







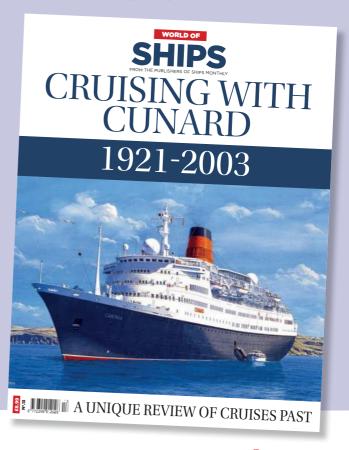
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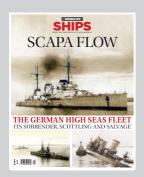
CRUISING WITH CUNARD

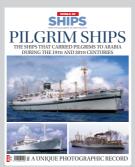
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WELCOME_



CLEANER AND GREENER SHIPS

n this issue we look at the impressive new ferries that are currently under construction around the world, one of which, Stena Estrid, has recently entered service. All the new ferries, and indeed all new ships being designed and built today, are influenced by the need to be cleaner and greener, and to meet new environmental regulations.

The latest rules, the IMO 2020 sulphur cap, came into force on 1 January 2020, and a raft of decarbonisation measures are expected in the near future. These include regional regulations, such as the emissions control area in the Baltic, but the issue

of climate warming is at the top of the news agenda, so can the shipping industry adapt quickly and make a difference?

Transporting cargoes by sea produces huge amounts of CO2 emissions, though the new LNG bulkers featured on page 20 offer some hope. But while companies are going down the route of building LNG-powered ships, which is one solution, much more still needs to be done.

Nicholas Leach • Editor sm.ed@kelsey.co.uk



Contributors this month

Steven Tindale



Steven Tindale is a former shipwright and former

RAF photographer. Growing up on Tyneside, he developed an interest in ships from an early age.

James Hendrie



James Hendrie is a part-time freelance writer whose

interests range from social history to transportation. He is a regular contributor the Ships Monthly.

Peter Knego



Known for his treks to document classic

passenger ships, Peter Knego has taken over 200 cruises and photographed numerous historic ships.

Malcolm Cranfield



Malcolm Cranfield is a maritime historian and

shipping photographer. His interest in ships started in 1960, when he was living at Portishead.



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Andrew & Donna Cooke • Roy Cressey • Gary Davies •

Roy Fenton • William Mayes • Russell Plummer • Jim Shaw • Conrad Waters

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COVER The new ferry Stena Estrid has recently entered service on the Holyhead-Dublin route; see pages 24-27 for details of new ferries currently under construction.

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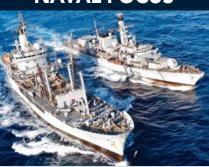
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Commander Paul Bijleveld on the patrol vessel HNLMS Zeeland. Patrick Boniface

WATERFRONT

GHOST SHIP

HISTORIC LAKER

A World War II-built ship that has been languishing at the Port of Chicago for more than a decade is to be demolished. Built for the US Maritime Commission by Great Lakes Engineering Works, the 620ft by 60ft vessel entered service as Frank Purnell for the Interlake Steamship Co in 1943.

Her original triple-expansion steam engine had two coal-fired boilers which were converted to oil in 1972. The ship served as a cement storage barge until 2009. Current owner Grand River Navigation Co to gain about \$1 million for the deteriorating hull. JS



▲ A 76-year-old 'Laker' tied up in the backwaters of Chicago for over a decade is to be scrapped. CHICAGO

SIGNIFICANT BOAT OF THE YEAR



CON-RO SHIP

Crowley Maritime Corp and subsidiary Jensen Maritime, the company's Seattle-based naval architecture and marine engineering firm, were honoured with the 2019 Significant Boat of the Year Award at the International Workboat Show in New Orleans in December 2019. The award recognises the company's industry-leading combination container/

roll on-roll off (con-ro) ships, El Coquí and Taíno, the first of their kind powered by liquefied natural gas (LNG). Workboat's recognition marks the first time that the award has been presented to a large oceangoing container vessel.

Crowley's LNG-powered conros are the result of \$550 million investment into the company's cargo shipping and logistics services. The innovative vessels have greatly expanded the company's US-flagged cargo fleet to provide customers with safe, reliable, fast cargo transportation services.

Wärtsilä's ship design team worked with the Crowley/Jensen teams to produce the Commitment class vessels from the keel up to meet the specific needs of Crowley's customers shipping cargo between the US mainland and Puerto Rico. Both ships were built at VT Halter Marine shipyard in Pascagoula, Miss.

PUFFER STYLE PRESERVED



VIC 56

The steam coasting lighter or a puffer', VIC 56, was towed from the Historic Dockyard Chatham to Portsmouth by the tug Christine in late October 2019 having been acquired for continued preservation by Boathouse 4 to join their small fleet of historic vessels berthed adjacent to HMS Warrior.

Built in Faversham in 1945, VIC 56 first sailed north to Rosyth, where she spent most of her career moving stores on the Firth of Forth between Rosyth and Crombie, and sometimes to Leith and Port Edgar as well as to Bandeath and Stirling.

Withdrawn in 1978, she was bought by Henry Cleary, who maintained her in operational condition. The tow to Portsmouth took place in calm conditions and VIC 56 was in steam for the first time at Portsmouth on Thursday 21 November. JM

SPL SAILINGS CANCELLED

FERRY ROUTES

Moby SPL, the joint venture between the Italian ferry giant and St Peter Line, cancelled all December 2019 and January sailings between Stockholm, Helsinki, Talllinn and St Petersburg scheduled for SPL Princess Anastasia (1986/37,583gt) due to what were described as 'unforeseen and unavoidable technical reasons.'

Built by Wärtsilä at Turku in Finland for Viking Line partner Rederi AB Slite as Olympia and originally linking Stockholm and Helsinki, she inaugurated the P&O Ferries service between Portsmouth and Bilbao in 1993 as Pride of Bilbao and remained on the route on until 2010. Pride of Bilbao also regularly fitted in a weekend round trip between Portsmouth and Cherbourg in the summer. Latterly owned by the Irish Continental Group but chartered by P&O, she was moved to launch the St Peter Line operation in 2011. RP



news



APPEAL REACHES £2.3 MILLION TARGET

PRESERVED PADDLER

The appeal to save the paddle steamer Waverley reached its £2.3 million target just seven months after being launched and now the 74-year-old vessel is set to return to service in the summer after the installation of a new boiler. The appeal attracted support from an incredible 8,000 individuals from all over the world, along with contributions from the Paddle Steamer Preservation Society, several

trusts, including £50,000 from the Swire Charity Trust, and £1 million from the Scottish Government.

The new boilers are under construction by Cochrane's Ltd at their Newbie Works in Annan. They are due to be completed during February and, in preparation for their delivery, Waverley was towed from her Glasgow berth to enter dry dock at Greenock, where her distinctive twin funnels were removed to allow access to the boiler room.

Waverley Excursions general manager Paul Semple said: 'Thanks to the fantastic generosity of so many people, we are able to push ahead with Waverley's boiler refit, which will be the most substantial since her rebuild in 2003.'

During the coming summer, Waverley is set to steam again with a programme similar to that which had to be cancelled in 2019, featuring sailings on the Clyde, in Western Scotland, the Mersey, Bristol Channel and the Thames. RP

SPECIAL TRIP

SHIELDHALL

Shieldhall, Britain's largest working screw steamer, will make a special sailing from Southampton on Saturday 30 May to see upwards of 1,500 sailing craft start the annual race around the Isle of Wight. While returning, the 1955-built vessel will pass no fewer than five outward bound cruise liners: Celebrity Silhoutte, Ventura, Iona, Crown Princess and Seven Seas Explorer. The day is a joint venture between Shieldhall's operators, the Solent Steam Packet Company, and the Coastal Cruising Association. For booking details call 0844 357 2324.

The CCA also offer a charter cruise from Southampton Town Quay on Sunday 31 May, when either Solent Cat or Ali Cat from the Solent and Wightline Cruises fleet make a Solent Cruise, visiting the rivers Itchen, Test, Hamble, Beaulieu and Medina, together with a Southampton Docks tour, where Queen Victoria, Norwegian Star, Arcadia and Azura will be berthed. The trip concludes with a visit to Portsmouth Harbour. For booking details send SAE to: CCA, 9 Milner Road, Bournemouth B4 8HD. RP

NEXT-GENERATION LNG

SHORT SEA

Four new next-generation shortsea cargo vessels being built at the WuHu Shipyard in China will feature LNG propulsion and storage systems provided by the technology group Wärtsilä.

The ships have been ordered by Wijnne & Barends Chartering of

the Netherlands, an affiliate of the Dutch Spliethoff Group. The ships will be among the first-ever of their type to be powered by LNG fuel. Because of space restrictions on short-sea cargo ships, Wärtsilä developed a customised solution. The 5,800dwt lo-lo (lift-on, lift-off) vessels will operate in the Baltic and North Seas.



A Four short-sea cargo vessels being built for Wijnne & Barends will feature LNG propulsion and storage systems provided by Wärtsilä. WUNNE & BARENDS

BREAKER ACTIVE AGAIN



ICEBREAKER

Argentina's naval icebreaker ARA Almirante Irizar has completed a round of supplying Argentina's research stations in Antarctica in company with the naval supply ship ARA Bahía Agradable.

Completed in Finland in 1978, the 14,899-tonne displacement icebreaker suffered an extensive fire in an auxiliary generator compartment in 2007 which put her out of service for over a decade. However, during that time four new MAN 9L32/40 diesel engines were installed and the ship's laboratory and research spaces greatly expanded, from 800 ft² to 4,470ft², while accommodation was increased from 245 to 313 people. JS

NATERFRON

าews

BRIEF NEWS

AURORA EXPEDITIONS • The second of the X-Bow vessels being built in China for charter by Aurora will be named Sylvia Earle after the well-known oceanographer and explorer. The 8,000gt 126-passenger ship will enter service in 2021 under charter from Sunstone Ships. WM

CRUISE & MARITIME • CMV's previously announced acquisition of a further two ships from P&O Australia has moved a step forward with the announcement of new names for the ships. Pacific Dawn will join the UK-based CMV fleet in 2021 as Amy Johnson, becoming the new flagship, while Pacific Aria will become Ida Pfeiffer in the German-based Transocean fleet, replacing Astor. That ship will then be transferred to a new CMV French operation as Jules Verne. The new names continue CMV's theme of naming ships after explorers. WM

ANOTHER ICEBREAKER •

Germany's Pella Sietas shipyard at Hamburg has been contracted to build a 120m by 25.5m multipurpose icebreaker for Russia's Rosmorport, which will provide services in Arctic waters. These will include towing, fire-fighting and sea rescue, as well as transporting pilots between ships. To be finished by 2023 at a cost of \$111 million, the vessel will be largest icebreaker ever built in Germany and will be capable of breaking ice up to 2.5m thick. JS

FERRIES FOR PHILIPPINES • The

Chelsea Logistics and Infrastructure Holdings Corporation of the Philippines has ordered a 123m ro-pax ferry from Japan's Fukuoka Shipbuilding, while also taking delivery of a smaller 67m passenger ferry for its service between Cebu and Surigao and a 98m vessel for the southern Philippines. JS

SEASPAN EXPANDS FLEET

• Hong Kong-based Seaspan Corporation, part of the Vancouver, BC-based Seaspan Group and the world's largest charter owner and manager of container ships, has acquired another six vessels at a cost of \$380 million, bringing its fleet to 119 ships. JS



RECORD-BREAKING YEAR AHEAD

PORT NEWS

The Port of Poole is looking forward to a record-breaking cruise year in 2020, with five maiden calls planned by three new operators at the Dorset port. In addition to calls by

regulars Astoria for CMV and Corinthian and Clio for Grand Circle Cruise Line, the port will host Phoenix Reisen's Deutschland and Saga Cruises' Saga Sapphire for the first time between March and September. French luxury operator Ponant Cruises are also bringing Le Boreal, Le Dumont-D'Urville and the 180-passenger newbuild Le Surville to Poole, where improved port facilities and the launch of the 'Cruise Poole' welcome team will be rolled out for the start of the new cruise season. KM

WINDERMERE LAUNCH

LAKE TRIP BOAT

The new Lake Windermere trip boat Swift will enter service during the 2020 season, having recently become the largest craft to be 'launched' onto the Lake for more than 80 years. The size of the vessel meant it was necessary to build smaller sections offsite, before they were transported to Lakeside for final assembly at the end of 2019.

Like Windermere Lake Cruises' existing flagship 'steamers' Swan and Teal, the new vessel boasts

three decks, but is slightly shorter, at 34m in length, which means she will be able her to access some of the smaller jetties in the area.

Swift, which has been designed to operate in all seasons during the year and will improve the quality of the visitors' experience thanks to her comfort and accessibility, was lowered into the water for the first time in the presence of special quests. The 300-seat vessel was built by Netherlands-based Damen, following the signing of a contract in March 2019.



ALL-ELECTRIC



▲ The recently launched Amherst Islander II will be North America's first all-electric ferry when it enters service later this year. DAMEN GROUP

NEWBUILD

The Damen shipyard in Galati, Romania has launched the allelectric ferry Amherst Islander II for Ontario's Ministry of Transportation, with a second larger ferry, Wolfe Islander IV, to follow. Both vessels, the first purpose-built all-electric ferries in North America, will operate on Lake Ontario, serving Amherst and Wolfe islands. The 72m Amherst Islander II will have a loading capacity of up to 42 cars while the larger 99m Wolfe Islander IV will accommodate 80 cars or a mix of cars and four trucks. JS

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A 2019 release from Trumpeter, this 1/350 kit produces a great model of one of the RN three funnelled heavy cruisers, HMS Cornwall, that showed the flag across the world in the thirties. Later in the year we expect a fantastic 1/200 scale Titanic. HMS Cornwall was lost off Ceylon (Sri Lanka) in April 1942.

Rhenania 1/1250 Maersk



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Sixty years of PADDLE STEAMER PRESERVATION

The Paddle Steamer Preservation Society Story Compiled by Richard Clammer

The PSPS was founded in 1959 at a time when this familiar and much-loved class of ship was in steep decline and faced possible extinction. Its aims were to encourage the retention and expansion of existing steamer services, to stimulate public awareness and, ultimately, to purchase and preserve at least one surviving example. Now, 60 years on, this fascinating book records the previously untold history of one of Britain's oldest and most successful maritime preservation societies; one which has succeeded in saving not one but two jewels her crown of the crown of the life type her trage at the icroic paddle steamer.

UK's maritime heritage – the iconic paddle steamers Waverley and Kingswear Castle. Drawing on the PSPS archives and the memories of those most closely involved, the book recalls the 1960s and 70s when members were able to sail on board or charter a wide variety of tugs, ferries and excursion ships; describes the purchase, restoration and subsequent careers of Waverley and Kingswear Castle; and examines the Society's close links with other paddle steamers including Maid of the Loch and Medway Queen. Illustrated with over 200 rare mostly colour photographs, depicting a wonderful array of paddlers from the 1950s onwards, special moments in the careers of the Waverley and Kingswear Castle, plus significant events in the Society's history, this book is essential reading for all paddle steamer enthusiasts. All proceeds from the book will go to PSPS funds and be used to help ensure that Waverley and Kingswear Castle continue to sail into the future.

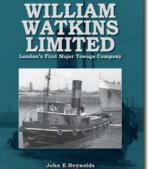
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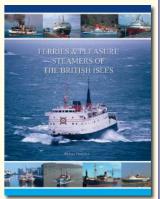
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NEWS IN BRIEF

SURVEY RESPONSE • The Isle of Man Steam Packet company described the result of a customer survey on passenger services and onboard facilities as 'positive', with more than 7,000 people participating. The survey results will be taken into account through the next two or three years as the design work gets under way for a new vessel to replace Douglas-Heysham route mainstay Ben-My-Chree (1998/12,504qt).

ROUTE CLOSURES • Cornish Ferries, which operates Enterprise Boats and the St Mawes and Place Ferries, has put two boats up for sale due to what general manager Caroline Harvey describes as 'changing market forces.' Due for disposal are 100-passenger St Mawes-Falmouth summer ferry May Queen, which completed 40 years of service in 2019, together with Kingsley II, which brought hybrid power to the link between St Mawes and Trelissick in a research programme supporting River Fal trips which has ended.

RANGER SALE • Seatruck Ferries have sold the 1,054-lane-metre Clipper Ranger to Canadian operator CTMA, who have had the 1998-built ro-ro freighter on charter since July 2019, when she replaced 1972-built veteran CTMA Voyageur, which is now lying for sale in Montreal. Clipper Ranger has been renamed CMTA Voyageur II.

LONG JOURNEY ENDS AT HOLYHEAD



Stena Estrid, Stena Line's new 41,671gt vessel for the Holyhead-Dublin route, arrived in the Irish Sea on 22 December 2019 and, after a brief late-night call for berthing trials in Dublin, arrived in the Anglesey port at 0700 next morning. She had taken five weeks to complete the 10,000-nauticalmile journey from the Avic Weihai

with the first of the Stena E-Flexer series making a Central Corridor route debut on 13 January.

With a reduced crew of 27 on board, Stena Estrid's long delivery journey saw her go to Singapore, through the Malacca Straits to Sri Lanka, then via the Indian Ocean and up the Red Sea to the Suez Canal. The second

replace Stena Lagan on Stena's Birkenhead-Belfast service.

Replacing the chartered Stena Superfast X (2002/30,285qt), Stena Estrid completes two return trips a day opposite Stena Adventurer (2003/43,532qt), with departures from Holyhead at 0835 and 2030 and return sailings from Dublin at 1450 and 0215.

EXHAUST SCRUBBERS TO BE FITTED

IRISH SEA

Irish Ferries are having exhaust scrubbers fitted aboard the three largest vessels in their fleet during 2020 overhauls, with Ulysses (2001/50,958qt) leaving the Dublin-Holyhead service on 6 January for the Remontowa Yard at Gdansk, and arriving to find Brittany Ferries vessel Pont-Aven (2004/40,859qt) already there in a floating-dock newly vacated by TT-Line's Huckleberry Finn (1988/26,391qt).

One of Pont-Aven's port side MAK 12VM43 units was damaged by fire in April last year and spent the rest of 2019 running on three engines. Work to fit the replacement engine was expected to take ten weeks and the vessel is due to leave Gdansk on 17 March.

Ulysses will be followed to Poland by Irish Ferries fleetmate Isle of Innishmore (1997/34,031qt) from the Pembroke Dock-Rosslare route, before it is the turn of W.B. Yeats (2018/54,974qt), which winters on the Dublin-Holyhead



crossing prior to spending the summer linking the Irish capital with Cherbourg, France.

Bad weather played havoc with Irish Ferries schedules in November and December 2019, with Isle of Inishmore suffering a number of cancellations and W.B. Yeats losing a night trip to Holyhead on 9 December and the return.

FERRIES IN THE NEWS...FERRIES IN THE NEWS...FERRIES IN THE NEWS...FERRIES IN THE NEWS...FERRIES IN



AKRANES • Smyril Line has increased its fleet to five vessels after buying the 1,511 lane-metre ro-ro Bore Bank, built in 1996 in Norway, at the end of December 2019 for a new route from Faroes capital Tórshavn to Thorlakshofn in western Iceland, and Hirtshals, Denmark, as Akranes.

AUSTAL ROLL-OUT • Bajamar Express, the first of two 118m trimarans on order by Fred. Olsen Express for Canary Islands service, has been moved out of the Western Australian vard's construction hall to have her superstructure fitted and she is on course for delivery during the second quarter of 2020. Bajamar Express and sister Bañaderos Express, building at Austal's yard in the Philippines, will carry 1,100 passengers and 276 cars at speeds of up to 38 knots powered by four MTU diesel engines, with an output of 36,400kW via waterjets.

FIRST VISITOR • The 2,166 lane-metre Seatruck Performance (2012/19,722qt) took time off from Heysham-Warrenpoint sailings to become the first vessel to visit Belfast Dry Dock since Harland and Wolff was rescued by InfraStrata late last year.



