 that we would see a more precise manner of testing flash points, albeit in open cup. (Figures 6 and 7).

By 1866, petroleum had caused an amendment to be issued to the Carriage and Deposit of Dangerous Goods Act which had previously targeted Nitro-Glycerine – also known as Glycerine Oil – that went onto include the carriage of Petroleum under Section 8.

The same year, 1866 saw an amended Petroleum Act issued that mentions in section 3 the terms "Petroleum, Rock Oil, Rangoon Oil and Burmah Oil and any product of them and any oil made from petroleum, coal, schist, shale, peat or other Bituminous substance". This now indicates that the petroleum market was expanding rapidly with laws being issued readily to keep up with the new 'discoveries' now being made together with the range of petroleum derivatives. This Petroleum Act had a Schedule attached setting out the description of the test apparatus that determined the Flash Point, based on Sir Frederick Abel's prototype.

By 1871 another Petroleum Act was passed by the British Parliament that encompassed all three previous Acts on the matter that were repealed and under sections 4 and 5 set out provisions for Harbour Authorities to be Licensing Authorities in their own right and the Act stipulated certain conditions that were applied to the Master of every Ship "carrying a cargo that consist wholly or partly of petroleum products on entering any harbour in within the United Kingdom and a penalty of £500 would be imposed not to show due diligence on each Master of a Ship" These sections clearly reflect the growing numbers of accidents and fires that were occurring on ships as well as in the ports throughout the land.

It has to be said here that no maximum quantities are mentioned, unless kept within 50 yards of a building. It is of note here that in the case of London, the Metropolitan Board of works was to become the enforcing authority on petroleum in the Capital from 1865.

Another piece of legislation, quite unrelated at the time, was to play an evolving role in petroleum matters. The Highways and Locomotives Act 1878 came in to effect which saw the building of roads as we know them some 130 years on that saw local Highway Boards set up and a District Surveyor appointed that had powers to raise charges for the use of "their" roads and that the "ordinary highway" was termed as a Main Road as well as the responsibility as to who was responsible for road repairs, use and repair of Bridges and the power to impose fines for excessive heavy loads that caused damage to the roads.

Each County Highway Authority had powers to make bye laws that lead to the introduction of fines, control of weights of locomotives, including the drawing of any wagon, the number of Horses that drew any wagon, the hours of which locomotives (read mechanised vehicles) could pass over any roads, the revocation of previous Acts stating that any locomotive consuming its own smoke (suggesting that other forms of vehicle were making as presence) and the power to licence such locomotives and the imposition of speed limits the Act went on to become known as the Red Flag Act as the need was introduced for someone to wave a Red Flag ahead of the "locomotive".

An amendment appeared to the 1871 Act on 11th August 1879 as more precise details had emerged on the test apparatus used for determining Flash Points as the device went from an Open Cup to a Closed Cup Method, the same principle of which is used today that also included the payment of a fee not exceeding Five Shillings paid to the Government to have test carried out on any product purporting to be known as petroleum.

As petroleum demand continued to increase so its availability became more widespread and eventually, petroleum could literally be bought anywhere as Street Traders were very common in Victorian England.

The government decided to control this activity and 27th August 1881 issued the Petroleum (Hawkers) Act 1881 that allowed a maximum of 20 gallons to be conveyed and sold, provided it was in a closed vessel, that the carriage was well ventilated and not allow an explosive mixture to form, that no naked lights or sources of ignition

were near any carriage, that the carriage was constructed or fitted in a way that petroleum cannot escape from it, especially any escape of petroleum into any building or sewer, that it is stored in a licensed Premises and fire precautions are provided for as well as security and access is controlled.

Here we see that Hawkens (Sellers) of Petroleum were individually licensed to sell petroleum and that the enforcing Authority was the Police or any duly Authorised Officer who could seize the product if necessary. It is of note that the under the definition of Carriage the words "wagon, cart, truck, vehicle or other means of conveyance by land whether drawn to propelled"

By 1896, many steam driven and combustion driven vehicle were starting to make their appearances and a new piece of legislation known as the "Use of Locomotives on Highways Act 1896 was issued that remove some of the restrictive conditions from the former 1878 Act as well as calling for one hour before sunrise and one after sunset, the person in charge of a light locomotive (Motor Car!) " shall carry and attach a lamp to exhibit light and under Section 3, a bell or other instrument to give audible warning of the approach and position of a Carriage."

Also it set out that the keeping of petroleum spirit as an inflammable fuel may be kept with a vehicle in accordance with the Petroleum Act 1871, provided a levy is paid at the rates of One Ton or more - £2. 2shillings or for Two tons or more, £3 3s. To cap it all the maximum speed limit was set at no more than fourteen miles per hour.

Finally, on 14th August 1903, an amendment to the 1896 Act was made giving offences for reckless driving, display of identification plates, and the Registration of Motor Cars was introduced. The Act went onto introduce the issue of Driving Licenses and the duty to stop in case of an accident. The Act also went onto introduce Road Signs, Fines and Penalties

The Highway Code had arrived, motoring was now becoming popular and the need to fill petrol tanks up became a pressing need. Yet, the first ever purpose designed Petrol Station, founded in the St Louis in the USA was still more than 4 years away.

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