

photos are useful not only for what they illustrate, but for what they indicate was important (or not) to the owner. The presence of many photos of off-watch situations and shore liberty indicates that, while brief, these moments were often more memorable than the actual work.

Having spent some of his younger years as a professional mariner, this reviewer recognized many aspects of life at sea from his own experience, making the review particularly interesting. Even though Richardson tells his own unique and authentic story as a marine engineer, at the same time, his history is the story of all merchant marine engine crews during the second half of the twentieth century.

In The Treacle Mine reads like the transcript of an extended oral history interview, making it an authentic primary source for maritime social and labour history research. It can be easily recommended to any historian interested this topic for the post-Second World War period. It would also appeal to anybody who served in the maritime industries during that time. Many would find their own memories fitting into a broader perspective shared by fellow mariners throughout the industry. With a comparably modest retail price, the book might even be considered as additional reading for a university class studying the maritime history of the second half of the last century, if only to provide students with access to an authentic set of experiences by a professional mariner during that period.

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Ray Solly. *The Development of Crude Oil Tankers. A Historical Miscellany.* Barnsley, S. Yorks: Pen and Sword, www.pen-and-sword.co.uk, 2021. 186 pp., illustrations, ship index, general index. UK £30, US \$60.00, cloth; ISBN 978-1-52679-241-9.

This richly illustrated history compiled by a recognized tanker-ship officer, educator, and author, vividly informs us about 160 years of specifically the tanker ships carrying the basic feedstock of our petroleum-reliant world: crude oil. Unlike most other ships, tankers are limited to only those ports globally with the complex technology and storage to handle that volatile and valuable liquid petroleum. Crude oil is the building block for those many other products it can be refined into—motor gasoline (mogas), aviation fuel (avgas), jet fuel, diesel, kerosene, and myriad other products. Under the tanker umbrella there are many variants, from products to chemical, edible oils and gas carriers. Crude is the thick, sandy sludge from the bowels of the earth; the ultimate raw

product, sometimes so thick it requires heating to flow. That creates unique challenges for tank cleaning.

Solly's study focusses on the larger ships serving the roughly 50 major oil terminals globally (per the CIA), and which the Global Energy Observatory expands to a total of 325 "oil ports" in 80 countries. Jessica Aizarani states that "as of April 2020, there were 810 very large crude carriers (VLCCs) worldwide ... having a storage capacity of around two million barrels of crude oil. In 2020, seaborne transportation of crude oil amounted to 1.86 billion metric tons" (Statista.com).

This book is a comprehensive and readable amalgam of fact-sets on the technical development of these ships from the first in 1861 named the *Elizabeth Watts*, which brought barreled oil on a sailboat from USA to the UK, under the command of Captain Charles Bryant. Some of the early vessel names were *Mobilite* (a canal barge in the US and UK), *Narragansett*, *Nike*, and *Conch*—owned by Shell. The book shares many images of the Suez Canal, the English Channel, Euro Port in Rotterdam, North Sea shuttle tankers, Asian shipyards, ports in the US, France and UK. We are shown Kuwaiti Oil Company's *Al Rekkah* and *Sea Serenade* of 357,000 DWT (Deadweight Tonnage or carrying capacity) after it was hit by an Exocet missile in the Persian Gulf tensions of the 1980s and written off.

Exxon Valdez's catastrophic voyage is catalogued mainly for its relevance in leading to OPA90 (Oil Pollution Act, 1990), but the *Braer*, *Amoco Cadiz*, and most of the other major environmental catastrophes in this sector are simply left out. Although the innovative ice-breaker *Manhattan* is misspelt *Manhattan*, China and Taiwan are conflated, and the Bahamian flag is spelt *Bahaman*, this book admirably and succinctly informs as well as entertains. The book fills its 200 or so pages with five sections, starting with 1861 to 2021; the early period, then a single-hull motor phase, the ultra-large crude carrier (ULCC) epoch, a double-hull VLCC section, and finally a tribute to the North Sea Oil trades. The fulcrum of the book is the *Jahre Viking* of 564,765 DWT, built in 1980. This historic behemoth merits its own highly-illustrated 8-page chapter, an honour only allocated to one other ship, the *Arosa*.

The coverage is international, including as it does oil majors Saudi Aramco, Exxon-Mobil, Chevron, Shell, PetroChina; other others in France, Russia and the UK. Shipyards in Sweden, the US, UK, South Korea, Japan, Denmark and beyond are covered as though they were the maternity wards for ships. Solly mentions shipowners from all of these nations plus Greece, Hong Kong, Monaco, Norway, Singapore and beyond, and the flags of Marshall Island, Bahamas, Panama, Liberia and more.