ROUTE BOOST • Capacity on Stena Line's North Sea freight service between Killingholme on the Humber and Rotterdam Europoort has been increased by the introduction of the 29,004gt sisters Hatche (2009) and Qezaban (2010), which are on charter from Alternative Transport. They commenced sailings on 21 and 23 January respectively. They replace Stena Forerunner (2003/12,818gt), which provided a single-ship service and is now running between Harwich and Europoort having originally been delivered by the Dalian Yard in China.



CLIPPER PENNANT RETURNS

CHARTER NEWS

After linking Spain with the Canary Islands on charter to the Balearia-Fred. Olsen Express joint venture Canary Bridge Seaways, the 1,830 lane-metre Clipper Pennant (2009/14,759gt) has returned to home waters to join P&O Ferries for a 12-month charter, giving freight support to 17,464gt Dutch-

built ro-pax sisters Norbay (1994) and Norbank (1993) between Liverpool and Dublin.

One of a four-ship series for operation by Seatruck, Clipper Pennant was built in Spain at the Astilleros de Huelva yard. She has had a varied career, including charter spells with DFDS, Stena Line and Smyril Line, in addition to Irish Sea work for Seatruck.

She replaced the Godby
Shipping-owned Mistral
(1999/10,471gt), which went to layup in Zeebrugge before herself
heading to the Canary Bridge
operation between the Spanish
mainland port of Huelva and Las
Palmas, Gran Canaria, taking
over from Volcan de Teneguia
(2007/11,197gt), which had been
providing freight back-up.

UPGRADE FOR STENA'S ROSTOCK PAIR

BALTIC SEA

Stena Line is spending €5million to upgrade public areas of Trelleborg-Rostock route vessels Mecklenburg-Voorpommern (1996/37,907gt, pictured) and Skane (1988/42,705gt), with food outlets, cabins and corridors all receiving renovation in a programme due to be completed before the start of the 2020 peak sailings period. The

work will take place during the vessels' annual overhauls and at other times while in service.

Last year Stena's installation of Japanese-style budget sleeping capsules aboard both vessels proved a success, with more than 5,000 bookings recorded, while the further improvements follow the so-called 'Stena Design Book', which emphasises spaciousness.

Although Stena are now

facing competition from TT-Line, the Rostock run has enjoyed substantial growth in passenger numbers, which are expected to reach a 400,000 record this year.



HUGE DFDS INVESTMENT

CHINA NEWBUILDS

In addition to E-Flexer Côte d'Opale building at Avic Weihai for the DFDS' Dover-Calais route and due for June 2021 delivery, two Baltic class ro-pax giants have been ordered by DFDS from China's Guangzhou Yard. The 54,900gt pair will enter service between Klaipeda, Karlshamn and Kiel in the first half of 2021, offering cabin berths for 600 passenger and 4,500 lane metres of vehicle space, with a 23-knot service speed and twin funnels side by side housing exhaust scrubbers.

Four even larger ro-ro vessels of 60,465gt are on order from another Chinese builder, Jinling, and will take 12 drivers with 6,695



lane metres of vehicle space. Lead ship Hollandia Seaways (pictured) entered service between Ghent and Gothenburg in December 2019, with names of Humbria Seaways and Flandria Seaways announced for two of the three remaining ships, which are all due for delivery this year.

There will be another change by DFDS in the Baltic on 14 April when, at the end of a charter to Brittany Ferries, Baie de Seine (2003/22,328gt), reverts to her original name of Sirena Seaways and replaces Liverpool Seaways (1997).

HE NEWS \dots FERRIES IN THE NEWS \dots



MORE DELAY • Delivery of vessels building for CalMac at the nationalised Ferguson Shipyard at Port Glasgow will be further delayed, with Glen Sannox not ready to start Arran sailings until October 2021 and her as yet unnamed sister for the Uig Triangle links following in 2023.

EASTER DEBUT • Rederi AB Gotland's LNG-powered ferry Thjelvar is expected to appear on the Destination Gotland service between Visby and Nynashamn before the Easter holiday period, joining her 2018-built sister Visborg. They have a capacity for 1,650 passengers with 2,300 car lane-metres and came from the Guangzhou Shipyard in China, which has a further nine ro-pax vessels on order for a number of diffeerent owners, including P&O Ferries, DFDS on order for owners including P&O's Dover-Calais pair and new vessels for DFDS and Algerie Ferries.

VRONSKIY • After a four-month lay-up in Almeria, Spain, the 1978-built/13,505gt veteran has been chartered by FRS Iberia, the Spanish subsidiary of German's Forde Reederi, to run between Motril and Melilla, replacing Golden Bridge (1990/24,463gt).
Vronskiy started as Prinses Beatrix on the Hook of Holland-Harwich run.



TT PURCHASE • Germany's TT-Line is boosting sailings between Trelleborg and Klaipeda to five times weekly using its recent acquisition Marco Polo, which was previously in Mediterranean service between Catania, Sicily and Valletta, Malta for Italian operator Tirrenia as Barbara Krahulik (1993/14,398gt). The new vessel has been sent to the Remontowa shipyard in Gdansk, Poland for the installation of exhaust scrubbers and for work which will extend her passenger accommodation.

BRIEF NEWS

DREAM CRUISES • Genting Hong Kong has entered into a sale and leaseback agreement, in respect of Genting Dream, with a group of four Chinese financial institutions for the amount of US\$900 million. It is understood that about US\$500 million will be used to pay off the existing loans on the ship. A sale and leaseback arrangement has also been entered into in respect of the new Crystal Endeavor. Genting has an ambitious building programme under way, with ships being built at its MV Werften yards in Germany for both Crystal Cruises and Dream Cruises.

PORT OF MIAMI • The two months to September 2019 saw a 22 per cent increase in cruise passengers through the Port of Miami, with a record total of more than 6.8 million. An added boost in due course will be an extension of the Brightline, Virgin Trains USA's high-speed passenger service linking West Palm Beach with Fort Lauderdale and Miami, when the link to the Port of Miami opens.

MYSTIC CRUISES • Mystic is to have seven ships built. The 10,000gt 200-passenger vessels will include four for Atlas Cruises in the USA, to be named World Adventurer, World Discoverer, World Seeker and World Traveller. Additionally, World Navigator and World Voyager are already under construction and World Explorer is in service with Quark Expeditions.

COSTA CRUISES • Costa Atlantica became the first Costa ship to be transferred to the new CSSC Carnival joint venture in China in December 2019. Sistership Costa Mediterranea is to be transferred at a later date. Two 135,000gt ships (with options for four more) are under construction in Shanghai for the new operation.

ONE OCEAN EXPEDITIONS •

Following the repossession of its two chartered former Russian research ships in 2019, One Ocean has struggled to continue with its single ship, RCGS Resolute. Following cancelled sailings, the ship has been laid up in Buenos Aires for some weeks, with the company apparently unable to buy fuel.



NEW SHIPS COMING IN 2020

NAME

ON ORDER

With more than 120 new ocean-going cruise ships still to be delivered, and no sign of a slowing in the rate of new orders, European yards, and in particular those in Finland, France, Germany and Italy, dominate the market.

Smaller cruise ships are being built or part-built in Croatia, Norway, Portugal, Romania and Spain, sometimes in yards that belong to subsidiaries of the main players. A few small vessels are being built in China and Vietnam, but the Carnival/Fincantieri tie-up with the China State Shipbuilding Corporation will potentially open the door for the building of large cruise ships in China.

Of the massive order book, stretching well into 2027, 28 ships, varying in size from 100 passengers to more than 5,000, will be delivered in 2020.

A further 26 ships are scheduled for delivery in 2021, with 27 more in 2022. With very few ships coming out of service, these ships will be adding a very significant amount to global cruise capacity, and it may be quite difficult to fill all of the new berths, particularly in the small ship expedition sector, where the growth is the greatest.

NEW SHIPS DELIVERIES DUE IN 2020

NAIVIE	OPERATOR	PASSENGERS
Celebrity Apex	Celebrity Cruises	2900
Coral Geographer	Coral Expeditions	120
Costa Firenze	Costa Crociere	5200
Crystal Endeavor	Crystal Cruises	200
Enchanted Princess	Princess Cruises	3600
Evrima	Ritz Carlton	300
Flying Clipper	Unknown	300
Fridtjof Nansen	Hurtigruten	530
Havila Capella	Havila Kystruten	*470
Havila Cator	Havila Kystruten	*470
Havila Polaris	Havila Kystruten	*470
Havila Pollux	Havila Kystruten	*470
lona	P&O Cruises	5200
Le Bellot	Ponant	180
Le Jacques Cartier	Ponant	180
Mardi Gras	Carnival Cruise Line	5200
MSC Virtuosa	MSC Cruises	4900
National Geographic Endurance	Lindblad Expeditions	120
Ocean Victory	Victory Cruise Lines	190
Odyssey of the Seas	Royal Caribbean	4200
Scarlet Lady	Virgin Voyages	2800
Sea Cloud Spirit	Sea Cloud Cruises	140
Seven Seas Splendor	Regent Seven Seas	750
Silver Moon	Silversea	600
Silver Origin	Silversea	100
Spirit of Adventure	Saga Cruises	1000
Ultramarine	Quark Expeditions	200
World Voyager	Mystic Cruises	200
* plus deck passengers		

The latest rendering of the new Viking expedition ships. VIKING NAMING AND REBRANDING in June 2019, but was postponed More details have been VIKING after one of the company's river released concerning the Viking Ocean Cruises' Viking ships, Viking Sigyn, was involved itineraries of the two new

Jupiter was named remotely from Los Angeles by soprano Sissel Kyrkjebø on 15 January while the ship was sailing between the Falkland Islands

The original christening event had been due to be held in Oslo in a collision on the Danube in May in which 28 Korean tourists died, when the boat in which they were travelling sank following the accident. Now the cruise brands of Viking River, Ocean and Expedition will all come under the one name - Viking Cruises.

expedition ships, which are due to enter service in 2022. Viking Octantis will operate in Antarctica and the Great Lakes, while sister Viking Polaris will initially be employed in the Arctic when delivered in August 2022, before heading south to Antarctica.

COLLISION

CARNIVAL CRUISE LINE

On 20 December 2019 Carnival Glory (2003/110239qt) struck the bow of Carnival Legend (2002/85,942qt) as she was arriving at the Puerta Maya Terminal in Cozumel, Mexico and manoeuvring to go alongside, in good visibility and weather, although there were reports of strong winds. There appeared to be little damage to the latter ship, but Carnival Glory, which had only been back in service for a month following a major refit, suffered significant damage to the starboard side of her stern.



▲ Carnival Glory was damaged by a collision in Cozumel.

NEW EXPEDITION SHIP

SILVERSEA

and Cape Horn.

When Royal Caribbean Cruises acquired 67 per cent of the share capital of Silversea, one of the first events was the transfer of the second of the Galapagos ships, the construction of which was barely started, from Celebrity to Silversea.

Both companies had a presence in the Galapagos Islands, although that of Celebrity was rather larger. The 5,922qt Celebrity Flora, with a passenger capacity of 100, was the first of this pair and was

delivered in May 2019 by the Dutch De Hoop shipyard at Lobith, way inland on the River Rhine.

On 30 December 2019 the second ship, now named Silver Origin, was launched and will be delivered to Silversea in late March. She will begin operation in the Galápagos Islands in July, with seven-night cruises between San Cristóbal and Baltra. In addition to Silver Origin, Royal Caribbean ordered a pair of so-called Evolution class ships for delivery to Silversea in 2022 and 2023.





HAVILA

With the ongoing problems at the Barreras shipyard in Vigo, which ultimately led to the yard cancelling the Havila order for a pair of Norwegian coastal ships, Havila took the decision to have the work in progress towed to the Tersan yard in Turkey, where the ships will be completed.

Tersan is building the other two ships for Havila. There seems, however, to be a deadweight problem with both pairs of vessels, with different solutions planned. The Spanish-built ships were to have been lengthened,

have had the superstructure completed in aluminium.

Delivery of all the ships is needed before the 1 January 2021 start date for Havila's contract. At present the Spanish ships are about six months late and it is difficult to see how that lost time can be recovered. Havila may be forced into chartering ships in the short term to fulfil its obligations. Ritz Carlton Yacht Collection is having its first ship, Evrima, built at the same yard and appears to have had to make a cash injection in order to get its ship completed.

BACK IN THE DOCK

NORWEGIAN NAVY

The Norwegian Navy has fresh problems after its newest and largest ever warship failed a safety survey. The logistics vessel HNoMS Maud has subsequently been taken out of service following the results of an inspection by DNV GL, the Norwegian-based certification company that quality assures ships.

The ship's lack of upkeep has been highlighted, with evidence that the vessel had not undergone any maintenance for two years while docked at the shipyard in South Korea. This is



likely due to several workplace accidents and the near bankruptcy of the Daewoo Shipbuilding & ME shipyard during construction, which twice delayed delivery. The DNV GL report also cited an oxygen generator in the hospital operating room that posed a major fire risk, along with heavy doors and insufficient onboard lighting

that were potentially hazardous to the crew. The rectification of the deficiencies, which is to take place under warranty, is expected to take several months.



CHINESE INDUSTRY

PLAN

The Chinese People's
Liberation Army Navy (PLAN)
commissioned Shandong
(17), its first domestically
built aircraft carrier, in Hainan
province on 17 December 2019.
The Type 001A is a modified
version of the Type 001
Liaoning, a Soviet-era Admiral
Kuznetsov class aircraft carrier
which was reverse-engineered
into service in 2012.

Naturally similar in profile, the Short Take-Off But Arrested Recovery (STOBAR)-configured Shandong is distinguished by a different island superstructure and new phased array radars. The new ship is capable of operating up to 36 fighter jets, which is 12 more than her predecessor. The construction of two larger Type 002 with catapult launch and arrested recovery (CATOBAR) is already under way.

China's production of warships set a new record in 2019, with the launch of 28 naval vessels for the PLAN. These were a helicopter carrier (LHD), an amphibious landing ship (LPD), ten destroyers and 16 corvettes. Chinese shipyards also enjoyed export success, with orders for ships and submarines from Malaysia, Pakistan and Thailand.

MEXICAN REFORMATION

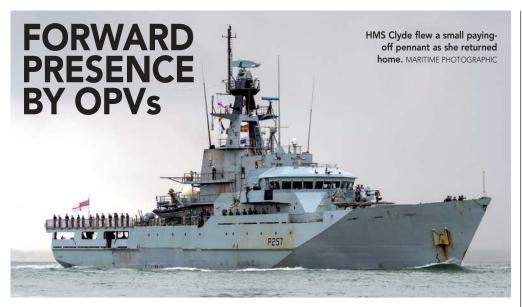
MEXICAN NAVY

The Mexican Navy has conducted platform and combat systems sea trials of the future ARM Reformador (F101) ahead of entry into service in April. The first of class POLA class vessel, meaning Patrulla Oceánica de Largo Alcance (long-range offshore patrol vessel), is based on Damen's SIGMA frigate 10514 modular design.

The Mexico Navy has longterm plans for up to eight ships, which will be divided equally between its Atlantic and Gulf fleets, dependent on funding. With a standard displacement of 2,575 tonnes, the POLAs will be armed with four Harpoon Block II anti-ship missiles, Rolling Airframe Missile (RAM) surfaceto-air missiles, an eight-cell VLS launcher for Evolved Seasparrow Missiles (ESSM) and a 57mm gun.

The ship was built in six modules, two at Damen Schelde Naval Shipbuilding in Vlissingen, Netherlands and four locally at the ASTIMAR 20 naval shipyard in Salina Cruz, Mexico. The Armada de México has now taken delivery of more than ten naval vessels of various designs from the Dutch shipbuilding group.





ROYAL NAVY

Britain's South Atlantic territories have a new permanent guardian and patrol vessel, with HMS Forth arriving at Mount Pleasant in the Falkland Islands on 7 January. The lead Batch 2 River class OPV takes over from HMS Clyde.

The latter returned to Portsmouth on 20 December 2019, 12 years after sailing from

SELECTION NARROWED

the naval base where she was built for the South Atlantic role. She was formally decommissioned just hours after arriving back in the UK. Clyde's lease from BAE Systems expires at the end of March 2020. A rumoured sale to Brazil has not materialised, leaving her future undecided.

The Batch 2 River class OPVs are at the heart of the RN's new 'forward presence' strategy, with

the goal of permanently stationing the vessels in areas key to the UK's military, political and economic interests around the globe. As part of this, HMS Medway deployed to the Caribbean for three years in late January. Of the remainder of the class, HMS Trent arrived at Portsmouth on 19 December. Tamar and Spey are near completion and are expected to become operational by the end of the year.

ARGENTINE RESURGENCE

NETHERLANDS NAVY

The Dutch MoD has narrowed the field of those in contention to replace its Walrus class diesel submarines from four to three. The requirement for four long-range multi-mission submarines now involves a competition between Naval Group (Barracuda), Saab Kockums (A26), and Thyssenkrupp Marine Systems (U212CD) after Navantia (S-80) was eliminated. A contract for the winning design is to be awarded in 2022.

On a more positive note for Navantia, the Spanish shipbuilder has finally achieved closure of the resistant hull of the first of class, Isaac Peral (S81). The key milestone was achieved on 18 December 2019 with the integration of the last section of the boat onto the hull at the shipyard in Cartagena. Her launch is now scheduled for October 2020. The S-80 programme is many years behind schedule as a result of a serious design error.

ARGENTINE NAVY

The first of four OPV87 offshore patrol vessels has been delivered to the Argentine Navy. The refurbished ARA Bouchard was formally handed over at Naval Group's facilities in Toulon on 6 December 2019. The secondhand vessel previously served with the French Navy as FS L'Adroit between 2011 and 2017, having been the company's self-funded design demonstrator.

Prior to redelivery, she underwent a ten-month refit, which included the addition of a 30mm gun and specific customer-requested upgrades to the combat system, propulsion and freshwater production capacity. The modifications will extend patrol endurance to more than three weeks. The three remaining OPVs

The three remaining OPVs are all newbuilds. These will also be ice-strengthened to allow navigation in the South Atlantic. Deliveries are planned to take place at six-monthly intervals.



BRIEF NEWS

ROYAL NAVY • HMS Severn is about to return to sea for the first time in 28 months. The Batch 1 River class OPV will recommission at her affiliated town of Newport and become the RN's designated navigation training ship, a specialist role which was last undertaken by the Leander class frigate HMS Juno. Severn was decommissioned in October 2017 but later reprieved. She was refitted for further service during the first half of 2019.

JMSDF • The Japanese MoD has allocated 3.1 billion yen (US\$28 million) for modifications to the 'destroyer' Izumo to enable her to operate the F-35B. Although the helicopter carrier was designed from the outset to accommodate the SVOTL jets, the flight deck will require special paint to withstand exhaust temperatures, and relocation of the forward Phalanx CIWS to operate them. Her sistership, Kaga, is also expected to be upgraded, making them both de facto aircraft carriers.

IRISH NAVY • The UN Security
Council is examining a report
into how a former Irish Naval
Service patrol vessel ended up
in the hands of a Libyan warlord.
The ex-LÉ Aisling was sold by
the Irish Government in 2017 for
€110,000. She has since arrived
in Libya, contrary to international
sanctions, with various nefarious
transactions behind the raising
of the purchase price to €1.35
million. She has been renamed Al
Karama (Dignity) and rearmed.

US NAVY • Fincantieri Marinette Marine has been awarded a US\$1.3 billion contract for the construction of four Multi-Mission Surface Combatant warships for Saudi Arabia under the Foreign Military Sales programme.

The ships are based on Lockheed Martin's Freedom-variant Littoral Combat Ship, nine of which are in service with the US Navy, with seven more under construction. The steel monohulls are to be built at the Marinette yard in Wisconsin.

