PORTLAND MARKET REPORT

"RAPID *PETROLISATION* DURING WW1 SAW OIL PRODUCTION INCREASE BY 25% IN FOUR YEARS"

January update

The end of 2018 marked 100 years since the guns of the First World War fell silent. Understandably most of the collective memory of the war has focussed on the human suffering experienced during the 1914-18 hostilities. But the First World War also marked a major energy transition, as power from coal began to diminish in the face of increasing oil usage. At the beginning of the 20th century, coal completely dominated the energy world, making up 96% of global fossil fuel consumption. But by 1920 that figure had fallen below 85% and it was oil consumption in the war years that was largely responsible for this decline.

The British Navy – at the time unsurpassed in scale and technical specification – had been the first to see the benefits of oil rather than coal-fired steamships. Both Winston Churchill as First Lord of the Admiralty and Jackie Fisher as First Sea Lord, had long championed liquid fuel as the Navy's preferred power source. Coal was a cumbersome fuel to transport and slow and difficult to load onto vessels. This meant that ships lay prone in a harbour for days on end, whereas refuelling by oil could be done at sea, thus maintaining the ship's battle readiness plus its manoeuvrability. Furthermore, oil had a greater thermal content than coal meaning boilers could be smaller and lighter and thus ships could go further and faster. Finally, oil offered a key tactical advantage in that it created less smoke than coal and thus ships would be less likely to reveal themselves to the enemy. The result of this sea-change in thinking (see what we did there?!) was the launch in 1913 of the world's first oil only battleship (HMS Queen Elizabeth – a so-called super dreadnought) and by the end of the war, all new naval vessels were built with oil burning capacity.

The transition to oil in the Navy was a relatively smooth one, but the equivalent transition in the army was a virtual energy revolution. In 1914, the Allied Armies of the First World War – along with their Central Power counter-parts – were almost entirely reliant on horsepower. Some estimates have over 6m horses serving in WW1 (one horse in the field for every 3 men) and this equine reliance was reflected in the fact that the British Army only possessed 827 cars and 15 motorbikes in 1914. Four years later the British had 56,000 trucks in operation, along with 23,000 cars and 34,000 motorcycles! In the Royal Air Force, the transformation was no less spectacular. Fewer than 1,000 planes (on all sides) were in operation at the beginning of the war. But by 1918, over 200,000 planes had been involved in the conflict and Britain alone was producing over 2,700 planes per week.

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All of these new machines of transportation were powered by petroleum and there was one country that had the reserves and technology to supply them. By 1914, the USA was already responsible for 65% of the world's oil production, which at the time stood at 56m tonnes per annum (that's 1.2m barrels per day – a far cry from today's figure of 95m bpd!). But the rapid "petrolisation" that the First World War set in motion, saw oil production increase by 25% in four years. What's more, America's share of that increase also went up, so that by 1918 over 75% of the world's oil was supplied by the USA.

And it wasn't just in crude production that America dominated the oil sector. In 1914, Britain didn't even have a refinery, whereas America had over 20 – all of which were processing oil using techniques and to standards that today would still be viewed as modern. And because the First World War demanded different grades of fuel, so US refining technology had to innovate to keep up. Prior to the war, kerosene was pretty much the only product that came from crude (for heating and lighting), so refineries were simply huge kettles which boiled crude oil, skimmed off the kerosene layer and then (shockingly) either just burned the remaining volume or dumped it. But cars, tanks, planes and ships now all needed different types of fuel. Therefore, the war years saw the rapid development of techniques such as thermal cracking, whereby heavier crude molecules were "cracked" into lighter ends and this resulted in the doubling of gasoline, naphtha and diesel production.

America's total dominance of the oil sector by the end of the war continued for most of the 20th century and the power and wealth that this generated, played a key part in cementing America's global hegemony. If any comparisons are to be made between the present day and 100 years ago, consider perhaps China's current total dominance of the electrical battery market. In 1918, the increasing use of oil ensured the terminal decline of coal and the supply of that oil was effectively controlled by the USA. Of course, the jury is still out on whether electric mobility will have the same impact on the 21st century as oil had on the 20th. But if that was to be the case, then the fact that China currently buys more than 70% of the world's precious metals and manufactures over 90% of the transportation batteries which are made from those precious metals, would surely be an indicator of which country will be the dominant super-power of the 21st century.

For more pricing information, see page 22

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