

BOOK REVIEWS

Samuel Bawlf. *Sir Francis Drake's Secret Voyage to the Northwest Coast of America, AD 1579*. Salt Spring Island, B. C.: Sir Francis Drake Publications, 2001. x + 149 pp., illustrations, tables, appendix, notes, bibliography. CDN \$100.00, cloth; ISBN 0-96885-280-7 and *The Secret Voyage of Sir Francis Drake, 1577-1580*. Vancouver, B. C.; Douglas & McIntyre Publishing Group, www.douglas-macintyre.com. 2003. 464 pp., illustrations, table, notes, bibliography, index. CDN \$24.95, paper; ISBN 1-55365-0417.

Samuel Bawlf's self-published *Sir Francis Drake's Secret Voyage* is a handsomely produced book, lavishly illustrated with many sharply reproduced late-sixteenth- and early-seventeenth-century maps. In this 2001 book, Bawlf claims that during his 1577 to 1580 voyage of circumnavigation, Francis Drake traveled 2,000 miles exploring the northwest coast of North America from southern Alaska to northern Oregon - instead of the generally accepted 400 miles along the coasts of southern Oregon and northern California.

Unlike his previous book, Bawlf aims the more recent, commercially published *The Secret Voyage of Sir Francis Drake* at a more general audience. It contains a short introduction to Drake and his times and a conventional history of the circumnavigation, its aftermath, and Drake's later life. These are followed by a 70-page narration of Bawlf's version of Drake's voyage in the North Pacific. End-note references to his earlier book serve as evidence for his hypotheses.

At the heart of Bawlf's case are two small world maps of Drake's circumnavigation of circa 1585 and 1588. They derive from the same source and show four islands, each less than one-sixteenth of an inch long, which Bawlf equates with Prince of Wales Island, the Queen Charlotte Islands, Vancouver Island and the Olympic Peninsula. Once he has decided on that correlation, he goes to other world maps and globes and identifies named locations on them with specific points along the shores of those islands and peninsula and adjacent mainland - and attributes all these points to Drake's explorations, ignoring other possible sources, and ignoring sixteenth-century map makers' predilections for inserting cosmographers' speculations where information was unavailable. Along the way, Bawlf develops ideas of how Drake treasonably provided information about

these places to a few foreign map makers in contravention of English policies of secrecy.

It is a meticulously detailed study, and to discuss all his points would require a book as long as his first one. Bawlf's principal ideas are clear, however. This is a conspiracy theory, in which Bawlf claims to have "decoded" deliberately "encyphered" "cryptograms" in the maps and discovered Elizabethan "rules" enabling him to do so. One such "rule" is that no latitude higher than 48 degrees was permitted to be mentioned in any Elizabethan document for fear of disclosing that Drake had really discovered the coast of Canada leading to the hoped-for Northwest Passage, or Strait of Anian - Drake's true and overriding objective in the voyage of circumnavigation, according to Bawlf. Another "rule" is that the latitudes given in the maps and documents must be raised by 10 degrees to identify the true locations of Drake's activities. Once he has stated these "rules," he changes every piece of information that does not conform to his ideas until it matches, starting with his four key islands which are off northern California and southern Oregon on the sixteenth-century maps and must be moved north six hundred nautical miles to create the framework for the rest of the work.

Nowhere does he cite any source for these "rules."

Bawlf assumes that the policy of falsification was maintained by many well informed Continental mapmakers who had no reason to bow to any English edict. Especially notable are the detailed charts by Robert Dudley, who had acquired much information before he moved to Italy and converted to Catholicism. Dudley places Drake's port of *Nova Albion* at 38 degrees in northern California, consistent with much other documentary and cartographic evidence.

As the first book progresses, Bawlf's presentation shifts from hypotheses through probabilities to certainties, with such words and phrases as, Drake "must have speculated," "now revealed," "now identified," "undoubtedly," "obviously," "no doubt," "now we know," "must," and "we now know is actually."

As a lead-in to his Northwest Coast ideas, Bawlf's description of Drake's passage from Guatulco in southern Mexico to the Northwest Coast contains a significant error. He applies the modern league of 18,228 feet to Drake's accounts, instead of the Elizabethan league of 15,000 feet. The Elizabethan

measurement would put him on the coast in southern Oregon, the latitude accepted by modern scholars, while even the modern league would only give a landfall in northern Washington, not Vancouver Island as Bawlf claims.