CARGO

BRIEF NEWS

EVERGREEN ORDERS CON-GREEN BOXSHIPS • Taiwan's Evergreen Marine Corporation has ordered a series of four 172m by 27.4m con-green container ships from South Korea's Hyundai Mipo Dockyard for delivery starting in 2021. The 1,800TEU capacity vessels, to be built at a cost of \$95 million en bloc, have been developed by Hyundai in conjunction with MAN Energy Solutions and DNV GL to maximise vessel operational efficiency and meet the Energy Efficiency Design Index (EEDI) Phase 3 requirements, which start in 2025. JS

CONTAINERSHIPS TAKES
DELIVERY • Helsinki, Finlandheadquartered Containerships,
now a subsidiary of CMA CGM,
has taken delivery of its fourth
LNG-powered container ship,
the 1,380TEU Containerships
Arctic, from China's Guangzhou
Wenchong shipyard. The
19,850dwt vessel follows
sisterships Containerships
Aurora, Containerships Nord and
Containerships Polar into service,
operating in the Baltic Sea area. JS

DUAL-FUEL BOX SHIP •

Classification society DNV GL has entered into a Joint Development Project (JDP) with China's Huangpu Wenchong Shipbuilding Company concerning the design of a new 5,000TEU dual-fuel container ship for the rapidly expanding intra-Asia trades. The vessel will use LNG as fuel and utilise a hydro-dynamically optimised hull form to reduce water resistance. JS

ANOTHER FOR ROYAL ARCTIC

• Greenland's Royal Arctic Line expects to take delivery of a small 108TEU container ship from Poland's Remontowa shipyard later this year for operation between Greenland's Port of Tasiilaq and Reykjavik, Iceland. The ship will bring Royal Arctic's fleet to seven vessels, made up of five boxships, one reefer and an additional ship being built by Huangpu Wenchong in China. JS



TRISTAR GOES FOR LNG VESSEL

LNG TANKER

The former BP liquefied natural gas tanker British Ruby has been acquired by the United Arab Emirates-based Tristar Transport of Dubai and was renamed Tristar Ruby in December2019. Flying the flag of Liberia, she became the

first LNG vessel to be added to the Tristar fleet of 30 tankers.

The 84,491dwt vessel, built in 2008, will remain on long-term charter to BP Shipping as she has been since delivery, and will continue to trade worldwide. She departed Trinidad and Tobago just after Christmas under her new

name, bound for the Cape. The 288m vessel has a cargo capacity of 155,000m³ and averages 23 knots on passage. The vessel was constructed by Hyundai Heavy Industries in Ulsan. Her three sisters, British Diamond, British Emerald and British Sapphire, remain in the BP fleet. RC

CORNISH BREAKDOWN

SHUTTLE TANKERS

The 5,319dwt Turkish cargo vessel Dinamik suffered a main engine breakdown off the Cornish coast on 6 August 2019 while she was on a voyage from Cardiff to Antwerp, Belgium in ballast. The vessel, built by Hidrodinamik Shipyard, Istanbul in 2007, anchored 15 nautical miles north-west of Pendeen, and the Sea Wolf Marine Group tug Gladiator (1975), based

at Falmouth, was assigned to assist, arriving on the morning of 8 August to connect a tow

The 92m cargo vessel was then taken to Falmouth for inspections and repairs at the Queens Wharf North in Falmouth. Dinamik eventually moved into Falmouth Bay to await orders, finally sailing for Pasajes, Spain on 15 November 2015 to return to service. The vessel is operated by Statu Gemi Kiralama Ve Ticaret. RC



The Turkish cargo vessel Dinamik at Queens Wharf North, Falmouth, where she spent some time in late 2019 after breaking down off the Cornish Coast. EDWARD M. MOORHOUSE

FIRST C-BOX FOR BREAKING

MULTI-PURPOSE

The first C-Box type multi-purpose vessel to be demolished arrived at Indian shipbreakers at Alang before Christmas. The 20,458dwt Mermaid was one of 11 C-Box types built at Flensburg between 1998 and 2000 for Egon Oldendorff. She was delivered as Johann Oldendorff on 4 January 1999.

The vessel has five box-shaped holds and is equipped with two 60-tonne cranes. The 13,066gt vessel measures 153.22m by 23.6m and has a capacity of 1,300TEU. She had several other names before becoming the Liberian-flagged Luka in 2010. RC



▲ The C-Box type multi-purpose vessel Luka in the Bosphorus in 2016. She was renamed Mermaid in July 2019 and by the end of the year had gone to Indian breakers. SIMON SMITH



COASTER

Germany's SAL Heavy Lift is set to become the first shipping company in the world to adopt a new hydrogen/methanol fuel technology following the successful testing of the system aboard its 9,417dwt Annette.

The technology, developed

by FUELSAVE GmbH, works by dynamically injecting a mix of hydrogen, oxygen, water and methanol into selected parts of the air intake manifolds of both the main engine and auxiliary engines to allow a more thorough combustion process.

Testing by SAL disclosed that it produced average reductions

of ten per cent less CO2, 15 per cent less SOx, 30-80 per cent less NOx and 40 per cent less particle emissions. SAL plans to have the system installed on all six of its ships, with the 6,629dwt heavylifter Trina being refitted this quarter, and the remainder of the fleet to follow over the course of the next 18 months. JS

TEEKAY'S INNOVATION

SHUTTLE TANKERS

Bermuda-based Teekay Offshore expects to place a series of four 130,000dwt LNG-burning hybrid shuttle tankers in service this year as they are delivered by South Korea's Samsung Hl. Led by Aurora Spirit, the innovative ships are to be employed in the North Sea to carry crude oil from offshore drilling structures to shore-based refineries. Designed to operate on LNG, the ships' emissions will be reduced by approximately 40 per cent annually. JS



▲ Teekay Shipping's innovative shuttle tanker Aurora Spirit will transport crude oil from platforms in the North Sea. TEEKAY SHIPPING

ANOTHER ONE DELIVERED



▲ The 15th Arc7 icebreaking LNG carrier ordered for Russia's Yamal LNG project, the 97,000dwt Yakov Gakkel, has been delivered. I. APPINO

LNG CARRIER

South Korea's Daewoo Shipbuilding and Marine Engineering (DSME) has delivered the 172,600m³ capacity Yakov Gakkel to a joint venture consisting of Teekay LNG and China LNG Shipping.

The 299m ship becomes the sixth vessel owned and operated by the joint venture and also the

15th and final Arc7 icebreaking LNG carrier ordered for the Yamal LNG terminal in the Russian Arctic. All of the ships are equipped with dual-fuel diesel/electric propulsion systems powering ABB-furnished Azipod units, and are capable of operating yearround in the Arctic without the support of icebreakers, except in the most severe conditions. JS

ALL CHANGE IN INDIA

CHEMICAL TANKER

Mumbai-based Seven Islands Shipping continues to expand, adding larger vessels to its fleet while disposing of older, smaller ships. The latest acquisition is the 46,344 dwt chemical/ product tanker Apostolos A, built in 1999 as Minerva Zen by Daedong Shipbuilding Co of South Korea. Purchased from Ancora Investment Trust, she has been renamed Jasmine under the Indian flag.

For the first time since the company's founding in 2002, the fleet totals in excess of a million tons dwt. Recent disposals include Orchids (1986) and Windsor (1996), which have been sold to Bangladeshi breakers. RC



POSITIVE FUTURE



TRAWLER

The future of Hull's last distantwater trawler, Arctic Corsair, which was built in 1960, has been assured by a grant of £13.6 million from the National Lottery Heritage Fund as part of a major maritime development at Hull, which will include the Maritime Museum, Dock Office Chambers and the North End Shipyard, as well as the preservation of the Spurn Lightship.

Extra funding of £10 million will be provided by Hull City Council, along with £4.3 million for development of Queens Gardens to form a trail connecting the attractions.



NEW HOME FOR CHARTERHOUSE

LIFEBOAT

The historic lifeboat Charterhouse, built in 1909 for service at Fishguard with funding from Charterhouse School, has found a new home at the West Wales Maritime Museum at Pembroke Dock, where she arrived in December 2019.

When built, Charterhouse was the most advanced lifeboat in Wales, being the first to be fitted with an engine. She also carried 12 oars and two small sails. She took part in many rescues, including saving all but one of the crew of the Dutch schooner Hermina off Fishquard in 1920.

Replaced at Fishguard in 1931, Charterhouse was sold by the RNLI to become a private yacht in North Wales until 2009, when she returned to Fishguard for restoration to her original condition with the aid of Heritage Lottery funding. She will be open to the public in her new home in the spring.



MERSEY FERRY

Time is running out for the former Mersey ferry Egremont, which is lying at Sharpness, where she is for sale for offers over £100,000. However, with no takers so far, she remains under serious threat of deconstruction.

Egremont was built in 1951 by Philip & Son of Dartmouth for service between Liverpool and the Wirral, for which she could carry 1,462 passengers, and for Mersey cruising, on which she could accommodate 700.

Withdrawn in 1976, she was bought for static use as a clubhouse and sailing school at Salcombe, having her engines removed and simple bunk accommodation for 93 provided. She remained there for 40 years until 2016, when she was towed to Sharpness for a major refit and upgrade to turn her into a small boutique hotel and sailing school. However, the £2 million project ground to a halt when Salcombe Harbour Board was not able to offer a mooring licence for more than a year.

REBUILD FOR KAISER WILHELM

PADDLE STEAMER

The German paddle steamer Kaiser Wilhelm is undergoing a major rebuild at a cost of around €950,000, funded largely by the Federal Government. The work includes replacing the stern and fitting a new boiler, with two furnaces, which is of welded rather than rivetted construction but otherwise is the same shape and format as the one it is replacing. It has traditional domed rather

than flat end plates, which help to extend a boiler's life.

Kaiser Wilhelm was built in Dresden in 1900 for service on the River Weser mostly between Hameln and Hann Munden and continued on these routes up to 1970, when she was withdrawn and taken into operational preservation on the River Elbe from a new base at Lauenberg. Since then she has sailed on about 20 operating days a year, carrying up to 270 passengers.



news

CALSHOT SPIT LIGHTSHIP ON THE MOVE



LIGHTSHIP

Calshot Spit Lightship was moved on self-propelling rollers through the streets of Southampton in December 2019 the 1.2km distance from her old position in the Docks to a new site, where she will become part of the Solent Sky Museum. Built as LV 48 in 1914 with an iron hull of rivetted construction by local shipbuilder John Thornycroft for Trinity House, she spent her long operational

career anchored at the entrance to Southampton Water, where she helped to guide all the liners of the day, and other ships, in and out of the port, not only by her light at night but also, as she was on a swinging mooring, by the direction in which she was pointing, indicating to pilots the tidal set. Six crew lived in cramped conditions, keeping the light and foghorn operating and recording shipping movements.

In 1987 she was replaced by a catamaran buoy and then found a new life after being lifted out onto the quay, firstly at the Ocean Village. Since 2010 she has been near the old Ocean Terminal.

Restoration for her new role to become part of the museum's café is expected to cost around £70,000, and the work will be undertaken partly by volunteers. The museum is also trying to trace any past crew members, or their relatives, from her days as a Trinity House lightship.



WRECK SITE PROTECTED

BATTLESHIP

The wreck of the pre-World War I battleship HMS Montagu, and the steps leading down to it on Lundy Island, have been granted protected status by the Department of Digital, Culture, Media and Sport. Montagu was built in 1901 and is an example of the transition from the ironclads of the late 19th century to the giant turbine-driven Dreadnoughts built from 1906.

She ran aground in thick fog on the rocks at Shutter Point on

Lundy on 30 May 1906 during radio communications trials and, due to her position, could not be saved. Much of the ship was dismantled in 1907, with the steps in the rocks leading down to the wreck built to facilitate this.

Duncan Wilson, Chief Executive of Historic England, said: 'Not only is the wreck of HMS Montagu important for what it can tell us about pre-World War I naval shipbuilding, but it is linked to the landscape of Lundy Island by the distinctive flight of rock-cut steps.'

SECOND SNARK SAVED

PASSENGER VESSEL

One of the Clyde's most famous smaller passenger vessels, Second Snark, has been saved from the scrapyard thanks to the intervention of former owner Hamish Munro, who provided funding to buy her and bring her back from Plymouth by road to the Clyde at Fairlie in November 2019.

Built in 1938 by Denny of Dumbarton for their own use as a yard tender, and with a Passenger Certificate for 127, Second Snark was sold into private ownership in 1963. She returned to the Clyde in 1969 for Clyde Marine's services as a tender for visiting ships, excursions, charters and for use on their ferry connections, particularly between Gourock and Kilcreggan. In 2017 she sailed south under her own power to Plymouth, where she was laid up and put up for sale.



▲ The Second Snark Preservation Society has so far £400,000 to return the iconic vessel to her old routes.

NEWS FEATURE John Pagni

LNG MAKES BULKER







NG is becoming the fuel of choice for the future. In the Baltic, the main but not the only driver of the fuel's use, is the Emission Control Area, which was set up in 2015 and limits sulphur exhaust to 0.1 per cent. So far, just a few non-LNG carriers use the environmentally friendly fuel. But more shipowners are opting to use it, notably Finnish company ESL Shipping, which recently introduced the world's first ever LNG-fuelled dry bulkers.

The two ships, Viikki and her sister Haaga, arrived in the Baltic in November 2018 to considerable interest from the maritime world. The two 19,958gt ships are unlike any others, but surely more will follow. Until their order from Jinling Shipyard in late 2015, cargo ship owners had

opted for other technologies to reduce emissions: scrubbers or low-sulphur fuels, such as MDO/ MGO, or even low-sulphur HFO.

Two ferry companies, Viking Line and Tallink, took the plunge with dual-fuel ships Viking Grace and Megastar (see SM, May 2013 and April 2017 for more on LNG). Finland also built the coast guard OPS (offshore patrol ship) Turva and ice-breaker Polaris, which burn LNG as the main fuel.

Non-passenger vessels are often unsophisticated, having the simple job of carrying cargo from A to B. However, the Viikki class is different, having many innovative design features. On the outside Viikki and Haaga look much like any other modern bulker (except for their green livery with 'Powered by Natural

Gas' on their sides). But much was done to optimise the hull by CFD (computer fluid dynamics) and on testing for the ice-class 1A ships, which will operate in the Baltic Sea year-round when ice can be over a metre thick in mid-winter.

Their bow and stern thruster openings are scalloped (shaped) with streamlining grids to aid water flow, and the hull has a low-friction ice-resistant paint with no antifouling additive. The hulls will be cleaned at regular intervals to reduce drag, while surface smoothness was incorporated into the hulls during the construction process.

The ships' propulsion system has the first multi-fuel option at sea. Instead of the usual dual fuel, the master of Viikki or Haaga has the choice of three: LNG, MDO and even low-sulphur HFO. The

large 390m³ LNG tank is clearly visible at the stern, enabling cargo operations and bunkering to be undertaken simultaneously.

The tanks for the other two fuels are located inside the stern area and protected by void spacing. The ships' range on LNG is 4,000 nautical miles, which can be extended to 9,000nm if all the tank capacities are fully utilised.

All three fuels can be burnt in the one main engine, a multi-fuel MAN B&W 5G45ME-C9.5.GI, which produces 6,000kW. Engine efficiency is improved and extra power may be provided by the permanent magnet shaft generator, which can add 1,250kW of extra power from the auxiliary engines (which also run on LNG) when needed, in ice conditions for example.

BREAKTHROUGH

John Pagni reports on the world's first LNG-fuelled dry bulkers, which were recently built for the Finnish company ESL Shipping.



LNG BENEFITS

LNG emission reductions compared to 0.1 per cent sulphur fuel oil

- 98 per cent less particulates (soot, etc)
- 92 per cent less Sulphur Oxide (SOx)
- 57 per cent less carbon dioxide (CO₂)
- 25 per cent less nitrogen oxide (NO₂)



▲ The engine room.



▲ The bridge.

The magnet is positioned on the shaft line between the generator and propeller. A rudder-propeller supplemented by a combination of four strator fins optimises water flow, aiding fuel efficiency and manoeuvrability.

The three MAN dual-fuel auxiliary engines (two 1,000kW and one 650kW) supply the 1,000kW and stern thrusters, as well as delivering more power to the propeller. Both ships also have onshore power supply plugs, the first such extras to be found on cargo ships. When berthed, the ships' fuel consumption and emissions are zero, as all engines can be shut down.

Exhaust gas heat recovery is helped by thermal insulation, and a heat recovery wheel cuts cooling

energy by 30 per cent and heating energy needs by 45 per cent compared to normal systems. This feature was tested successfully at -20°C in Luleå, Sweden.

Although the cargoes of iron ore pellets, lime and other raw materials, plus coal for steelworks and power station customers, are not remarkable, the holds and their handling systems are. Hatch covers open the whole length of all three holds together.

Three electro-hydraulic derrick cranes with a 30m outreach operate automatically, watched by an operator on the bridge, sitting in a simulator-like set-up, who can take over manually if necessary. Unloading and loading averages 1,000 tons of cargo per hour, as the crane grabs do not have to go over hatch covers.

After cargo discharge, the washing water can either be re-used or piped ashore for correct disposal. The ballast water treatment technology employed is approved by the US Coast Guard, and has worked with brackish, cold and muddy waters, the harshest conditions for a BWTS.

There are just 12 crew, including a full-time cook, needed, compared to 14-16 on ESL's older ships. There are 19 cabins, a mess room and a gym, as well as a sauna with a large sea-view window, a must aboard a Finnish-flagged ship. The crews are made up of Finns and other nationalities, and Haaga was Portuguese-flagged initially, but is now on Finland's registry. ESL Shipping's vessels are all named after suburbs of Helsinki, and the

new newbuilds are no exception.

Both ships took the unusual North East Passage route when coming to the Baltic, carrying special cargoes from Japan to customers in the Baltic, which defrayed the normal delivery expenses. The three-week voyage also cut 40 per cent off the traditional Panama Canal route. Being green and clean is not cheap: the ships cost a combined €60 million, of which the EU contributed €8.5 million.

VIIKKI AND HAAGA

BUILT 2018, Jinling Shipyard, China

DIMENSIONS 160m x 26m, draught 10m (moulded)

SPEED 12 knots

CAPACITY three double-skin holds totalling 33,000m³ or 25,600 tons

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FUTURE FERRIES

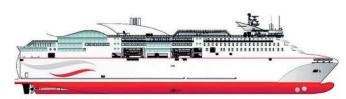
Major ferry contracts for the 2020s

Continuing the overview of the world's largest ferries, Russell Plummer turns the spotlight on over 30 ro-pax vessels in excess of 30,000gt that are due to enter service from this year into 2024.

ore than 30 large new ferries are set for construction and delivery into 2024, with two thirds of these coming from yards in China, among them impressive products of the 42,000gt Stena E-Flexer series carrying 1,100 passengers and with 3,600 lane metres of vehicle space. Taking shape at the Avic Weihai Yard in Shandong Province, they will join the fleets of DFDS Seaways, Brittany Ferries and the Stena Group, with the latter being the driving force behind their

design and construction.

The Swedish ferry giant's Irish Sea route between Holyhead and Dublin welcomed the first E-Flexer, Stena Estrid, at the beginning of 2020, with sisters Stena Edda and Stena Embla due to follow later in the year and 2021. They will operate on the route from Birkenhead Twelve Quays to Belfast, when current Visentini-built pair Stena Lagan and Stena Mersey go to the Sedef Shipyard in Turkey for extensive rebuilding work to boost capacity close to E-Flexer levels. They will go from 2,238 to 2,875 lane metres, and cabins from 102 to 194.



▲ An impression of a ferry due for delivery in 2021 from the Barreras yard in Vigo to Spanish operator Armas.

E-FLEXERS ON CHARTER

Brittany Ferries are set to long-term bareboat charter three E-Flexers, on order from Avic Weihai, for services between Portsmouth and Plymouth to Northern Spain, with the first, Galicia, scheduled for late 2020 delivery. Both Salamanca, expected in 2021, and a third vessel to be added in 2023 as Santona will be LNG-powered. Brittany Ferries also hope that the much delayed 42,500gt Honfleur will finally appear from FSG at Flensburg, to enter service from Portsmouth to Caen-Ouistreham opposite Mont St Michel (2002/35,592gt),

with current second vessel *Normandie* (1992/27,541gt) switching to sail between Portsmouth and Le Havre.