The author covers fairly technical material, seamlessly illustrating it with

over twenty-five diagrams and schematics and 175 photographs, from how horses carried the first oil to ships, to how tanks were fitted into sailboats. Then we learn about the construction innovations enlarging bulk tank ships with engines like the *Gluckauf*, reaching 6,000 tons deadweight. Solly reminds us of the Plimsoll Line and Lloyd's of London insurers, along with modern arbiters of global marine safety, the International Maritime Organization (IMO), which he lauds for its regulations. Then there is Sir Joseph Isherwood (1870-1937) and his transverse system of stiffeners to maximize cargo capacity, and minimize non-cargo spaces like cofferdams, slop tanks and ballast tanks, all of which revolutionized design up to today.

Although early in the book readers may feel left in irons and struggling not to lose headway against a tidal flow of jargon, the author quickly lifts the fog on complex industry terms like COW (crude oil washing, for cleaning tanks), and IGS (inert gas system), or SBT (segregated ballast tanks). For some, these terms can also conjure up tank cleaning in humid Keppel Harbor, Singapore, pulling up sacks of sludge by hand, or watching fish swim in the beams of sunlight in the opening of a ballast tank; to others, dreary afternoons learning tank safety, tank washing, and flashpoints. There is plenty of detail in this book, from engine and deck systems, steering, rudder and propeller placement, bridge configurations, gangways, bollard strengths, tug boat assist, gravelling docks, double-hull capabilities, steel renewal, and safety.

Typically, a photo caption will comprise year built, engine and speed details, trading history, ownership and name variants, plus any other items of interest. One such example is the case of the *Sirius Star* of 318,000 DWT, a very large crude carrier, that was held for ransom by Somali pirates in 2008. USD \$3 million cash was dropped on deck and the crew were saved. On escaping the tanker, however, five of the pirates had their boat swamped by waves and drowned—one man's body washed ashore with his loot tied to his corpse. Some ships don't lead long or blessed careers; the *Globtik London* and *Globtik Tokyo*, for example, each about 484,000 DWT, lasted less than a decade or so before being scrapped. That's a huge engineering investment for ships which usually last beyond 20 years of age. One disturbing image depicts half a dozen mega-tankers, of 550,000 DWT each simply rafted up to each other in 1985 in a Norwegian fjord. This explains old timers saying that during that severe market downturns one could walk across a harbour or fjord on the decks of laid-up ships.

Coverage of developments such as the phaseout by 2003 of all single-hull oil tankers is made to seem innocuous, and almost fun. You can tell how the author has deftly navigated bridge decks as well as lecture halls; he reads the audience with this self-styled *Historical Miscellany* to deliver a highly readable, very well-illustrated and explained compendium of a sector which

may have faded from the frontal lobes of much of the public, yet crude oil tankers remain the work horse of liquid energy globally. After all, if it can't be driven, piped, sent by train or plane, then chances are the energy we use was delivered on a crude oil supertanker chronicled in this book.

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Mark Stille. *USN Submarine vis IJN Antisubmarine Escort*. Oxford, UK: Osprey Publishing, www.bloomsbury.com, 2022. 80 pp., illustrations, bibliography. US \$22.00, CDN \$30.00, paper; ISBN 978-1-47284-305-0.

This booklet is one of an apparently popular series with the general public regarding combat between two opposing entities. The range is wide, with some topics very much “what if” and others, such as this, an historical struggle that fits in well with more comprehensive accounts of the topic in question. Here we have an examination of the United States Navy submarine force against the Japanese navy's (IJN) anti-submarine escorts or destroyer force. The author, Mark Stille, is a retired commander, USN, with a number of Osprey Publishing titles to his credit, many of like vein to this one.

The superficial understanding of the Pacific War tends to be one of aircraft carriers and island invasions, a naval war in which the combatants rarely saw each other and fought at long range with aircraft. Often overlooked is the devastating, unrestricted submarine campaign conducted by the USN against Japanese shipping, against which the IJN was ill-prepared. Indeed, so successful was the American campaign against the seaborne trade on which Japan's economy depended, that it had virtually ceased by the early months of 1945 and hence, the territories seized from the imperial powers (US, Great Britain, France, and the Netherlands) so swiftly and easily in late 1941 and early 1942 were rendered valueless.

The booklet is organized into a first section that explores the development and employment of submarines and escorts as conceived by the two nations prior to and during the war. With this foundation in place, separate sections then examine the strategic environment in which the campaign was fought, a relatively lengthy section as to the technical specifications of the various classes of vessel used by both sides, a short review of the personnel and their training on both sides, a thumbnail sketch of the American campaign against shipping and the ineffective Japanese countermeasures, and a conclusion.

The production quality of the booklet is very high, with a large number of photographs as well as diagrams and illustrations of the various classes of vessels involved. Every effort has been made to be even-handed in this approach, which succeeds quite well in that regard. Accompanying the illustrations are