Bawlf emphasizes Drake's search for a Northwest Passage and his desire to found a colony near its western entrance. There is no doubt that Drake looked for such a strait, but it is equally obvious that he did so only as long as that appeared to offer a practical passage to the Atlantic. Drake was in possession of the first great treasure to fall into the hands of Elizabethan seamen. Bringing the treasure home safely was of transcendent importance, not only to Drake and his crewmen, but to his backers, including his queen, and to the English nation. Yet Bawlf claims that Drake traveled 2,000 miles in unknown waters, sometimes across open water to islands he could not have known existed, frequently through difficult straits between islands and peninsulas, repeatedly hazarding his ships in unpredictable tide races and currents and among unknown shoals and pinnacle rocks, often in foul weather, and often traveling in directions not calculated to find the desired Northwest Passage through the continent - in a leaking ship needing careening. On one occasion, Bawlf places Drake at the Yucalta Rapids, where: "... they would have spent an anxious time waiting for the moment of slack water and then making a dash through the treacherous bottleneck...". AH this would have been foolhardy and irrational behaviour for a man known as a thoroughly practical seaman.

Such explorations also would have been impossible in the time available. After manipulating the accounts, Bawlf gives Drake 44 days to explore 2,000 miles by adding 30 days to the 14 days given in the voyage accounts. Deducting ten days for stops, as Bawlf does, leaves 34 days. Traveling day and night, Drake's average speed would have had to be 2.45 knots, or 58.8 miles per day. The *Golden Hind* averaged three to four knots in the open ocean in good conditions. Along shore, Drake could only have operated in daylight. Allowing for contrary winds and currents, tides, fog, rain, and all the other vicissitudes of sailing along dangerous unknown coasts and in narrow waterways, his average speed could not have reached one knot: less than 24 miles per day.

But Drake did not have 44 days to explore the coast despite Bawlf's changes to the dates of Drake's arrival at his harbour after his explorations and when he departed. In fact, immediately after leaving harbour, Drake visited

a group of islands on 24-25 July and named them the Isles of Saint James. Saint James's day is 25 July, confirming the conventional chronology of the accounts. This leaves Drake 14 days - not 44 - to carry out his explorations. With no stops, his day-and-night speed to travel 2,000 miles would have had to average 5.95 knots, or 142.8 miles per day in a ship capable of less than one knot in daylight along a complex unknown shore.

Bawlf remarks in wonder at Drake's supposed achievement of discovering the complex relationships of many hundreds of miles of islands, straits, river mouths, and mainland in a mere month's travel, when diligent explorers - including Perez, Bodega e Quadra, Cook, Dixon, Galliano, and Vancouver - collectively took two full decades to achieve the same understanding. The wonder is that anyone could believe that Drake could have done it.

Bawlf endorses Whale Cove, Oregon, as Drake's careenage harbour, and identifies randomly placed stone piles on a mountain in Oregon as "Drake's survey markers." There is no evidence that associates Drake with either site, and much evidence that Drake never saw them.

In his nearly complete reliance on very-small-scale world maps, Bawlf uses little of the extensive evidence in the accounts of the voyage written in Drake's lifetime. Where he does use them, he concentrates on the shorter accounts and downplays the longest, *The World Encompassed*, which was prepared under Drake's direction and published by his nephew after Drake's death.

That extensive account does not describe Northwest Coast Native-American peoples, with their huge cedar canoes, split-plank communal houses, and totems, who lived from northernmost California to Alaska - the peoples with whom Bawlf claims Drake interacted for 44 days.

That account, and others, do provide detailed descriptions of a unique location at 38 degrees north, complete with a harbour within a bay, offshore islands, and distinctive white cliffs. They also describe distinctive costumes, ceremonies, artifacts, words, and lifeways of a specific tribe of Native Americans - Coast Miwok - whose way of life differed sharply from the Northwest Coast peoples. Bawlf cannot explain how someone who (as he claims) had not visited the California coast, could have invented these descriptions, which match reality point-for-point without the need for conspiracy theories, cryptograms, evidence suppression, and

imagined "ten-degree rules."