While work on the E-Flexer series has been under way, the Avic yard has undergone a major change of ownership, with just under 70 per cent of total shareholding now owned by the state-controlled China Merchants which, in the process, became the country's fourth largest shipbuilding group. Stena have since ordered two enlarged E-Flexers for delivery in 2022, with increased length, from 214.5m to 239.7m, to boost vehicle capacity by 500 lane metres to a total of 3,600.

In contrast to the overnight sailings role for the first vessels, including 23-hour trips to Northern Spain for the Brittany Ferries trio, an E-flexer is also heading for DFDS Seaways' 90-minute Dover-Calais crossing. Keellaying for *Côte d'Opale* took place late in October last year. She will enter service at the start of a ten-year bareboat charter from Stena in 2021,



▲ First impression of two ferries coming from China's Guangzhou Yard that will join P&O's Dover-Calais fleet in 2023.





▲ Côte d'Opale will join P&O Ferries Dover-Calais route in 2021.



▲ The 39,761gt Guangzhou-built Thjelvar was delivered to Destination Gotland in January.



▲ A name has still to be announced for a 67,300gt Irish Ferries vessel from FSG in Germany.

showing how the design can be adapted from overnight ferry to short-route day vessel. DFDS are also awaiting two 23-knot Baltic class ro-pax giants of 54,900gt from Guangzhou International, China, with delivery scheduled for March and September 2021, handling 600 passengers with 4,500 lane metres of vehicle space.

DOVER-CALAIS SHIPS

P&O Ferries have also placed a major two-vessel order with Guangzhou for their Dover-Calais route for a 40,600gt/230m pair designed by Danish naval architects OSK-ShipTech, expected in service during 2023. Costing £130 million each, they are to be double-ended, with two bridges cutting out the need for in-port berthing movements, and saving seven minutes on outward and return journey times.

A unique bow shape will reduce wave resistance, especially around thruster openings. Accommodation for 1,500 passengers is to come in a two-decks-high central structure, with double-height panoramic windows, along with 1,500m² of outside deck space.



▲ Brittany Ferries' Galicia close to float-out at China's Avic Weihai yard.



▲ At 63,800gt Viking Glory will be Viking Line's biggest ever vessel when delivered in December.



 $\ \ \, \triangle$ Also as-yet-unnamed is a vessel building in Poland with delivery to Polferries due next year.

P&O have also opted for a combination of oil fuel and batteries for propulsion, with any surplus power generated going to the batteries.

TT-Line Tasmania hope to get their largest ships to date for the Port Melbourne-Devonport route. The presently unnamed 50,600gt pair on order from FSG are due for delivery from Flensburg in 2021. Germany's TT-Line has looked to China for the first time, with a pair of 45,000gt vessels on order from the Jinling yard, planned for completion this year, for 800 passengers and 4,600 lane metres of cars and trucks on

Germany-Sweden services from Travemünde to Trelleborg. This route is currently maintained by *Nils Holgersson* (2001/36,458gt) and *Peter Pan* (2001/44,245gt), which was lengthened by 30m early in 2018. The pair maintain the company's tradition for vessels carrying the names of fairy tale characters.

MOBY LINES

The largest vessels in the current order books are two 69,000gt giants for Italy's Moby Lines, which are due in 2022 from the Guangzhou yard at Nansha in China. They



More than 2,800 people took part in a competition to decide the name for Tallink's 50,000gt newbuild, which is due from Finland's Rauma Yard in 2022. The final choice was MyStar.



will take 2,500 passengers and 1,300 cars on vehicle decks with a total of 3,800 lane metres. Initially, they will be scrubberfitted but are LNG-ready, with scope for fuel tanks to be installed later. Designed for the Livorno-Olbia route, they will have Mediterranean-style stern-loading, with escalators to take foot passengers to the upper decks. A feature in the main restaurants will be a glass-walled central galley, where passengers can see their meals being cooked.

Two other ferries in excess of 60,000gt are due to come on stream this year: a still-to-benamed 67,300gt Irish Ferries ro-pax from FSG offering cabin berths for 600 of a 1,800 passenger total, and Viking Line's first order from a Chinese yard, the 63,800gt *Viking Glory*, to be delivered by Xiamen Shipbuilding in December for

▶ Transport Tasmania has looked to the FSG Yard in Flensburg, Germany, for a pair of 50,600gt vessels due to be delivered for service between Melbourne and Devonport, Tasmania, in 2021.

service in the Baltic between Finland and Sweden. She will take up to 2,800 passengers and 600 cars on 1,500 lanemetre vehicle decks.

SULPHUR-FREE ENGINES

Viking Glory will be the world's first vessel with Wärtsilä 31DF dual-fuel engines running completely on sulphur-free liquefied natural gas, and is to be able to use biogas when it becomes a viable alternative fuel in the future. The six engines will give a service speed of 22 knots; there will also be sail assistance from two top-deck towers as the vessel replaces

Amorella (1988/34,384gt).

Tallink have confirmed that the near-sister to the 2017-built 49,134gt *Megastar* will be named *MyStar*. Work is due to begin in spring 2020 at Finland's Rauma Yard, with delivery expected towards the end of 2021. More than 2,800 people from 30 different countries around the world took part in a competition to select a name for the 50,000gt

▼ The recently amalgamated China Merchants Jinling Shipyard (Weihai), previously known as AVIC Weihai, has become a favourite of European ferry operators and has recently been contracted to build two ice-classed 1,100-passenger capacity ro-pax vessels for delivery by 2023 which will be Finnlines' new twin flagships. GRIMALDI GROUP



▲ E-Flexer Salamander will bring LNG power to UK-Spain links for Brittany Ferries from 2023.





vessel, which is designed to take 2,800 passengers with 3,000 lane metres for vehicles.

Gotland Rederi AB have also placed a first order in China for the 32,313gt

Thjelvar to boost the Destination Gotland fleet, and await imminent delivery of the 1,650-passenger/1,750-lanemetre vessel from Guangzhou. Nearer home, the Spanish

yard of Barreras at Vigo is set to deliver an as-yet-unnamed 39,761gt vessel for Western Mediterranean service in the Spanish Armas fleet. Polferries are also still to announce the name for a 33,000gt vessel from Geryfia Marine which will boost their Baltic fleet in 2021.

CHINA OCEAN SHIPPING

Chinese operators are also playing their part in keeping home yards busy, with China Ocean Shipping (COSCO) awaiting completion of a 32,653gt vessel for service in South Korea, with a larger pair of 43,000gt ships taking 1,370 passengers and 2,800 lane-metres for vehicles due to follow from the Guangzhou vard in 2021.

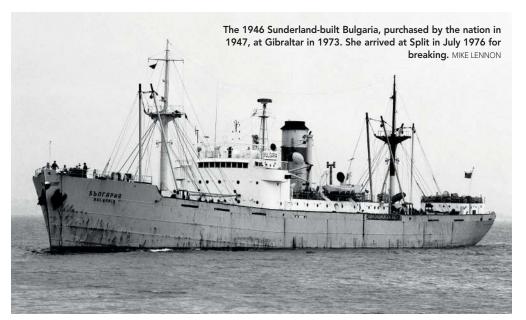
Now fitting out at the Huanghai Yard is the 44,200gt *Zhong Hua Fu Xing Haq*, which is to carry almost 2,000 passengers and 3,050 lane-metres of vehicles on the domestic routes of Bohai Ferry Group. Also due this year in Chinese home routes service is *Sheng Sheng 3*, a 37,000gt vessel building at Huanghai for operation by Weihai Haida, carrying up to 2,265 passengers with 2,580 lane metres of vehicle space.

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▲ Zhong Hua Fu Xing is due to enter service in Chinese waters for Bohai Ferry in 2020.

MAJOR RO-PAX NEWBUILDINGS 2020-2024

VESSEL	BUILDER	OWNER	DEL.	GT	PASS.	LN M	ROUTE	
MOBY 1	Guangzhou	Moby Lines	2022	69,500	2,500	3,800	Mediterranean	
MOBY 2	Guangzhou	Moby Lines	2022	69,500	2,500	3,800	Mediterranean	
(NAME TBA)	FSG, Germany	Irish Ferries	2020	67,300	1,800	5,615	Irish Sea	
VIKING GLORY	Xiamen, China	Viking Line	2020	63,800	2,800	1,500	Baltic Sea	
BALTIC CLASS 1	Guangzhou	DFDS	2021	54,900	600	4,500	Baltic Sea	
BALTIC CLASS 2	Guangzhou	DFDS	2021	54,900	600	4,500	Baltic Sea	
TT TASMANIA 1	FSG, Germany	TT-Line Tasm.	2021	50,600	1,800	2,500	Melbourne-Devonport	
TT TASMANIA 2	FSG, Germany	TT-Line Tasm.	2021	50,600	1,800	2,500	Melbourne-Devonport	
MYSTAR	Rauma, Finland	Tallink	2022	50,000	2,800	3,000	Baltic Sea	
BADJI III	Guangzhou	ENTMV	2020	48,000	1,800	TBC	Algeria-Spain-France	
(NAME TBA) 1	Jinling, China	TT-Line	2022	45,000	800	4,600	Germany-Sweden	
(NAME TBA) 2	Jinling, China	TT-Line	2022	45,000	800	4,600	Germany-Sweden	
(NAME TBA) 1*	Guangzhou	P&O Ferries	2023	44,600	1,500	2,800	Dover-Calais	
(NAME TBA) 2*	Guangzhou	P&O Ferries	2023	44,600	1,500	2,800	Dover-Calais	
ZONG HUA FU	Huanghai	Bohai Ferry	2020	44,200	1,967	3,050	Chinese waters	
COSCO 1	GSI, China	China Ocean	2021	43,000	1,370	2,800	Chinese waters	
COSCO 2	GSI, China	China Ocean	2021	43,000	1,370	2,800	Chinese waters	
HONFLEUR	FSG,Germany	Brittany Ferries	2020	42,500	1,680	2,400	UK-France	
STENA ESTRID	Avic Weihai	Stena Line	2020	42,000	1,000	3,100	Irish Sea	
STENA EDDA	Avic Weihai	Stena Line	2020	42,000	1,000	3,100	Irish Sea	
STENA EMBLA	Avic Weihai	Stena Line	2021	42,000	1,000	3,100	Irish Sea	
COTE D'OPALE	Avic Weihai	DFDS Seaways	2021	42,000	1,000	3,100	Dover-Calais	
E-FLEXER 7	Avic Weihai	Stena Line	2022	TBC	1,200	3,600	TBC	
E-FLEXER 8	Avic Weihai	Stena Line	2022	TBC	1,200	3,600	TBC	
GALICIA	Avic Weihai	Brittany Ferries	2020	42,000	1,100	3,100	UK-Spain	
SALAMANCA	Avic Wiehai	Brittany Ferries	2021	42,000	1,100	2,758	UK-Spain	
SANTONA	Avic Weihai	Brittany Ferries	2023	42,000	1,100	2,758	UK-Spain	
BARRERAS	Barrearas	Armas Nav.	2021	39,761	1,800	3,110	Mediterranean	
SHENG 3	Huanghai, China	Weihai Haida	2020	37,000	2,265	2,580	Chinese waters	
(NAME TBA)	Gryfia Marine	Polferries	2021	33,000	674	4,000	Baltic Sea	
(NAME TBA)	Tianjin Xingang	China Shipping	2020	32,653	700	2,000	China-South Korea	
THJELVAR	Guangzhou	Gotlandrederi	2020	32,313	1,650	1,750	Baltic Sea	
(NAME TBA)	Visentini, Italy	Corsica Ferries	2022	32,000	700	2,000	Mediterranean	



BULGARIAN POST-WAR SHIPPING

Malcolm Cranfield describes the post-war development of the Communist state of Bulgaria's shipping fleet through acquisition from other nations, including Great Britain, largely by private initiative.





ulgaria entered World War II on 1 March 1941 on the side of the Axis powers, with its nine vessels being requisitioned for war service, and was defeated just over three years later, in September 1944, when Russian troops occupied the country. In 1946 Georgi Dimitrov returned from exile to become leader of the ruling Communist party, with Bulgaria being declared a People's Republic.

The oldest of Bulgaria's ships when the country entered the war was the 1894 Tyneside-built *Bulgaria*, which was torpedoed by HMS *Unruly* on 8 October 1943. She was replaced in June 1947 by the former *Empire Flamborough*, delivered by Wm Pickersgill at Sunderland

◀ The 1944 Copenhagen-built Rodina, purchased by Bulgaria in 1946, seen passing Maassluis on 12 July 1968. She had been contracted to Burmeister & Wain at Copenhagen by Schiffahrt-Treuhand GmbH for Hamburg-Amerika Linie but was delivered in August 1945 as Fornaes to the Danish state shipping company established to carry out the administration of ships built under the Danish-German Hanseatic ship programme. Rodina finally arrived at Split in January 1976 for breaking. AUTHOR



▲ Vassil Levsky, the 1943 Burntisland-built former grain carrying merchant aircraft carrier Empire Mackendrick purchased by Bulgaria in 1957, at Gibraltar on 27 February 1964. She was detained in the Great Bitter Lake, Suez Canal on 6 June 1967 at the start of the Arab–Israeli Six Day War. Following her release on 6 June 1975, she was towed direct to breakers at Split. MIKE LENNON

to Norwegian owner Chr. Østberg in March 1946 as *Vindeagen*. The Varnabased shipping company Navigation Maritime Bulgare (Navibulgar), the postwar successor to Sociètè Commerciale Bulgare de Navigation à Vapeur, established in 1894, operated this ship from 1947 until 1976. At some point, possibly on Tyneside in 1963, she was given a modern wheelhouse and bridge and a cowl to her funnel.

An important figure in the post-war history of Bulgaria's shipping was Georgi Naydenov (1927-98). He joined the Partisan movement in their fight against fascism in 1942 and, together with the Bulgarian-backed Algerian revolutionary Mabet Sharef ('Doctor Hashemi'), created a joint venture in 1954, based at Vaduz in Liechtenstein, and in July 1961 formed the trading company Imextracom Establishment.

In November 1961, following the success in 1960 of a blockade-breaking voyage to Algeria by Navibulgar's *Breza*, the 1946-built *Bulgaria* was employed to

break the French blockade with another shipment of weapons for the revolutionary forces. In April 1962 the holding company, Texim was formed as a private organisation within the Bulgarian socialist economy, and in 1963 Imextracom

1 • AC	QUIS	ITIONS BY TEX	(IM 1963 -	- 1966
NAME	BUILT	FORMER NAMES	REN. 1970	FATE
Beni Saf	1948	Anunciada (Switzerland)		BU 1974
Atlas (1)	1946	Raunala (Sweden)	Bogdan	BU 1982
Antares	1946	Herdis Torm (Denmark)	Vasil Petleshkov	BU Split 1977
Arcturus	1951	Else Nielsen (Denmark)	Panagurishte	BU 1976
Afelion	1943	Bolivia (Denmark)	Vratza	BU Split 1973
Algol (2)	1945	Gull, Roda Seam	Sakar	BU Split 1972
Andromeda (2)	1945	Osprey, Pocahontas Seam	Slavianka	BU Split 1972
Aldebaran (3)	1949	Nordpol (Norway)	Dobri Voinikov	Sold 1976
Altair	1955	Millerntor (W Germany)	Vasil Aprilov	BU 1994
Alferatz (4)	1952	Allobrogia (Switzerland)	Vasil Drumev	Sold 1980
Alkaid (5)	1949	Brandanger (Norway)	Petar Beron	BU 2015
Argus (6)	1952	Sils, Romandie (Switzerland)	Gotze Delchev	Wrecked 1973
Acamar (7)	1957	Arthur Stove (Norway)	Perseng	Sold 1980
Alioth (7)	1958	Tweelingen (Holland)	Perelik	BU 1987
Achernar	1957	Alta (Sweden)	Vola	Sold 1980
Avior (8)	1956	Bronnoy (Norway)	Hadji Dimitar	Sold 1980
Alphard (9)	1957	Avasaksa (Sweden)	Midjur	Sold 1980
Algeneh (10)	1959	Yugala (Denmark)		Sold 1966

NOTES (1) Atlas was registered in Panama until 1967; (2) Liberty collier type; (3) as Philipoupolis, Aldebaran/Dobri Voinikov lay off Limassol during 1978-79 in a leaky condition, proceeding as Raffaella to Alexandria; abandoned, the ship was acquired by Egyptian buyers in 1982 and, renamed Fady, was hulked by 1990; (4) Alferatz/Vasil Drumev became the Lebanese Gevo 1 and was scrapped in 1982; (5) from 1981 Alkaid/ Petar Beron was moored at Varna as a stationary training ship (6) On 25 October 1973 Argus/Gotze Delchev sank at Palermo in heavy weather and was broken up in 1975 (7) between 1966 and 1968 Acamar and Alioth were managed from Austria as Donau and Rhone. They were sold in 1980 to Cardiff buyers to trade as Barrian and Tiger Bay but soon became the Greek-flagged Arion and Volare. Arion traded until December 1982 but Volare was lost in November 1980 after running aground near Gdansk; (8) Avior/Hadji Dimitar was sold to Greece for trading as Apostolos MIV; laid up at Piraeus on 31 October 1981, she sailed in May 1984 for breaking in Pakistan; (9) In 1980 Alphard/Midjur became Buana under the Panama flag but sailed from Bulgaria direct for Split for breaking at the end of 1983; (10) Algeneb was immediately resold to Cuba to trade as La Lima after taking the name Realengo 18; La Lima went to Cartagena, Colombia in November 1993 for breaking.



▲ The 1938 Rostock-built Chipka, which was mined in 1941 but raised in 1952, arriving at Cardiff on 12 June 1969. Last reported trading at the end of 1975, she arrived at Split in December 1978 for breaking. JOHN WILTSHIRE/DAVID OLDHAM COLLECTION

2 • [BULET	DRY CARG	O SHIPS 1	965-66
NAME	BUILT	FORMER NAMES	REN'D 1970	FATE
Rubin	1928	Otello, Parrakoola (Sweden)	Dobri Chintulov	BU Split 1973
Opal	1939	Brede, Lidvard (Norway)	Tzanko Tzerkovski	BU Split 1976
Topaz (1)	1939	Reinholt (Norway)		Sold 1968
Desmin	1944	Marcel Schiaffino/ Empire Welfare	Stefan Karadja	BU Split 1973
Sapphire (2)	1956	La Pradera	Panaiot Hitov	Sold 1979
Smaragd (3)	1956	Stancrown	Philip Totu	Sold 1978
Amethyst (4)	1962	Slitan (Norway)	Drianovo	Sold 1979
Aquamarine	1962	Sletta (Norway)	Triavna	BU Bulgaria 1976
NIOTEC (4) T		1 . 37		A 100 CO

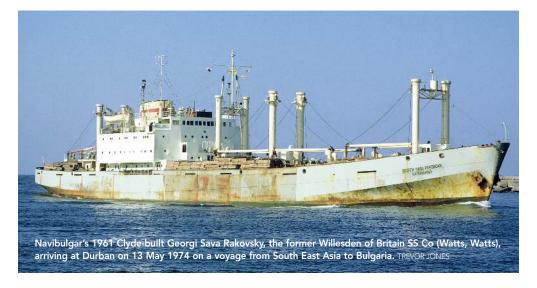
NOTES (1) Topaz was sold to Vassos Haji-loannou to trade as Eleni until scrapped in Pakistan in 1973; (2) Sapphire/Panaiot Hitov was sold to Greece to trade as Glory until 1981, when resold to Belgian principals and renamed Pan Buana, but was scrapped in 1983; (3) Smaragd/Philip Totu subsequently traded as Anthi Marina until 1979, when resold and renamed Glory Five, but was scrapped in 1980; as Stancrown, following a grounding, she arrived at Grimstad in July 1964 for repairs but was sold, via a Danish intermediary, to Uglands, who resold her to Bulgaria; (4) Amethyst/Drianovo, sold to Turkish buyers and renamed Black Sea, sank off the northern entrance of the Bosphorus on 27 November 1979.

Establishment proceeded to acquire a number of vessels, starting with *Beni Saf*, named after a town in Algeria. A separate company, Bulet State Economic Enterprise, also acquired a number of vessels.

