

Developmental Paper

The Management and Organisation of Energy in Transportation: Petroleum distribution c1900-c1939.

The major switch to private and commercial road transport in Britain in the inter-war years is well known, but the infrastructures that allowed it to happen are much less so. Just as with the growth of electric charging points in the early 21st century, a nationwide network of garages and petrol stations had to come into being for transport by car and lorry to be a viable reality in the early 20th century. This paper examines the necessary preconditions of ubiquity, standardisation and supply chain distribution which underpinned the management and organisation of petrol as energy for transportation. It concludes that this was an iterative process driven by mostly the actions of many small businesses but shaped by Parliamentary legislation, the Railway companies and the influence of private, voluntary organisations such as the Royal Automobile Club and the Automobile Association.

Britain in the inter war years 1919-39 witnessed a transport revolution. In that period, the number of private motor cars and commercial vehicles grew by roughly twenty-fold and eight-fold respectively. This transformation is widely known about and accepted, but what has been less examined are the supporting infrastructures that made this colossal change possible. We think that an essential, but under studied, pre-condition of this phenomenon is the ubiquity and standardisation of petrol distribution.

Moreover, the current debate on how best to generate, distribute and store electrical energy for motor vehicles is redolent of early attempts at distributing and storing petroleum and constituent products. Energy materials and fuels, such as hydrogen and petrol can be viewed as vectors - energy resources that are transformed to enable the transportation and storage of energy in different locations. They must be mined, generated, converted and refined before being transported for use. Pity the entrepreneur who requested planning permission for the first petrol station: a toxic, highly inflammable liquid that needed to be distributed to every town and village in the land.

We begin by briefly outlining what the dimensions of that transformation were. In 1919 there were approximately 100,000 private cars and 60,000 goods vehicles and lorries in the UK. The average annual growth in cars every for remainder of the decade was 27%, and the average growth in goods vehicles was 20%. Therefore, in the year before the onset of Great Depression, there were 990,000 cars and 340,000 lorries registered in Britain, a staggering increase. The Depression slowed but did not reverse the growth in motor vehicles. From 1930 until 1934 the rate of expansion in both categories was subdued at between 3-6% per annum. After 1934 and until the outbreak of the Second World War car ownership grew on average by 10% every year, and the number of lorries and vans by 5% year on year. After twenty years of breakneck growth, Britain entered the war with a national fleet of 2,030,000 registered cars and 500,000 goods vehicles, about 15 times as many as there were at the end of First World War. Cars had been a remarkable rarity pre-1919. Perhaps one in four hundred people owned one and most were driven chauffeurs, which in turn indicates how unusual and exclusive their ownership was. By 1939, one in four families possessed one. Transport in Britain had fundamentally altered. This paper seeks to explore in detail how this extraordinary change was supported. We do this in terms of ubiquity; how and where petrol was available for sale, standardisation; how the sale of petrol was controlled, and distribution; how the commodity was delivered to the myriad of small places where it was needed.

For private and commercial vehicles to become a popular and practicable method of transport, their owners had to be reasonably sure that they could be re-fueled and repaired wherever they needed to go. In the earliest days of motoring, this was far from certain. To assist car owners, in 1904 the Royal Automobile Club (RAC) began publishing a 'Directory of repairers and petroleum spirit depots in the United Kingdom'. To be officially listed in the directory, a repairer had to fulfil the following conditions: '(1) [Undertakes] general repairs to automobiles (2) Storage accommodation is available (3) There is plant for charging electric accumulators (for ignition) on the premises (4) An inspection pit is available (5) A stock of petroleum spirit is always on hand.' In the book, about 1100 addresses were given across the UK and Ireland where these services could be found. (The Automobile Handbook, 1904). We think that the actual network of garages and depots for road vehicles would have been more numerous than this, as the RAC was quite an exclusive organisation catering for the upper classes with exacting standards. Its handbook called on members to give: 'Personal opinions... where they have grounds for complaint as well as those [businesses] which are considered sufficiently good to be suggested for official appointment...All reports will be considered strictly confidential.' (The Automobile Handbook, 1905). Nevertheless, the handbook offers a highly useful indices of how many, and where, garages and petrol stations were in the UK over the period.

The handbook expanded rapidly over the succeeding years and by 1913 there were approximately 2200 addresses listed. However, the real explosion in the numbers of garages and petrol stations worthy of endorsement by the RAC occurred in the years 1920-1926, by which time there was just over 5000. These years also saw another development. In 1920 the first 'Filling Station' was opened by the Automobile Association (AA) at Aldermaston. A 'Filling Station' did not undertake repairs, it simply existed at the side of major roads for motorists to briefly stop by and refuel. Each had to hold 500 gallons of fuel ready, and water, air and a telephone were also available (73M84/G1/13/11). By 1925 there were seven operated by the AA across Britain, which were carefully marked up on the road maps they distributed to their members (73M84/H9/6). We think that by this point, anyone setting off in a car throughout the UK could be reasonably certain of finding fuel without having to carefully plan their journey. On the eve of the Second World War, the RAC was willing to list just over 8000 premises where fuel and repairs could be obtained, and we believe true number was almost certainly significantly higher (The RAC Guide and Handbook 1937-38). The network of garages and petrol stations in Britain would continue to develop, but a fundamental infrastructure supporting private and commercial vehicles, heavily shaped but only rarely directly provided by voluntary members' organisations, was now ubiquitous. We go on to explore how the railway companies helped to create the engineering standards and dangerous goods classification for transport of petroleum products by rail and later road. Furthermore, we explore the standards associated with development of haulage infrastructure such as metal drums, rail tank wagons, and siding facilities. Secondly, we examine the role of the state, via the Board of Trade, and, later, the Ministry of Transport, in the role of establishing a formal regulatory framework that drew upon industry expertise to apply. Our analysis extends the work of Velkar (2012) and Yates & Murphy (2022) to commodity transportation of dangerous goods, and we explore the process by which energy transitions emerged historically, to understand what lessons might be drawn for today's move toward electric vehicles, can be understood.

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