In January 1967 a single Bulgarian Merchant Fleet, managed by Texim until 1970, was created through the merger of Navibulgar, Imextracom Establishment and Bulet. However, in November 1969, under pressure from the Soviet Union, Bulgaria decided to break up the Texim Group, regarded as a capitalist venture, and Naydenov and other senior managers were charged with offences which led to them being











■ Imextracom Etablissement's
Andromeda, a Liberty collier built in
1945, at Gibraltar on 30 July 1965.
She and her sistership Algol were
owned in the USA until passing
to Liechtenstein owners in 1960,
respectively taking the names
Osprey and Gull, and purchased
by Bulgaria in 1964. MIKE LENNON

■ Navibulgar's Philip Totu, built in 1956 as Stancrown by J.Crown & Sons at Monkwearmouth, departing Cape Town in October 1973, from Chongjin to Bourgas. Purchased by Bulet in 1965, she operated as Smaragd until 1970. IAN SHIFFMAN

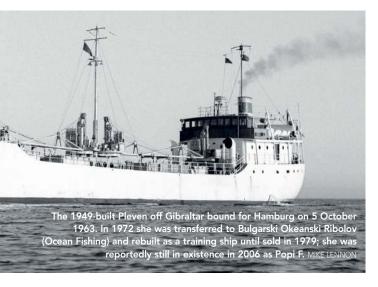
imprisoned. After five years in prison Naydenov was released in 1977; in September 1992, following the fall of communism, he created Texim Bank; in 1993 he was exonerated of all crimes.

WORLD WAR II

The first of the nine ships lost in World War II was the 1919-built *Knyaguinya Maria Louisa*, which exploded at the entrance to Piraeus harbour on 30 May 1941, her wreck being raised in 1952. In September 1941 the 1922-built *Rodina* and the 1938-built *Chipka* struck mines.

The 1937-built *Varna* and 1914-built *Balkan* were also torpedoed in 1943, while the 1913-built *Tzar Ferdinand* suffered the same fate in

▲ The 1952-built Alferatz at Gibraltar on 4 January 1965, after being purchased by Imextracom Etablissement. MIKE LENNON



• TANKERS ACQUIRED BY BULET IN 1965-66

NAME	BUILT	FORMER NAMES	REN. 1970-71	FATE
Hydrophane 1953		Janova (Norway)	Lom	Sank Jan 1972
Hyalite	1954	Hoegh Spear (Norway)	Erma	BU Aliaga 1980
Chumerna	1955	Nykopingshus (Sweden)		BU Split 1976
Hemussite	1953	Britta (Norway)	Vit	BU Bulgaria 1982

October 1944, shortly before the 1900-built *Bourgas* was scuttled at Thessaloniki. The only ship to survive unscathed was the 1928-built *Evdokia* which, in 1948, was converted into a salvage ship and survived as *Parvi Mai* (1 May) until being broken up at Varna in 1986.

Rebuilding of the nation's shipping fleet commenced in September 1946 with the acquisition from Denmark of the Hansa B type *Alstertor*, which was renamed *Rodina*.

Her purchase was followed in 1949 by the acquisition of the Belgian-built Hansa A type ships *Christo Smirnensky* and *Nikola Vaptsarov*. The sunken 1938-built *Chipka* was returned to service in 1954 and, in 1956-57, Navibulgar

acquired two secondhand vessels from Turnbull, Scott Shipping of London: the 1944-built X type *Eastgate*, the former *Trevider* of Hain SS Co, which was renamed *Balkan* and broken up in 1968 following a grounding; and the 1943-built *Saltersgate*, which became *Vassil Levsky*.

1960s ACQUISITIONS

The Imextracom
Etablissement ('Texim') ships are listed in table 1, with
Bulet's acquisitions in tables
2 (dry cargo) and 3 (tankers).
In addition, the Geneva-based
Transrodopi SA was, together with a Greek shipowner, thought to be S. M. Frangos, established in 1964 to operate four vessels (see table 4).



▲ The Liberty ship Algeneb (ex-Khibiny) and the 1932 West Hartlepoolbuilt Zahari Stoianov, the former Magnitogorsk built as Siltonhall but later modernised, berthed in Varna-East Port in 1969-70. WWW.AIRGROUP2000.COM

4 • ACQUISITIONS BY TRANSRODOPI 1964-67

NAME	BUILT	FORMER NAMES	REN. 1968	FATE
Transrodopi I (1)	1936	Achean, Jean L.D.	Alphecca	BU Yawata 1968
Transrodopi II (1)	nsrodopi II (1) 1939 Aeo		Adhara	Sold 1968
Transrodopi III (2) 1947		City of Leeds, Venetian	Acrux	BU Split 1975
Transrodopi IV	1936	Ulster Sportsman, Lairdswood	Alnilam	BU Spain 1970

NOTES • (1) Transrodopi I and II were both purchased from Transfruit (S. M. Frangos) of Athens; Adhara was sold to Vassos Haji-loannou to trade as Kanaris until scrapped in 1971; (2) Navibulgar had in 1970 given Acrux the new name of Silistra.

5 • NA	VIBUI	_GAR	DRY CARGO	SHIPS
NAME	BUILT	ACQ'D	FORMER NAMES	FATE
Javor	1920	1960	Reili (Norway)	BU Italy 1961
Breza	1922	1960	Gudrid (Norway)	BU Italy 1965
Chernomoretz	1944	1960	Thermo, Crowlin	Aground Ethiopia
Pleven	1949	1961	Kolastind (Norway)	unknown
Mir	1930	1961	Else Basse, Nordkap	BU Split 1966
Pirin	1942	1961	Slitan, Empire Elgar	BU Split 1965
Vitocha	1948	1961	Bestwood, Coleford	BU Split 1972
Rila	1952	1961	Rookwood	BU Bulgaria 1974
Rodopi (1)	1953	1962	Rushwood	BU Greece 1990
Luben Karavelov	1955	1962	Woolwich	BU Split 1976
G.S. Rakovsky (2)	1961	1962	Willesden	BU China 1983
Georgi Benkovski (3)	1960	1963	La Estancia	BU Alang 1987
Bacho Kiro (4)	1960	1963	La Sierra	BU Aliaga 1980
Karlovo	1954	1963	Kongsbru (Norway)	Sold 1977
Nessebar (5)	1946	1964	Ville de Bordeaux, Saga (Sweden)	BU Split 1975
Russe	1959	1966	Falstaff (Sweden)	BU Pakistan 1987
Pliska	1959	1966	Fidelio (Sweden)	BU Aliaga 1988
Plovdiv	1960	1966	Faust (Sweden)	BU Greece 1986-92
Angel Kanchev	1920	1967	Kronstadt, Port Curtis	BU Bulgaria 1974
Algeneb	1944	1967	Khibiny, Delfin, Jose J.Acosta	BU Spain 1970
Varna (5)	1951	1967	Ocean Monarch	Sold 1978
Zahari Stoianov	1932	1969	Magnitogorsk, Siltonhall	BU Split 1972
Botevarad (6)	1962	1969	Germa (Norway)	BU Mumbai 1997

NOTES (1) In 1972 Rodopi was converted for use as a training ship at Varna; (2) full name: Georgi Sava Rakovsky; (3) Georgi Benkovski was sold early in 1987. Renamed Vito Bay, she loaded a single cargo for Port Sudan before proceeding to Alang for breaking; (4) Bacho Kiro was fire-damaged in the Sea of Marmara on 4 November 1978; (5) Nessebar, a passenger ship, was operated by Balkanturist of Sofia, the recorded owner until 1974 of the liner Varna which, following her sale after lay-up, was gutted by fire at Ambelaki in May 1981; (6) Botevgrad traded for one year as Tango D. from early 1996 until scrapped at Mumbai.

Second-hand purchases by Navibulgar are set out in tables 5 (dry cargo) and 6 (tankers).

In 1964 four ships were transferred to a new Bulgarian-Ethiopian meat production and fishing joint venture company named Red Sea Development Company.

Breza, renamed Harar, reverted to Navibulgar in 1965 as Algeneb, and Pleven in 1968, following four years as Gondar. Chernomoretz, a former Isles class Royal Navy trawler converted to a cargo ship in 1948, became Axum. Karlovo operated as Eritrea until 1968.

6 • TANKER	ACOLUSIT	IONE DV	NIAMIDII	
• IAINNER	ACQUISIT		INAVIDU	LUAR

NAME	BUILT	ACQUIRED	FORMER NAMES	FATE
Anton Ivanov (2)	ton Ivanov (2) 1945 1960		Margit Reuter, Kratos	BU Aliaga 2001
Maritza	1949	1961	Bjorn Stange (Norway)	BU Split 1976
Arda	1950 1961		Kurdistan	BU Split 1977
Yantra	1952	1961	Harwi (Norway)	BU Split 1975
Pionere	1954	1961	Rogn (Norway)	BU Bulgaria 1974
Dunav (2)	1961	1963	Montana (Norway)	BU Aliaga 1987

NOTES • 1. All were transferred in 1968 to Bulgarski Tanker Flot, surviving ships in 1976 reverting to Navibulgar; 2. From 1983 Dunav was used as a pollution control vessel but was wrecked on 26th December 1986 and replaced by Anton Ivanov.



▲ Transrodopi I, built at Dunkirk in 1936 as Jean L.D., waiting for a discharge berth at Hamburg in June 1967 following a voyage from Santa Fe. On her purchase from S. M. Frangos in 1964, she was flagged out to Haiti before being transferred to the Greek flag two years later. In 1968 she became Navibulgar's Alphecca for a single voyage from India to Japan.

In 1967-68, following the creation of a merged Bulgarian Merchant Fleet, all surviving Bulet, Texim and Transrodopi dry cargo vessels were transferred to Navibulgar and given the standard funnel colours of yellow with a red band, and the tankers to the Bourgas-based Bulgarski Tanker Flot. In 1970,

following the disbanding of Texim, most ships were given new names, either of national heroes or of small towns or mountains in Bulgaria. *Beni Saf*, which suffered frequent boiler problems, was not renamed, as she was expected to be scrapped soon.

• Newbuilt ships will be described in a subsequent article.





Ships pictorial

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- ▲ The 29,733gt Hellenic Seaways ferry Nissos Rodos (ex-Kiso, Hellenic Voyager) was built by Mitsubishi HI in Japan in 1987. She operates from Piraeus to Chios and Lesbos. MARITIME PHOTOGRAPHIC
- ▼ The 2019-built container ship One Grus arriving on her maiden call at Southampton on 25 March 2019. The 14,000TEU ship was built at the Kure Shipyard in Japan. PHIL KEMPSEY
- ► The 76,998gt cruise ship Marella Explorer (ex-Galaxy, Mein Schiff 1) departs Southampton on her second cruise from the port during the autumn of 2019. ANDREW COOKE





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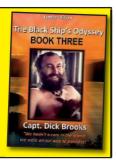
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OVATION FOR ORSOVA Orient Line's classic post-war ship

Orient Line's Orsova was the last of a trio of 28,000grt passenger-cargo ships built for the company in the post-war era. Stephen Payne recalls the ship's design and career.

rcades was the first of Orient Line's three post-war liners to enter service, in 1948, and she was followed by Oronsay in 1951, with the £6 million Orsova sailing on her maiden voyage from Tilbury to Sydney, Australia on 17 March 1954. Although the three ships are considered sisters, there were marked differences between them, with each being an improvement on her predecessor.

All three ships were built by Vickers Armstrong at Barrow, but whereas *Orcades* had some welding within her structure, this new technology was used on Oronsay to a much greater extent, while Orsova was constructed from prefabricated fully-welded units weighing up to 50 tons and was the first passenger ship to be fully welded. The absence of stepped riveted plates made her hull smooth and streamlined, making her far more efficient through the water, due to the absence of drag-inducing eddies at the plate edges. As a consequence, on the same engine power (42,500shp) Orsova was the fastest of the trio, reaching 26.07 knots on trials compared with Orcades' 24.74 knots.

Another advantage of welding was weight saving, as the weight of rivets and overlapping plates was eliminated. *Orsova* was 14ft longer overall than her sisters, as she was built with a curved, rather than straight bow. The hull plating terminated at the forecastle at the end of an extensive bulwark, rather than at deck level with railings, as on the earlier ships. The stern profile was also different, with

the cruiser form being more upright, rather than canting marginally forward.

The three post-war sisters exhibited a similar profile, in that the wheelhouse and officers' accommodation block was moved from the traditional position at the forward end of the superstructure to abut the funnel, roughly midships. *Orsova*'s funnel was elegantly tapered rather than being



▲ Orient Line advance promotional impression of Orsova.



vertical, as on her sisters, and the elevated surrounding structure was somewhat more compressed, to rationalise and improve the surrounding open passenger deck spaces.

Whereas *Orcades* had a tripod mast above her bridge and *Oronsay* utilised a teardrop sectioned pole mast, *Orsova* dispensed with a mast

NAMING OF ORSOVA

Orsova was the second Orient liner to be named after a small town on the river Danube where rapids, known as the 'iron gate', are a barrier for continued navigation. Accordingly, the emblem designed by Lynton Lamb for the new Orsova was a portcullis representing the iron gate displayed on the stem of the ship, with a second on the exterior bulkhead of the forward stairway enclosure.

altogether, her radar scanner being supported by a platform at the forward end of her funnel, while her wireless aerial was strung between the funnel and a cargo derrick.

As built, *Orsova* differed significantly from her sisters in that a 'stove-pipe' extension was added to the top of the funnel to aid smoke dispersal. Deemed a success, similar appendages were added to the top of the funnels of *Orcades* and *Oronsay* at their refits.

Orsova incorporated a number of technological improvements over her sisters. The four boilers of Orcades and Oronsay were replaced by three larger boilers operating at a higher pressure in Orsova. This minimised heat losses and improved the thermal efficiency of the plant, thus reducing fuel consumption.

The internal outfit of the ship was improved by eliminating painted bulkheads; all bulkheads, including those in crew cabins, were faced with plastic laminate, which was easier to keep clean. All three ships were built with partial air-conditioning, but *Orsova* incorporated this to a greater extent than the others, including in a number of cabins and some public rooms.

COMBINATION SHIPS

The three sisters were combination passenger-cargo ships. Two classes of passengers were carried, First and Tourist, as well as general and refrigerated cargo, and capacities across the three ships differed. The arrangement of the aft holds and hatchways was a factor in the disposition of the Tourist public

rooms, which were positioned in the aft part of the ship.

Orcades' and Oronsay's Tourist public rooms were compromised by the hatch trunks and were rather sparse, whereas Orsova, with one hold less, had a much better arrangement. This included a stern-facing bar, which was a precursor to the later Oriana's iconic stern gallery, and a Tourist Dining Room that was not encumbered by a hatch trunk. While Orcades was converted to single-class configuration in 1964 and Oronsay became one-class as late as 1972, Orsova retained her dual-class configuration to the end.

The last six Orient Line passenger ships were masterminded by Orient Line director Sir Colin Anderson and New Zealand interior architect Brian O'Rorke



Anderson favoured modernism and argued in the early 1930s that Orient Line should strike a progressive note to distinguish the Line's ships from those of the traditionally focused P&O Line. Anderson's fellow Orient directors were persuaded and charged him with



▲ Orsova early in her career, resplendent in her corn-coloured hull, tenders passengers at anchor. Cargo was carried in six holds serviced by five- and ten-ton capacity derricks mounted on seven vertical Samson posts.

implementing his vision.

O'Rorke was given the brief to design Orion so that passengers sailing half-way around the world over a period of five weeks would not become bored with the interiors and that they would feel cool in hot climes and warm in temperate regions. Simplicity and bold designs were the order of the day, and O'Rorke's influence extended to crockery, cutlery and soft furnishings. It was the first time that such an approach had been taken and it was a widely acclaimed success.

Orion's exterior was also distinctive, in that the black hulls of her predecessors was replaced by a corn-coloured hull, previously trialled for one voyage on Orama. Orsova was the last ship that O'Rorke single-handedly co-ordinated, as the later Oriana was worked on

by a number of other architects due to her size. As with previous Anderson/O'Rorke collaborations, *Orsova* was painted given a corn-coloured hull and was outfitted very much in the modernistic mould.

Orsova was laid down early in 1952 and was launched at noon on 14 May 1953 by Lady Anderson, wife of Sir Colin Anderson. Orsova was designed and built to meet the requirements of the intergovernmental Conference for Safety of Life at Sea 1948 (SOLAS 1948), whereas Orcades and Oronsay were built under SOLAS 1929 regulations.

The new requirements were embedded in the UK Ministry of Transport regulations and set higher standards for many aspects of the ship, including its structure, subdivision, pumping, electrical installations, fire protection, lifesaving, navigational aids, personnel and operations. This resulted in an increase in the number of fire-screeninsulated bulkheads.

Unlike her sisters, *Orsova* was fitted at build with a pair of Denny-Brown stabilisers, mounted below the waterline forward of the generator room on the tank top. When deployed, the fins reduced a roll of 20 degrees, greatly aiding passenger comfort.

Orsova followed the familiar pattern of extended line voyages to Australia and beyond into the Pacific, punctuated by seasonal cruises. In 1960 P&O and Orient Line merged to become P&O-Orient Lines, and by 1964 Orsova had her corn-coloured hull replaced with P&O white.

In November 1972, during a cruise from Southampton,



▲ Orsova arrives Circular Quay, Sydney in the late 1960s. STEPHEN BERRY



▲ Orsova in the Thames Estuary approaching Tilbury on her maiden arrival.

ON BOARD ORSOVA

Orsova had accommodation for 681 First class and 813
Tourist class passengers. First class comprised 377 cabins of one, two and three berths located on C, D and E decks, while Tourist class comprised 257 cabins of two, three, four and six berths on D, E and F Decks. Of the Tourist sixberth cabins, 20 could be readily converted into 40 two-berth cabins. To save space, showers were used more extensively than baths as on Orsova's sisterships.

The special suite, 'The Flat', on the starboard side of D Deck was a self-contained air-conditioned unit designed by John Wright, comprising a living room, double bedroom, pantry, bathroom, lavatory and a luggage room. There were also 11 large two-berth staterooms on this deck, three of which were air-conditioned, while four had an adjoining single berth cabin.

First class had 11,000ft² of open deck space laid out across three areas. Forward of the bridge structure on A Deck was the partially enclosed Arena, aft of the bridge was a slightly raised games deck which, unlike on the earlier ships, was screened to port and starboard and spanned the deckhouse rather than being two distinct areas. The final area, a Quoit Tennis Deck, was above A Deck and formed the roof of Orsova's extra tariff restaurant.

The majority of the First class public spaces were arranged along B Deck and comprised the rather sparse Lookout (an enclosed observation area), Lounge, two quiet Galleries which flanked the boiler casing, a large dancing space called The Square with folding screens at side which could be opened enabling the space to spill out into the promenade beyond.

The final public room on B Deck



▲ Orsova's Tourist Class Tavern.



was the Veranda Bar, while on the aft end of C Deck was the Tavern with a folding screen aft bulkhead that led out to the First class swimming pool. The First class Dining Room, along with annexes for Children and Private Dining, were located on F Deck, with the main entrance at the aft end via a 'grand descent' from the First class stair tower and the two passenger lifts. There were also a Children's Playroom and open deck, a Library with 1,200 books, an à la carte restaurant and lounge, a shop and hairdressing salon.

Tourist class public spaces were ranged on C, D, E and F Deck. The Tourist swimming pool on C Deck aft was a permanent fixture with adjacent changing rooms. The Tourist dance space, The Square, was on D Deck and was protected by draught-proof screens. The space was used for dancing, cinema, race meetings, and other entertainments.

Aft of the dance space was the Veranda Bar, which overlooked the open promenade through a semi-



▲ First Class Library on Orsova.



▲ Flying a kite from the aft deck.

circle range of windows. The Tourist Library and Children's Playroom were located on E Deck, while the Lounge and Dining Room were both on F Deck. The Dining Room was a vast improvement over Orsova's sisters, incongruous long tables replaced by smaller table groupings.

The Purser Offices were in the aft part of the ship, with First class on D Deck, Tourist below on E Deck. A spiral staircase connected the two offices. This arrangement was a big improvement over the earlier ships which had completely separate First and Tourist Pursers offices.



▲ Orsova's Cinema.

over 300 persons on board went down with dysentery. When the ship returned to Southampton 212 crew were dismissed after they refused to undergo medical tests to find the source of the disease.

Following an extensive three-week £250,000 refit at Southampton, the ship departed on 17 December 1972 on her Christmas cruise, but she was so short-staffed due to the crew dismissals that passenger numbers had to be restricted to 650, all First class, and many passengers had their holiday cruise cancelled. However, with conditions being so bad, passengers were given refunds, reducing further to P&O's already depressed earnings on passenger ship operations for 1972-73. Orsova's refit was intended to make her more attractive as a full-time cruise ship, but the two-class demarcation was retained.

On 9 January 1973 Orsova left Southampton on a voyage to Australia via the Panama Canal. During the summer of 1973 P&O announced that Canberra, which had just had a disastrous cruise season out of New York and been laid up, would be withdrawn and her



1974 cruise season, including a World Cruise, would now be operated by *Orsova*.

ORSOVA WITHDRAWN

However, a few weeks later it was announced that *Canberra* was going to be retained and *Orsova* would be withdrawn instead. An upsurge in the demand for UK cruising had been detected and it was felt that *Canberra*, which was already operating as a one-class ship, would be more suitable.

The cost of converting *Orsova* into a one-class ship was one of the deciding factors, but the ship would also have required some structural renewals, and the cost of this may have also been a factor. All three of the post-war trio of 28,000grt ships suffered from tank top corrosion.

Orsova's last cruise season was a series of voyages from Southampton, culminating in an extended Caribbean cruise in November 1973. Apart from the melancholy of the final voyage and the flying of the ship's paying-off pennant at each port of call, a fracas between two crew members led to one being stabbed during the return Atlantic crossing as the ship headed for



▲ Orsova lies at anchor tendering passengers to and from ashore from her deployed access ladder.

Madeira from Barbados.

The master ordered all possible speed to reach the island as quickly as possible to get the injured crewman to hospital, but he sadly died of his wounds before arrival. The culprit was detained on the island and collected by British police who flew out to extradite him, and *Orsova* arrived back at Southampton on 25 November 1973.

After destoring, *Orsova* departed for Kaohsiung on 14 December 1973, sailing via Cape Town, arriving at the shipbreakers on 14 February

1974, with an official handover the following day. *Orsova* was laid up and was soon seen canted to port and trimming heavily by the stern to aid the removal of her remaining fuel oil. After stripping out her interiors, Nan Feng Steel Enterprise Company began demolition of *Orsova* on 17 December 1974, with work completed in early 1975.

Orsova was a particularly fine ship and certainly the most refined of the Orient Line post-1945 trio of 28,000grt newbuildings. She would in time be the starting

point for the design of the last and greatest of the Orient Line ships, Oriana. Retaining her two-class configuration to the end, her Tourist class public spaces and open deck arrangements were a great improvement over her siblings through optimising the design. Regrettably, at less than 20 years of service she had the shortest career of the three sisters, a victim of circumstances and the steep rise in fuel prices that ended the careers of many fine ships in the first half of the 1970s. W





GREAT GLEN SHIPPING Small ships for the Scottish Highlands and beyond

James Hendrie profiles the Great Glen Shipping Company, which was established in 2010 to move goods by water efficiently and economically using a fleet of small cargo vessels. n academic study by Great Glen Shipping Company's Managing Director Liam Browning led to the formation of the company in 2010. The study examined the movement of goods on the UK's inland waterways and led Browning, with the backing of others,

and public support from Transport Scotland and Highlands and Islands Enterprise, to set about proving that goods could be moved from specific destinations by water more efficiently, economically and effectively than by other methods.

Browning decided that the Caledonian Canal, which links the Scottish east coast



at Inverness to the west coast at Corpach, near Fort William, was the place to test his study. He explained: 'I secured funding of around £200,000 to allow a trial for six months to be set up, with a view to moving timber from near Oban to the Norbord mill at Inverness, where it is manufactured into Oriented Strand Board (OSB).'

Great Glen Shipping Co chartered the 480gt general cargo ship *Kanutta* to carry the timber. *Kanutta*, with a maximum draught of 4.3m, and measuring 44m by 8.5m, was thought suitable to negotiate the various challenges of sailing up and down the famous Scottish inland waterway, and the trial proved that cargoes could be moved using ships rather than



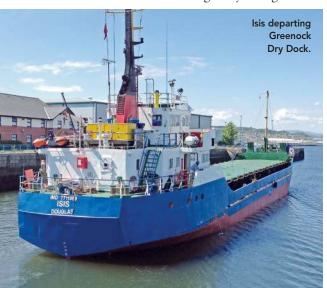
lorries in this part of Scotland, where the road system is less suitable to carrying heavy vehicles than in the more populated areas of the UK.

'I originally thought that we could backhaul fish feed to help the economics of the trial, but that didn't prove possible. Added to this was the fact that the winter of 2010 was quite severe, and I found that to make the trial economically viable was difficult. But we did pick up some other cargos, including rock salt and coal, both in demand because of the snow and the extreme cold weather.'

Kanutta returned to her owners on completion of the trials. While the trial might not have been a financial success, it showed that it was possible to move goods in the Scottish Highlands using water rather than the congested and in some cases dangerous roads. However, using the canal meant negotiating numerous locks and relatively shallow water, which made traversing the Canal time-consuming.

However, Browning's business partners, Calum Boyd and Christine McColl, of Boyd Brothers Haulage, got involved. Although they managed what was a road transport company, they were also the owners of Corpach Port, and had contacts and knowledge of the forestry sector. Corpach is home to the vast BSW K2 sawmill, which requires many loads of timber each week to sustain it, and, thanks to Boyd Brothers' support Great Glen, invested in two new ships, *Burhou* and *Isis*, from the Alderney Shipping Co.

'After a few months of searching, Burhou and Isis were advertised on the general market for sale. We saw them in Poole and, based on their previous liner service trade, instantly knew the two vessels would suit operations on the west coast of Scotland. We thought it would be advantageous to operate two sister vessels and keep them together. They had been operating together throughout their working lives', explained Browning.



IDEAL FOR SMALL PORTS

The 674gt coasters were built in Germany in 1978 and measured 57m by 10m. This made them ideal for the work that Browning and his fellow directors envisaged, namely shipping timber out of small, relatively inaccessible piers and harbours on the west coast of Scotland. Floating pier

technology was also starting to be used to allow access to previously inaccessible forests. This allowed timber to be transported by sea.

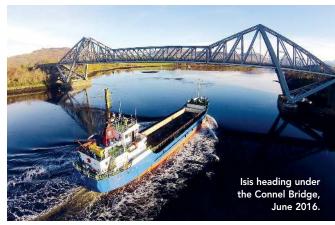
To allow Great Glen to operate in the smaller coastal ports, *Burhou* was converted to become a self-discharging and -loading vessel. This involved the addition of an excavator base and crane so that she could work where shore-based loading and unloading facilities were limited or non-existent, as was the case with the small floating piers.

As well as bringing the ships north, Browning persuaded the officers and crew of both ships to remain with them. Not only did they know the ships, but they were also familiar with operating in and out of smaller ports and harbours.

Although an increasing amount of timber was being produced, there was not enough work initially to keep both ships occupied, and *Isis* was laid up at Corpach. However, with more investment at the piers at Knoydart and Mull, *Isis* was soon needed. The demand for roundwood grew, and the ships' ability to get in and out of smaller locations and ship to the requirements of customers for the sawmills gave Great Glen the edge.

The demand for timber came not just from the Scottish market place, including the sawmill at Corpach, but also further south down the coast into England and the Iggesund mill at Workington. This uses the timber to manufacture Folding Box Board (FBB), marketed





under the Incada brand. To move this timber required another ship, which led initially to the charter and then eventual purchase of the 1983-built 1,139gt CEG Cosmos.

Built in Germany by Husumer Schiffswerft, *Cosmos* was bigger than Great Glen's previous ships, at 63m in length, and had a 40m hold. She was used not just to supply timber to Workington, but also gave Great Glen the ability to offer to carry larger loads and thus break into other markets.

Great Glen continued to expand and, in 2016, entered into a joint venture with a German company, Cargo Export Group Gmbh, which took over the management role, with Great Glen chartering ships from them. The company sold both *Burhou* and *Isis* ships in 2018, by when both vessels were 40 years old. They were replaced by the 852gt *CEG Universe* and 1,212gt *CEG Galaxy*.

The ships now operated by Great Glen are very different from the much smaller *Kanutta* which they started with a decade ago, but they still have the ability to operate in and out of the smaller harbours and ports which are the company's main work. 'These ships are all of an age, which means we



▲ Burhou 1 loading aggregates at Bonawe Quarry.



▲ CEG Universe with an inward log cargo at Wicklow.

GREAT GLEN SHIPPING FLEET							
	BUILDER	YEAR	DIMENSIONS	TONNAGE	ENGINES	SPEED	
KANUTTA	Alssund Skipsv A/S, Sonderborg, Denmark	1987	44.29m x 8.56m	480 tonnes	Single 670bhp Caterpillar, 1,800rpm	10.5 knots	
ISIS	Neue Jadewerft, Wilhelmshaven, Germany	1978	58m x 10m	674 tonnes	Single 345KW Mirrlees Blackstone ESL6 Mk.1, 750rpm	9 knots	
BURHOU	Neue Jadewerft, Wilhelmshaven, Germany	1978	57m x 10m	953 tonnes	Single 345KW Mirrlees Blackstone ESL6 Mk.1, 750rpm	9 knots	
COSMOS	Husumer Schiffswerft, Husum, Germany	1983	63m x 11m	1139 tonnes	Deutz 1,820KW	8.5 knots	
UNIVERSE	Ferus Smit Scheepswerf, Hoogezand, Netherlands	1988	64m x 10m	852 tonnes	Single 786bhp Caterpillar	9 knots	
GALAXY	Kröger Werft, Husum, Germany	1986	63m x 11.3m	1,212 tonnes	MWM TBD 440-6, 558KW, 750 RPM	8.5 knots	
LIVA GRETA	Ferus Smit Scheepswerf, Hoogezand, Netherlands	1988	64m x 10m	851 tonnes	Single 1,297KW Caterpillar 3508B	9 knots	

can continue to operate them for the next decade, and then things will get tricky for us. It is hard for us to source smaller ships of less than 1,500gt that we need for our operations', Browning explained.

Cosmos has been converted to be self-loading and discharging, being fitted with a Leibherr crane, which has a good reach and lift capacity. This has either a timber grab or clamshell bucket attachment, depending on the cargo to be loaded. It moves along rails fitted to either side of the ship, which are powered by hydraulic motors.

Timber continues to be one of the main cargoes transported by Great Glen ships, to Iggesund at Workington and to the sawmill at Corpach, and across the Irish Sea to Wicklow for the Murray Timber Group. Return cargoes are crucial to any shipping company and that remains one of the key focuses of Great Glen. Other cargoes carried include animal feeds, wheat and cement, usually to other ports in Ireland.

DIVERSE MARKETS

The ships continue to take coal and building materials to Stornoway, and move rock salt for Highland Council to use on the road network. Great Glen also ships quarry stone for Breedon Aggregates, but 60 per cent of cargoes are timber, a market which fluctuates with demand, so,

while it is important to the business, the need diversify into other markets is necessary.

Great Glen is now operating a fourth ship, leasing Liva Greta. This ship measures 64m by 10m and, like the other three ships owned by the company, is serving ports on Scotland's west coast and in the Irish Sea. The company has also started shipping to Sligo using this ship, and has further expanded its area of operation, operating from ports in Orkney, the Outer Hebrides, the west coast of Scotland and in England, going as far south as Plymouth and the Isles of Scilly. Great Glen also operate in the Irish ports of Cork and Wicklow, and in Northern Ireland in



Cosmos self discharging logs.

▼ Burhou 1 loading at Montrose.



Belfast and Londonderry. But the stated aim of taking lorries off the roads and moving more cargo by sea is still at the core of the business model.

The future for Great Glen Shipping Company may be challenging, with difficulties in finding ships of smaller tonnage. But Browning has a vision of a hybrid ship of the future which could operate. It might be based on a river vessel design which could operate from the smaller ports that are key to the company's services. Such services have been started in some countries, and Browning is confident this could be an answer, but until then he will continue to scour the world for small cargo ships. W





MARITIME

MOSAIC

The Greek Islands attract cruise ships from all round the world, with Rhodes, Piraeus, Mykonos and Santorini regularly hosting multiple vessels. This selection of photographs by Tony Davis shows visitors from a decade ago, and includes some old classics which are not part of the modern cruise scene.



- ▲ Three cruise ships anchored at Patmos in June 2007: Ocean Monarch (nearest camera) with Ruby and Aegean Two (on right). Ruby was completed in 1975 as Cunard Countess, a name she kept until 1996, then becoming Awani Dream II and Olympic Countess; more recently she had a brief spell with Cruise & Maritime Voyages, before being scrapped in 2014.
- ◀ Owned by Louis Cruise Lines but chartered to Golden Star Cruises, Aegean Two (1957/12,609gt) docked at Kusadasi on 26 June 2007. She sailed on three- and four-day cruises from Piraeus throughout the summer of 2007. Built in 1957 for Italy's Adriatica Line, she was named Ausonia for 49 years, until becoming Ivory. She became Aegean Two in 2005 and sailed under this name for Golden Star Cruises until 2009. She was scrapped at Alang in March 2010, having become one of the last vintage liners in service as a cruise ship.

READERS' ARCHIVE

 Ocean Monarch berthed at Rhodes. Built in 1954 as Port Sydney, she later became Daphne and Switzerland, then Princess Daphne between 2008 and 2014. She was built in 1955 by Swan, Hunter & Wigham Richardson, in Newcastle upon Tyne, as a freighter for the Port Line. Between 1972 and 1974, she was converted into a cruise ship at Chalkis Shipyard, Piraeus, Greece. She also served as a hospital ship in Sri Lanka in 2005. After a career of 60 years, she was beached at Alang, India during the summer of 2014 and scrapping began soon afterwards. She and most of the modest-sized cruise ships featured on these pages have been replaced on the Greek cruising scene by much larger cruise ships.

▶ Pullmantur's Zenith (1992/47,255gt), built by Meyer Werft at Papenburg, docking at Rhodes on 27 June. Built for Celebrity Cruises, she was transferred to the Spanish cruise line in 2007 after its acquisition by Celebrity's parent, Royal Caribbean Cruises. She recently Pullmantur's fleet and is now Peace Boat 2.



NORISLE

Great Lakes classic steamer set for new career

Peter Knego went on board the steamer Norisle, a passenger ship that has spent the past 44 years moored at Manitowaning, a small town 15 miles north of the Canadian port of Little Current, a tiny hamlet on Lake Huron's Manitoulin Island, the largest island on a freshwater lake in the world.



orisle was commissioned for the Dominion and Owen Sound Transportation Company to link Tobermory, on mainland Ontario, Canada with South Baymouth on Manitoulin Island. Her name is a contraction of 'North' and 'Isle'. She was Canada's first post-war passenger ship, and her construction began in 1945 at the now defunct Collingwood Shipyard at the southern end of Lake Huron's Georgian Bay, where the handsomely proportioned vessel enjoyed a spectacular sideways launch.

Outfitting was completed in the late summer of 1946, just prior to her maiden voyage on 16 September 1946. Structurally unaltered to this day, the 215ft by 36ft six-deck Norisle measures 1,668gt. She had a maximum draught of 12ft and could carry up to 200 passengers, 100 of whom were accommodated in 50 day cabins, with upper/lower berths, a chair and a small sink. She had two forward lounges as well as a dining room, and could also carry up to 44 vehicles on two car decks, which were connected via a large transfer elevator.

Norisle's power plant is a combination of elements designed for other ships. In 1923 Collingwood received an order for a pair of Canada Steamship Lines freighters, but built only one, leaving one 16ft-tall 1,000ihp triple expansion steam engine. The yard built ships for the Royal Canadian Navy during World War II, but the end of the war resulted in the cancellation of further orders for corvettes. The corvette boilers are of the three-furnace Scotch Marine type, with an operating pressure of 195psi. Such new unused boilers matched the requirements for the engine in storage and provided a very cost-effective combination propulsion plant for Norisle.

Crossings from Tobermory to South Baymouth took between two and a half and three hours in each direction, with a turnaround of an hour to an hour and a half at either end. This passage reduced north-west or south-east road driving time by several hours.



▼ Norisle hits the water via a sideways launch at Collingwood Shipyard on Ontario's Georgian Bay. COURTESY OF JOHN COULTER

Passengers and automobiles prepare to board the Norisle at the start of one of her crossings. COURTESY OF JOHN COULTER



Norisle made two daily round trips between the end of May and mid-October, Canadian Thanksgiving. She spent the winters laid up at Owen Sound, the location of the Owen Sound Transportation Company's head office.

In her first year of service

Norisle carried a respectable 13,000 vehicles and 40,000 passengers, which increased to 20,000 vehicles and 60,000 passengers a year by 1960. Norisle was the largest ship in a fleet whose other members were Manitoulin, Caribou and Normae, a trio that served



Owen Sound's 'Turkey Trail Run' along Lake Huron's North Channel ports to Sault St Marie. In 1950 those ships were joined by the brand-new *Norgoma*, which was a slightly smaller version of *Norisle*.

In 1963, in order to make room for additional vehicles,

Norgoma was fitted with diesel engines and moved to the popular Tobermory to South Baymouth run, working in tandem with Norisle to provide up to four roundtrips a day. It must have been quite a sight when the two small but majestic-looking ships met



midway, with a whistle salute.

After successful and eventfree careers, both Norisle and Norgoma were laid up at Owen Sound in late 1973 and replaced by the much larger ferry Chi-Cheemaun ('big canoe' in the native Ojibway language), which still serves the Tobermory to South Baymouth route. Norgoma eventually went on to Sault St Marie, where she became a museum ship at the local marina until being shut down in early 2019. Sadly, her future is now very uncertain.

In 1975 Norisle was sold for the princely sum of \$1 to the township of Manitowaning, where she has been berthed ever since. In 1976 she was opened as a museum and training ship for Sea Cadets until maintenance and a lack of funding forced her closure in 2006. Between 1977 and 1980 she also had a restaurant, which was open to the public.

In 2007 the Friends of the Norisle (now the SS Norisle Steamship Society) campaign to repurpose the ship began. The following year, with a government grant and an atcost professional contract, all of her asbestos was removed. Between 2011 and 2014 all panelling, non-steel inboard structures, non-propulsion plant wiring and plumbing



were removed, in preparation for the ship's proposed refit. The vessel remains the property of the Township of Manitowaning; her structural condition is sound and has not deteriorated.

The two gentlemen that escorted me to Manitowaning

had already driven nearly 400 miles from the Toronto, Ontario area, a journey that would have been halved had they taken the ferry route once served by *Norisle*. John Coulter, the Chief Engineer and Director of Restoration, and Wayne Fischer, Director of

Acquisitions, are dedicated to restoring the ship and, unlike many who have attempted such projects, they have a solid business plan backed up with an independent and supportive market research study.

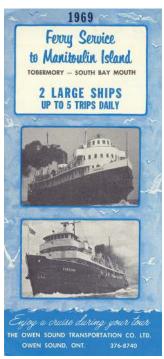
The society's vision is not only to see the ship preserved, but also returned to active service as a luxury heritage cruise ship. Coulter, a marine engineer who began his career as an engineer officer on board Cunard Line's Queen Elizabeth (and later served on Saxonia and Carmania), has been down this path on several heritage steamship projects. His efforts in initiating and directing the ten-year revitalisation of North America's oldest operating steamship, Segwun, which currently cruises Ontario's Muskoka Lakes, is one of the rare North American success stories in vintage steamship preservation.



ON BOARD NORISLE

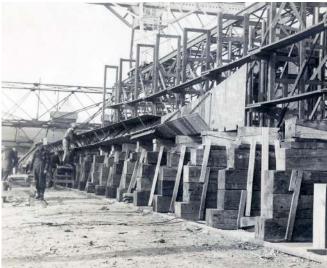
When we arrived at *Norisle*, I marvelled at just how large and imposing she is in person.





▲ An Owen Sound Transportation Company timetable from 1969 featuring Norisle and Norgoma. ROGER LELIEVRE COLLECTION

▼ Norisle's keel was laid in March 1946. COURTESY OF JOHN COULTER



Now topped with a removable cowl to prevent water ingress, her funnel is powerfully massive in proportion to her slim, low profile. Her forward superstructure is comprised of a marvellous juxtaposition of curves that distinguish the ship from the typical 'layer cake' look of most classic Great Lakes liners.

Although the years have taken their toll on her upper

superstructure paintwork, which has since been refreshed, and windows, it was easy to imagine *Norisle* cruising through the scenic Great Lakes once again.

Once aboard, there was very little to inspect other than the stripped-out interior shell of her superstructure, with only portholes, windows and support beams. Like the much larger ocean liner



▲ Norisle, heading out at full speed, appears much larger than her mere 1,688gt suggests. ROGER LELIEVRE

United States (currently laid up at Philadelphia), Norisle is a blank slate in preparation for her next transformation. In key areas, Coulter had paint-indicated the lines of proposed suites, passageways and public spaces onto the decking. When rebuilt, her interiors will emulate a luxury ship of her time, while utilising the fireproof materials required to meet SOLAS standards.

Key historic artefacts, like the bell and some of the original furniture, are stored offsite, ready to be returned when the time comes. Since *Norisle* was designed for basic transportation services, there were no commissioned artworks, etched glass panels or exotic woodworks worthy of preservation as might be expected on a liner of her vintage. However, such luxurious enhancements will be an essential part of her new image and service.

MACHINERY SPACES

We ended our time on board with a visit to the intact machinery spaces. Her magnificent engines had only seen a total equivalent of six years' worth of use, thanks to the ship's limited distance runs and long periods of layup. Aside from needing some new



▲ Norisle's forward lounge is now stripped of its furnishings.



▲ Norisle's original operating gear would be retained for the future.



▲ This is a forward-facing view along Norisle's port Boat Deck.



▲ The port side promenade, facing aft.



The new inboard architectural plans of Norisle in her proposed role as a heritage four/five star Great Lakes cruise ship involve two scenarios: the first retains the ship's current dimensions, carrying up to 58 guests with seven officers and 24 crew; the second involves the addition of a 45ft mid-section, so she could carry up to 70 guests with seven officers and 28 crew. In both cases, Norisle's distinguishing outboard architecture would remain largely 'as is', from her tall, imposing funnel to her curvaceous superstructure, slightly raked prow and her elegantly sheered and sheltered promenades.

The inboard layout of the ship would have virtually no resemblance to the original, apart from two forward lounges on the Promenade and Boat decks, the promenade decks and the Promenade Deck dining room. The now strippedout day cabin and car deck spaces would be replaced by a library and new suite accommodations ranging from 156 to 575 square feet.

The Bridge Deck would be extended aft with a balcony lounge, additional day room and luxury suite accommodations. A Sun Deck area would be located atop the existing Boat Deck house at the stern. A central passageway would link the accommodations on the Main, Promenade and Boat Decks, and high standard non-officer crew accommodations would be fitted on the Lower Deck.



Mayor Dave Ham, John Coulter and Wayne Fischer hope to see Norisle repurposed for Great Lakes cruise service. PETER KNEGO

paint and a tune-up, according to my hosts, all of the original parts are in full working order. Keeping the propulsion plant operational will be a highlight of *Norisle*'s proposed cruising experience, and the ship's carers are confident that guests will come from all over the world.

LOOKS LIKE A SHIP

Experts from the cruise industry who advised on *Norisle*'s Business and Operations Study saw her silent and vibration-free steam propulsion plant, not often found on diesel-powered ships, as an important marketing advantage and asset to passengers' comfort. An additional marketing strength was that *Norisle*'s outboard architecture looks like a ship, unlike the majority of new cruise ships.

As I left the nearby port of Little Current on Victory Cruise Lines' replica coastal steamer *Victory I*, to resume my ten-night North American Great Lakes cruise, locals lined both banks of the channel to wave her off. With a faint

NORISLE

BUILT 1948, Collingwood Shipyard, Georgian Bay, Ontario

DIMENSIONS 215ft x 36ft, 12ft draught

TONNAGE 1,688gt

sound and ready for repurposing as a heritage-style cruise ship. PETER KNEGO

CAPACITY 200 passengers, 44 cars

ENGINES Single screw, 1000ihp triple expansion steam engine

SPEED 12 knots maximum

DISPOSAL Laid up in 1973

plume of diesel emanating from her funnel and her top deck areas filled, the faux Victorian-era Victory I must have looked quite a sight, and I was able to imagine myself on the decks of a repurposed Norisle as her razor-sharp prow cut through the tranquil waters, sun glistening upon her funnel. With her steam whistle proudly blowing once again, she would be an inspiration for generations to come.

• For more information, please visit www.norisle.com. Very special thanks to John Coulter, Wayne Fischer, Dave Ham and Roger LeLievre.



EUROPEAN SUBMARINE RENAISSANCE

Conrad Waters examines the latest submarine construction projects involving European navies and shipyards.



consequence of the Cold War's end was a significant decline in Europe's submarine forces. The apparent end of the Russian underwater threat and the high cost of maintaining submarine flotillas saw often limited

funds channelled towards other priorities. Some navies – Denmark was a notable example – abandoned underwater operations altogether.

Europe has maintained a substantial and technologically advanced submarine construction sector. The major maritime powers, France and the United Kingdom, continued to rely on nuclear-powered boats to deploy their strategic deterrents and support long-distance operations. Other countries, such as Germany, relied on export sales to supplement meagre domestic demand. However, design and construction skills have become increasingly focused on just a handful of yards.

Today, the changed strategic environment means that

◀ Although the French Navy no longer operates diesel-electric submarines, Naval Group's Scorpène design has proved popular in export markets. This is Chile's O'Higgins. NAVAL GROUP

submarines are increasingly back in fashion among European fleets, a situation that is helping to secure the future of the remaining European yards that specialise in submarine construction.

FRANCE

France's Naval Group is arguably Europe's most significant submarine builder at the present time. It is the only regional shipbuilding group to have recent experience of constructing both nuclear-powered and diesel-electric submarines. Assembly activities are focused on its Cherbourg facility in Normandy, and supported by other sites across France.

France's most important current programme is for the 'Barracuda' or Suffren class nuclear-powered attack submarines. Intended to replace the six Cold War era Rubis class boats on a onefor-one basis, the 5,300-tonne Barracudas will be armed with a mixture of torpedoes, Exocet anti-shipping and latest generation Naval Cruise missiles. Power is provided by a variant of the K15 pressurised water reactor used in other recent French nuclear-powered combatants. This is linked to a turbo-electric propulsion plant.

Work on the Barracuda programme began before the turn of the millennium. However, it was only in 2007 that fabrication of the lead boat commenced. Subsequent construction progressed slowly. This was probably hindered by a loss of specialised shipbuilding skills similar to that which has impacted completion of the Royal Navy's Astute class boats.

Suffren was finally unveiled at a high-profile ceremony attended by President Macron on 12 July 2019. Her sea trials are expected to commence during 2020. Four other members of the class are already at various stages of assembly, and work on the final unit will commence soon.

France's Marine Nationale now only operates nuclear-



powered submarines. As such, the navy's next construction programme is likely to be focused on replacing the existing quartet of Le Triomphant class nuclear-powered strategic submarines. However, Naval Group has maintained its expertise in diesel-electric submarines through a series of export contracts.

Recent overseas sales have been dominated by the company's popular 'Scorpène' design, which was originally manufactured in conjunction with Spain. Two pairs have been completed in Europe for Chile and Malaysia, with Brazil and India both currently building additional boats under licence. A dieselelectric variant of the larger Barracuda design has also been sold to Australia, where it will eventually form the locally-built Attack class. A noteworthy omission from the list of exports has been sales to any other European country. This may reflect lack of market acceptance of the group's

MESMA air independent propulsion plant.

UNITED KINGDOM

As in France, the Royal Navy took the decision to restructure its underwater operations to rely solely on nuclear-powered boats at the end of the Cold War. Submarine manufacture is concentrated on BAE Systems' Barrow-in-Furness shipyard in Cumbria, although many other companies are involved through the supply chain.



▲ The French Navy's new Barracuda type nuclear-powered attack submarine Suffren pictured shortly before her formal unveiling ceremony at Naval Group's Cherbourg facility in July 2019. NAVAL GROUP



Current activity is focused on completing the programme for seven Astute class attack submarines. The first three were ordered as long ago as 1997, and commissioned between 2010 and 2016, after very considerable delays and cost overruns. Progress with completing the remaining members of the class has been somewhat better. However, the fourth boat, Audacious, had yet to commence sea trials at the time of writing, well over two years after launch.

Displacing around 7,800 tonnes when submerged, the Astute class are powerful, stealthy submarines with sufficient capacity to accommodate a large outfit of heavyweight torpedoes and Tomahawk cruise missiles.

An important aspect of the design is the Thales Sonar 2076 suite, which provides excellent detection and tracking capabilities at long ranges. In contrast to the French systems, which require periodic refuelling, the cores of the class's PWR2 reactors are designed to last the entirety of the submarines' operational careers.

The Astutes will be followed into production by the new 17,200-tonne Dreadnought class submarines. These boats are intended to replace the existing Vanguard class used to deploy Britain's Trident strategic missiles. Fabrication of the first of four submarines started in October 2016, but she is not expected to enter operational service until the early 2030s. The Dreadnought

programme will be the most expensive British defence project ever undertaken by the time it is completed.

GERMANY

Given that Germany has always been in the forefront of submarine design, it is no surprise that it remains one of Europe's most important manufacturers. As was the case for other European countries, construction facilities were considerably rationalised during the years after the Cold War. Today, submarine assembly is concentrated at the historic HDW yard at Kiel in Schleswig-Holstein. This now forms part of ThyssenKrupp Marine Systems (TKMS).

The most famous submarine built by TKMS is probably

▲ The German Type 209 submarine design has been in production for an astonishing 50 years, enjoying much export success. This is Peru's Angamos on exercises with the US Navy in November 2019. US NAVY

the Type 209. Intended to provide a capable yet cost-effective underwater capability for developing navies, the diesel-electric Type 209 was an instant export success. More than 60 examples built to different variants have been delivered to a total of 14 countries from 1971 onwards. The design remains in production at Kiel, as well as under licence overseas.

Although the Type 209 continues in production,



▲ Italy's Type 212A submarine Salvatore Todaro on a deployment to the United States. The most obvious feature distinguishing her from her German sisters is a different hull colour. US NAVY



▲ An unidentified Republic of Korea Navy Type 214 submarine. This German TKMS design has gained several export customers both in Europe and beyond. REPUBLIC OF KOREA NAVY

TKMS' future is represented by the more modern Type 212 and Type 214 designs. Both these submarines utilise diesel-electric power as their main form of propulsion, but are also equipped with supplementary air-independent propulsion (AIP) plants. AIP avoids the need for a submarine to come to the surface or snorkel for air, allowing prolonged underwater operation at modest speeds. The AIP plant in all the TKMS-designed submarines is based on fuel cell technology developed by fellow German company Siemens.

The Type 212 was initially developed for the German and Italian Navies as the Type 212A. A relatively small submarine of around 1,800 tonnes submerged displacement, it was optimised for stealthy operation in confined waters typically found in the Baltic and Mediterranean. An interesting design feature is the use of non-magnetic steel to reduce vulnerability to detection and destruction.

Six Type 212As were delivered to Germany's Deutsche Marine between 2005 and 2016. The last two were built to a slightly different design and a new Type 212CD variant is under development for future German and Norwegian requirements. Meanwhile, Italy's Fincantieri built four Type 212As at their Muggiano yard near La Spezia over a similar period. There are plans for a further quartet, which will also be built to an evolved specification.

The Type 214 is a slightly larger, 1,900-tonne export-focused design which uses a similar AIP plant but is built of conventional steel. Unlike France's Scorpène, it has gained European orders from Greece, Portugal and Turkey, as well as being sold to South Korea. TKMS has also developed even bigger export submarines, including Israel's Dolphin series and the Republic of Singapore Navy's Type 218SG.

SPAIN

A more recent European entrant to submarine design is Spain's Navantia. Originally partnered with Naval Group on the Scorpène project, it subsequently decided to withdraw from the collaboration to develop its own S-80 class. The resultant programme for four submarines illustrates some of the challenges involved in creating an independent design capability.

The contract for the submarines, also known as the Isaac Peral class after the lead boat, was originally signed in 2004. It envisaged the first unit being delivered around 2011 and the remainder at annual intervals. Unfortunately, design flaws resulted in the discovery that the submarine was overweight. Experts from America's General Dynamics Electric Boat had to be brought in to resolve the problem. Development of an indigenous AIP system also proved to be more difficult than initially envisaged.

The end result has been



▲ An early graphic of Spain's S-80 submarine. The design has subsequently been significantly enlarged into the S-80 Plus. NAVANTIA



▲ The first S-80 submarine under construction in 2012; she will not enter service until 2022. NAVANTIA



▲ The German Type 212A submarine U33 pictured in June 2019. Her AIP propulsion and non-magnetic hull make her particularly suitable for operation in enclosed waters. US NAVY

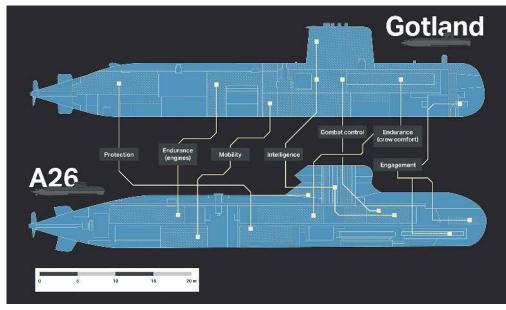


▲ The two A26 Blekinge class submarines will enter service with the Swedish Navy in the mid-2020s. COPYRIGHT SAAB AB

that the submarines have been enlarged by around 10m to provide extra buoyancy. The renamed S-80 Plus class will now cost over €900 million per boat, or more than double the initial estimate. Moreover, it will not be before 2022 that Isaac Peral is finally delivered from Navantia's yard at Cartagena. Even then, the new AIP plant will not be ready for installation. Current plans suggest that only the last two submarines will be delivered with this capability.

SWEDEN

Sweden is currently the only other Western European country with the ability to design and build submarines independently, re-establishing this capability in 2014 after a gap of several years. It had



▲ A Saab graphic illustrating the process of evolution from the Gotland to A26 class submarines. COPYRIGHT SAAB AB



▲ The reconstructed Swedish submarine Gotland photographed in October 2018. The modernisation is being used to prove technologies that will equip the new A26 design. COPYRIGHT SAAB AB

previously sold its Kockums submarine business to HDW in 1999. However, dissatisfaction with Germany's control over a key industrial capability ultimately saw the operation brought back under Swedish control as part of the Saab defence conglomerate.

Saab Kockums is currently working on the construction of two A26 Blekinge class submarines at its Karlskrona shipvard in southern Sweden. Much of the equipment used in the new design is being trialled in the modernisation of the existing Gotland class, which has also been allocated to the same yard. A key element of the design is an upgraded variant of Kockums' Stirling AIP system. This uses an alternative approach to Siemens' fuel cell technology.

Expected to displace around 2,000 tonnes in submerged, the A26 will be equipped with four 533mm torpedo tubes and carry both torpedoes and mines. An interesting design feature is the incorporation of a multi-mission portal in the area of the torpedo tubes to facilitate the deployment of divers and their equipment.

A key challenge Sweden needs to overcome is the likely limited domestic demand from a submarine flotilla that operates only five boats. A number of differently-sized A-26 variants have therefore been developed with overseas orders in mind. A key export prospect is the Dutch requirement for four new submarines, for which Naval Group and TKMS are also all competing.

SUBMARINE CLASS	BARRACUDA' (SUFFREN)	SCORPÈNE**	ASTUTE	S-80 PLUS (ISAAC PERAL)	TYPE 212A	TYPE 214	A26 (BLEKINGE)
COUNTRY	France	France	United Kingdom	Spain	Germany	Germany	Sweden
DISPLACEMENT*	5,300 tonnes	1,600 tonnes	7,800 tonnes	c. 3,000 tonnes	1,800 tonnes	1,900 tonnes	2,000 tonnes
DIMENSIONS	99m x 9m x 7m	64m x 6m x 6m	97mm x 11m x 10m	81m x 7m x 6m	56m x 7m x 6m	65m x 6m x 6m	63m x 6m x 6m
PROPULSION	Nuclear, 25 knots +	Diesel-electric, 21 knots	Nuclear, 30 knots +	Diesel-electric, 20 knots, AIP from 3rd boat	Diesel-electric + AIP, 20 knots	Diesel-electric + AIP, 20 knots	Diesel-electric + All c. 20 knots
CREW	circa 65 +	circa 30	circa 100	circa 30+	circa 30	circa 30	circa 25
ARMAMENT	4 x 533mm TT Torpedoes Exocet Anti-Ship Missiles Naval Cruise Missiles Mines	6 x 533mm TT Torpedoes Exocet Anti-Ship Missiles	6 x 533mm TT Torpedoes Tomahawk Cruise Missiles Mines	6 x 533mm TT Torpedoes Mines (Can deploy Anti-Ship & Cruise Missiles)	6 x 533mm TT Torpedoes Mines	8 x 533mm TT Combinations of torpedoes, Anti-Ship Missiles & Mines	4 x 533mm TT Torpedoes Mines

FIVE SMALL SHIPS

The Rover class Small Fleet Tankers served the Royal Fleet Auxiliary and the Royal Navy for the best part of five decades. Steven Tindale recalls the history of the 'five small ships', and records the service they gave.

of Defence tendered for the building of a new class of single-hulled Small Fleet Tankers for the Royal Fleet Auxiliary (RFA). Designed by the Admiralty, these five ships would become the Rover class.

The first three, *Green Rover*, *Grey Rover* and *Blue Rover*,

were built at the Hebburn yard of Swan Hunter on the Tyne and entered service between 1969 and 1970. With a full load displacement of 11,520 tons, they were 461ft in length with a beam of 63ft.

They had a short superstructure and a tall single funnel, giving them an usual profile, the most distinctive feature of which was a large flight deck situated aft. Although there was no hangar, the flight deck measured 99ft by 51ft and could accommodate any helicopter in RN service. The flight deck was serviced by a two-ton capacity cargo lift to facilitate vertical replenishment operations by helicopter (VERTREP).

Built to carry up to 6,600 tons of fuel oils, lubricants, aviation fuel and fresh water, the Rover class ships could also carry an additional 340 tons of dry cargo, including refrigerated goods and ammunition. For their primary task of Replenishment At Sea (RAS) the Rovers were fitted with two refuelling derricks, one port and one starboard. Each derrick was capable of delivering 600m³ per hour

through four six-inch hoses. They were also capable of delivering fuel from bow and stern installations and could receive fuel via port and starboard refuelling points. For transferring solid cargo, they were fitted with two two-ton jackstays, port and starboard.

The last two ships of the class, *Black Rover* and *Gold Rover*, were also built on the Tyne by Swan Hunter, but this time at Wallsend, and commissioned in 1974. The external differences between the two batches were minimal, the most obvious being the stern anchors, which were reduced from two to one, and the addition of a foremast.

On board, the main difference was in the engine room. The first three ships were fitted with two Ruston



NAVAL SPECIAL



▲ Grey Rover photographed from her sister, RFA Plumleaf, as the two ships rendezvous in the Indian Ocean in 1982. MOD

▼ Gold Rover carries out an RAS operation with the Leander class frigate HMS Ajax. MOD

and Hornsby 16-cylinder diesels, but these proved to be unreliable, and so *Black Rover* and *Gold Rover* were fitted with Crossly and Pielstick 16-cylinder diesels. The first three ships were refitted with

the same engines between 1973 and 1974. The machinery drove a single shaft with a controllable pitch propeller. This gave a top speed of 18 knots, and a cruising range of 15,000 miles at 15 knots. All five ships were fitted with a bow thruster unit.

Green Rover entered service in August 1969, two months ahead of schedule. In April 1971, on passage to Vietnam, she took part in RAS operations with the Fast Troop Transport HMAS Sydney and in September of the same year returned to home waters to participate in landing and take-off trials of the new Harrier VSTOL jet.

The second vessel, *Grey Rover*, entered service in April 1970. Her first two years

were primarily occupied with training duties at Portland. However, in July 1973 while she was on exercise off the west coast of Scotland, she collided with HMCS Okangagan. The Canadian submarine was submerged at the time, suffered heavy damage to her conning tower and had to put into HMNB Faslane for repairs. Grey Rover sustained damage to her hull and propeller and had to drydock on the Clyde for repairs.

The third ship, Blue Rover, entered service three months late, in July 1970. This was partially due to a fire in a fuel tank, which tragically resulted in the deaths of two shipyard workers. In her first year, she supported the Royal Yacht Britannia on a tour to the Pacific, which included a visit to the Pitcairn Islands by the Duke of Edinburgh.

COD WAR INVOLVEMENT

In 1973 the three Rovers sailed in support of RN frigates protecting British trawlers from Icelandic Coast Guard vessels during the Second Cod War. One or more of the Rovers were on station throughout the year, conducting RAS and resupply operations in the hazardous waters of the North Atlantic.

Later that year, *Blue Rover* again supported *Britannia* on a visit to the Pitcairn Islands, but a serious engine room fire disabled her machinery. The two ships worked together to improvise an RAS in order





▲ Grey Rover on her final deployment to the South Atlantic in 2005. She is pictured off South Georgia.



▲ A Sea King helicopter of 845 Naval Air Squadron at rest on Gold Rover's flight deck. Note the revised single anchor arrangement. MOD

to refuel Britannia, which then towed the stricken tanker 1,200 miles to Tahiti, the longest improvised tow undertaken by a an RN vessel since World War II.

In 1974 both Gold Rover and Black Rover entered service. After spending her first months in home waters, Gold Rover sailed for the Mediterranean, visiting Gibraltar, Italy and Malta, and supporting the RN Task Force deployed to Cyprus

after the Turkish invasion, assisting in the evacuation of 1,500 civilians. The humanitarian work continued six months later, when *Green Rover* supported the frigates *Lowestoft* and *Achilles* during Operation Stella, the evacuation of British and Commonwealth citizens and refugees from Vietnam.

The following 12 months saw *Green Rover* return to the North Atlantic supporting RN frigates during the Third Cod





War. While deployed in the Pacific, she became the first RFA ship to fly the flag of an RN flag officer. Also around this time *Grey Rover* and *Blue Rover* conducted trials with the BP tankers *British Tamar* and *British Esk* to test the feasibility of transferring fuel from a merchant tanker to an RFA ship. On completion of the trials, *Blue Rover* returned to Cod War duties, while *Grey Rover* was deployed in support of RN units standing by to



NAVAL SPECIAL



evacuate British nationals from Lebanon. The refuelling trials, which proved to be successful, continued the following year, this time using *Gold Rover*.

In July 1978 *Green Rover*, along with the frigate HMS

Juno, deployed to the British Virgin Islands in support of the Governor, who was experiencing security problems in the wake of constitutional changes. In December of the same year, Grey Rover was



▲ A Harrier GR1 demonstrates its vertical take-off and landing abilities on Green Rover's flight deck, September 1971. HAWKER SIDDELEY

ordered to the Persian Gulf to stand off the Iranian coast in case it became necessary to evacuate British nationals after the deposing of the Shah.

In 1979 Black Rover was involved in another security incident when, accompanied by the frigate Eskimo, she sailed to the Bahamas to support the Bahamian Defence Forces following the sinking of the patrol vessel HMBS Flamingo, which was strafed by Cuban MiG fighters after she detained two Cuban trawlers for illegal fishing.

In the 13 years since the Rover class first entered service, the five tankers had been deployed around the world and participated in all manner of replenishment and resupply operations. It seems remarkable then that, when the RN and RFA embarked on their biggest operation since World War II, Operation Corporate, the mission to retake the Falkland Islands, only one of the class, Blue Rover, was deployed to the South Atlantic, arriving off the Falklands on 2 May. She



remained on station until the end of June, taking part in operations at San Carlos Water and South Georgia, where she sustained superficial damage when replenishing the ferry *Norland*.

After the challenges of Operation Corporate, the RFA returned to its peacetime tasking. In November 1983 *Grey Rover* and *Blue Rover* were deployed on Operation Offcut, supporting the British multinational peacekeeping force in Lebanon.

SOLD OUT OF SERVICE

In 1988 the decision was taken to place *Green Rover* in reserve after 19 years of service. She remained laid up at Portsmouth until 1992, when she was sold to the Indonesian Navy. She was renamed KRI *Arun* and became the flagship of their Training Command. The following year *Blue Rover* became the second of the class to be sold when, in March 1993, she became NRP *Bérrio* of the Portuguese Navy.

The remaining three ships continued to be deployed worldwide. Between 1992 and 1998 Black Rover, along with other RN and RFA units, was involved in humanitarian missions in Montserrat, Honduras and Nicaragua. In 1992 Gold Rover and the Type 22 frigate Campbeltown went to the aid of two vessels involved in a collision off the West African coast. During the same period Grey Rover spent time on station in the South Atlantic. In January 2003 she was in the South Atlantic

ROVER CLASS TANKERS						
NAME	PENNANT	BUILDER	LAUNCHED	COMM'D	FATE	
GREEN ROVER	A268	Swan Hunter, Hebburn	19.12.1968	15.8.1969	To Indonesian Navy 1992	
GREY ROVER	A269	Swan Hunter, Hebburn	17.4.1969	10.4.1970	Scrapped Liverpool 2009	
BLUE ROVER	A270	Swan Hunter, Hebburn	11.11.1969	15.7.1970	To Portuguese Navy 1993 as Berrio	
GOLD ROVER	A271	Swan Hunter, Wallsend	7.3.1973	22.3.1974	For disposal August 2019	
BLACK ROVER	A273	Swan Hunter, Wallsend	30.8.1973	23.8.1974	For disposal August 2019	

when she was redeployed to participate in Operation Telic, the invasion of Iraq.

Two years later *Black Rover* participated in Exercise Deep Sabre , a multinational exercise which took place in the South China Sea as part of the Proliferation Security Initiative, a global operation intended to stop the spread of weapons of mass destruction.

In 2006 Grey Rover was involved in another multinational operation, supporting the Type 42 destroyer Southampton to intercept a vessel carrying illegal drugs, which proved to be a fitting end to her career. In March 2006 she sailed into Portsmouth to be decommissioned, and three years later she was towed to Liverpool to be broken up.

The two remaining Rovers remained in service for another 11 years, resupplying ships, participating in humanitarian operations and supporting RN vessels in counter-narcotics operations. They were decommissioned in 2017 before *Black Rover* and *Gold Rover* and were laid up in Portsmouth to await disposal, staying there until August



2019, when they were sold and towed to Aliaga in Turkey for disposal.

The Rovers' primary purpose was to replenish and resupply Royal Navy ships wherever they were deployed and this accounted for most of their tasking. However, over five decades of service, the small ships proved their versatility by performing duties they were arguably never intended to fulfil.

Remarkably, KRI *Arun* (ex*Green Rover*) and NRP *Bérrio* (ex*-Blue Rover*) continue to serve the Indonesian and Portuguese Navies respectively almost 50 years after the first of the 'Five Small Ships' entered service.



▲ Gold Rover awaits as the Type 23 frigate HMS Lancaster approaches from astern in the South Atlantic, 2015. MOD



▲ NRP Bérrio (ex-Blue Rover), fleet support tanker of the Portuguese Navy, pictured in 2007.

Aview fro the Bridge

Patrick Boniface talks to Commander Paul Bijleveld on board HNLMS Zeeland, one of the **Royal Netherlands** Navy's Holland class offshore patrol vessels.

WHERE DID YOU **GROW UP?**

I grew up in a small town just outside of Amsterdam and, as a child, I went sailing and rowing and played around the water. My father was in the Navy, so it may seem obvious that I would also go into the Navy, but I have an older brother who is in the merchant navy. So, when I had to make a decision about what to do, I was considering work in a hospital as a doctor or working at sea. I asked my father about the Navy and my brother about the merchant navy, and my brother told me: 'We drive as economically as possible from A to B transporting goods to make a profit'. My father said: 'We do the opposite – we travel from A to B but all the time we are shuttling around navigating and exercising at sea.'

WHEN DID YOU JOIN THE NAVY?

I joined the Royal Netherlands Navy in August 1992, and started on board the M class frigates, becoming Commanding Officer of a patrol vessel in the Caribbean. I spent three years living on Aruba and then came back to the Netherlands as Operations Officer on board another M class frigate. I later became Commanding Officer of three minehunters. After that I was asked to become Executive Officer on an LCF frigate, then to the Sea Training Command, and I have been on Zeeland since September 2018.

WHAT IS IT LIKE TO **COMMAND A SHIP LIKE ZEELAND?**

Zeeland is a big ship with a small crew. Our deployments are mostly in the Caribbean for counter-drugs operations, as well as humanitarian relief. Operating the ship in an efficient and effective way, and keeping the priorities. Sometimes the work can be emotionally challenging, such as when we are called on to help with hurricane relief operations, while counter-drug

Commander

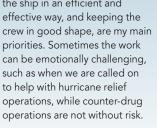
board HNLMS

Zeeland.

Paul Bijleveld on

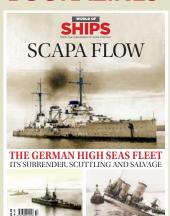
WHAT IS SPECIAL ABOUT **HNLMS ZEELAND?**

Zeeland and her sisters are really spacious, which gives us good seaworthiness capabilities. This ship is built so she can sail from the Netherlands to the Caribbean. She has expeditionary capabilities, as well as being able to undertake helicopter operations in bad weather conditions. The ship measures 110m in length by 16m in beam, which has some implications for her maximum speed, which is only 22 knots. She is not as fast as a frigate, but is very stable in bad weather, so we can perform helicopter operations for longer, and that is one of the main benefits when we are involved in hurricane relief operations. We also have a slipway for getting two fast interceptor craft afloat, which are useful for humanitarian relief operations in areas where the established infrastructure has





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Date Ship

AVONMOUTH - BRISTOL

24 Marco Polo

CARDIFF

Fridtjof Nansen

CORK/COBH

23 Marco Polo

DARTMOUTH

16 and 18 Fridtjof Nansen DOUGLAS (IoM)

11 Fridtiof Nansen

Fridtiof Nansen

8 15 and 22 Saga Sapphire **19 22 and 29** Boudicca

30 AIDAluna

13 Fridtjof Nansen

FORT WILLIAM

25 Hebridean Princess

FOWEY 15 Fridtjof Nansen

GREENOCK (GLASGOW)

2 6 10 and 17 Hebridean Princess

ISLES OF SCILLY (St. Mary's)

10 and 19 Fridtjof Nansen

KIRKWALL

14 Magellan

22 Astoria

LERWICK

13 Magellan

LIVERPOOL 12 Fridtiof Nansen

LONDON

22 Fridtjof Nansen

24 and 31 Hebridean Princess

PORTLAND

Fridtiof Nansen

PORT OF TYNE (NEWCASTLE

18 and 29 Balmoral

PORTREE

29 Hebridean Princess

12 and 25 Astoria

PORTSMOUTH

8 and 17 Fridtjof Nansen

AIDAmar, Spirit of Discovery

Black Watch

Oceana AIDAmai

Aurora

15 Spirit of Discovery

16 Balmoral, AIDAmar

Black Watch, Ventura

Aurora, AIDAmar

Black Watch

Braemar, Queen Victoria, Ventura

29 Spirit of Discovery

ST PETER PORT (Guernsey)

20 Fridtjof Nansen

4 16 and 16 Magellan

Fridtjof Nansen

22 Viking Star

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JANUARY'S MYST

While by no means certain of the January mystery, I would attempt to identify the ship passing St Marks Square in Venice as the former Norwegian ship Ingerfire (3,578grt), which was built by Mekaniske Verksted at Kristiansand, Norway in 1953 for Jacob Kjode, Bergen.

She was sold in 1966 to Italian owners Segio Tesetti and renamed Kangra, then Zeuca, in the same year and this photograph may show her under one of these names while under the Italian flag. In 1979 she became the Panamanian-flagged Argus and



was later renamed Vrontis and Sunrise V. She was finally sold for breaking up at Gijon in 1979 as the Cypriot-

flagged Stavreula. Peter Sommerville Greenock

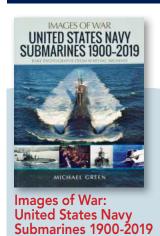
THIS MONTH'S MYSTERY SHIP **PHOTOGRAPH**



This month's mystery looks to be some kind of old passenger or cargo vessel, with the name La Palma just visible on the stern. But when was she built? Did she have a long career? Who operated her? And where was the photograph taken?

Send your answers and the identity of the ship, including postal address and information, by email to: sm.ed@ kelsey.co.uk; or by post to Mystery Ship, Ships Monthly, Kelsey Media, The Granary, Downs Court, Yalding Hill, Yalding, Kent, ME18 6AL. Emails preferred.

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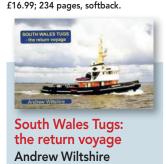
In 1900 the US Navy took its first submarine, Holland VI, into service. With a single torpedo tube, it had a crew of six, weighed 82 tons and travelled submerged at 6.2mph at a depth of up to 75ft. Contrast this to the 18 Ohio Class nuclear-powered submarines which entered in service from 1981. Displacing 21,000 tons with a crew of 155, they have an underwater speed estimated at 30mph at a depth of 1,000ft, and carry 16 nuclear warhead ballistic missiles with a range of 4,600 miles.

Michael Green

provides a detailed insight into the many US Navy submarine classes. Particularly interesting is the post-World War II programme of nuclear-powered submarines, starting with Nautilus and progressing to Skate, Thresher, Sturgeon, Los Angeles and George Washington. Admiral Hyman G. Rickover's role as Father of the nuclear navy is examined in detail. The book is profusely illustrated, with many rare archive photographs. PS

• Published by Pen & Sword Books, 47
Church Street, Barnsley, 5th Yorkshire, 570 2AS UK; www.pen-and-sword.co.uk,

This latest title from Images of War



In this second 96-page softback book of South Wales tugs, author Andrew Wiltshire takes a close look at tugs

bookof the**month**

Leith-built ships: Vol 1 – They Once Were Shipbuilders

Ron Neish

Published by Whittles Publishing, Dunbeath Mill, Dunbeath, Caithness KW6 6EG; tel 01593 731333, www. whittlespublishing.com, £16.99, 128 pages, illustrated, softback

This is the first in a series about the almost forgotten part played by the port of Leith, near Edinburgh, in our great maritime heritage, and provides a complete history of the ships built at Leith from around 1850 until the end of World War I. It features yards which eventually

became the famous Henry Robb Shipyard, as well as S. & H. Morton, Ramage & Ferguson, Cran & Somerville and Hawthorns & Co.

Leith-built Ships is a
testament to the skill of the
men who built the ships
and to the many men and
women who may have sailed
or served on them. This
history is brought together
in the first of a three-volume
series about Leith's rich maritime
heritage and is the culmination

of author Ron Neish's lifetime

experience of shipbuilding.

Leith was once Scotland's main
port, with many firsts to its name.

Shipbuilding started there some 400
years before the great shipyards of

Leith-BUILT SHIPS

VOLUMENT THEY DINCE WERE
SHIPBUILDERS

ROKEISH

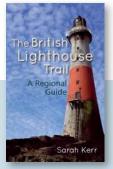
the Clyde came into being, and the vessels built at Leith reached all corners of the globe. Some had sad histories, some took part in the famous conflicts of the times, and others were just ordinary working vessels that carried their crew safely through long working lives. PS

in South Wales ports, from Swansea to Port Talbot, then Barry, Cardiff, and finally Newport. He follows the changes in tug ownership, which has moved from local companies to national and multinational companies.

Tugs are the workshorses of the maritime world, and their main role is shiphandling, but they have many other duties too, playing a crucial part in keeping ports operational on a day-to-day basis. The book is packed with outstanding historic photographs and informative captions covering a wide range of different tugs.

The book is essentially a pictorial record of tugs, with one, sometimes more, photographs on each page, accompanied by extended captions. Among the tugs covered are small local tugs such as Pengarth, naval tugs such as HMS Wakeful, and larger ocean-going salvage tugs such as Britonia. This well-produced book is a must for any tug enthusiast and is recommended for the quality of the images and the in-depth research. JM

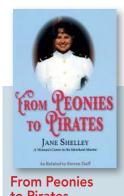
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The British Lighthouse Trail Sarah Kerr

Lighthouses are often much-loved features of the UK's coastline and waterways. But how many are there and is it possible to visit them? This book provides a comprehensive list of all lighthouses in Scotland, England, Wales, Northern Ireland, the IOM and Channel Islands, with practical advice on how to reach them. It covers all lights from Muckle Flugga in Shetland to the Corbière light in Jersey. BB

• Published by Whittles Publishing, Dunbeath Mill, Dunbeath, Caithness KW6 6EG; tel 01593 731333, www. whittlespublishing.com, £18.99, 302 pages, illustrated, softback.



to Pirates Jane Shelley

From Peonies to Pirates tells the story of the life of Jane Shelley as related to Steven Duff. Shelley was one of the earlier female officers in the merchant marine, and the somewhat unusual title reflects her varied career, from selling flowers in Toronto to encounters with Somali pirates in the Indian Ocean. This memoir consists mainly of text, with a few photos, and is full of anecdotes and incidents relating to Shelley's life. JM

 Published by Burnstown Publishing Ho, 5 Leckie Lane, Burnstown, Ontario, KOJ 1GO, www.burnstownpublishing. com, 222 pages, softback, \$25.

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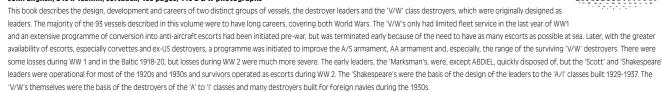
RAILWAY FERRY DINARD • Russell Plummer tells the fascinating story of the iconic turbine steamer Dinard, a major trail blazer in home waters and the Baltic.

FREIGHTERS OF A BYGONE ERA • Classic freighters are all but a memory, but Phil Kempsey's photos show some classic British ships from the 1960s.

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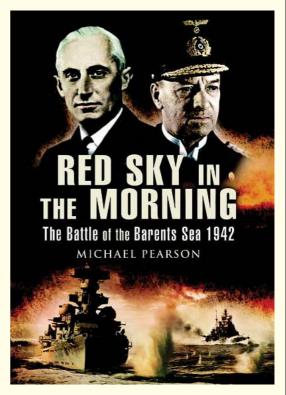
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RED SKY IN THE MORNING

The Battle of the Barents Sea 1942

Facing crushing defeat at Stalingrad the Nazi regime was determined to prevent re-supply of the Soviet Union



by Allied convoys sailing the treacherous northern route into Murmansk and Archangel. One Such convoy, JW51B, sailed from Scotland 21 December 1942 and in the depths of the Arctic winter was attacked by a powerful German naval force. The resulting battle with the convoy escort was to have far reaching effects for the Kriegsmarine.

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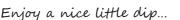
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It has been produced to TV Broadcast standards, using 99% rare archive film, telling the amazing story of the once great British Merchant Navy and Shipping industries, starting in the early 20th Century and continuing through the heyday of when we had the biggest and best Navy and ships in the world. This remarkable programme shows just how great it was including our great ports when they were full of ships of every shape and size, all flying the Red Ensign. Our great ship yards and the thousands of ships they built for the whole world. We even show some of the many Sea Training schools that trained the young men needed to man our once great ocean fleets. It is so important this story is told and now, thanks to this DVD, people of today and future generations will be able to see for themselves just how great our maritime world was.

Cost per DVD \$18.95 UK incl p&p. Please allow £2 extra p&p for the rest of the world.

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