Bawlf's conclusions are fantasies built on speculation derived from hypotheses based on the thinnest of intensively manipulated evidence. Sadly, they will become part of the history of West-Coast mythmaking, bedeviling the media's and public's perceptions of exploration-era history.

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Carlo Beltrame, ed., *Boats, Ships and Shipyards, Proceedings of the Ninth International Symposium on Boat and Ship Archaeology, Venice 2000*. Oxford: Oxbow Books, www.oxbowbooks.com, 2003. 362 pp., illustrations, photographs, notes, references. US \$ 155.00, cloth: ISBN 1-8421-093-7. Distributed in North America through The David Brown Book Company, Oakville, CT.

This latest volume presents fifty-three of the papers delivered at the Ninth ISBSA meeting held in Venice in 2000. This abundance clearly and amply exemplifies the variety and depth of scholarly inquiry to be found not only in the field of ship and boat archaeology but in other related study fields as well. In this diverse collection, the reader will find, in addition to contributions of a purely archaeological nature, others bearing on comparative structural studies, construction and accoutrement details, vessel reconstructions, historical and archival issues, shipyards, iconography, ethnography, vessel design, experimental archaeology and computer analyses. One cannot help being struck by the expansive growth of the discipline in recent years.

As can likely be surmised from the foregoing, these proceedings lack a unifying theme and overall are somewhat less successful than, for example, the Fifth ISBSA Proceedings that dealt with the single theme of carvel construction technique. Also, as should be evident, the subject matter is extraordinarily wide geographically, chronologically and typologically. Geographically, the papers are almost equally split between those from the Mediterranean basin and those from Northern and Central Europe, with a single contribution dealing with India. Chronologically, the authors consider everything from the prehistoric to the modern era; there are clear clusters, however, around the ancient world as well as the Medieval and Renaissance periods. In a typological vein, everything from prehistoric log boats, coastal

and inland craft, ancient ship sheds and shipyards to large open ocean vessels are entertained with a clear focus on archaeological examples.

Considerable variability is to be found in the quality of the presented papers in this volume - a seemingly common occurrence among conference proceedings. In some cases the authors clearly took great pains to prepare well-illustrated scholarly contributions while in others, the results appear to be little more than résumés apparently developed from speaking notes. For the most part, the papers are short, descriptive and often of a highly technical nature. In a number of cases this brevity does not allow the authors to fully develop either their ideas or their conclusions and the reader is left wishing for more. This is likely a reflection of the time restrictions placed upon conference presentations in general.

This volume could have benefited from a more rigorous editing as typographical errors are common. A more serious concern is the problem of translation. It is obvious that English is not the first language of many of the presenters and we are left with either the authors' own attempts at writing in a second language or translations by others. The results of these endeavours vary significantly and range from the readable to the incomprehensible. This will prove somewhat irritating in a small number of cases where the authors genuinely seemed to have had something of interest and importance to relate. On a positive note, the book is abundantly and artfully illustrated, an aspect that is enhanced by the large format of the volume.

The papers have been arranged into eight sections: Introductory Papers; Mediterranean Ships; Reconstruction of Ships; The Shipyards; Inland Boats; The Galleys; North European Medieval and Post-Medieval Ships; and Integrated Evidence and Replicas. As in other ISBSA proceedings, this organization is only evident in the table of contents as nothing in the body of the text indicates breaks between the sections. Although some overlap in subject content among the sections is to be expected, the papers have been reasonably well organized considering the absence of a unifying theme. Every section contains at least one presentation that surpasses the purely descriptive and accordingly, derives meaningful insights from the data that significantly advance the field.

In the section on Mediterranean ships, Kahanov's paper dealing with early shipwrecks from Israel is a stand out. His evidence suggests that, rather than the simple chronologically linear progression from "shell first" to "frame

first" ship building in the Mediterranean between the fourth and eleventh centuries A.D., the process in construction development was far more complicated. Equally thought provoking is Bischoff's innovative analytical approach to reconstruction using a computer and a spline model. Here, using data from the imprint of a vessel from a Viking Age burial near Ladby, he has successfully reconstructed the craft both graphically and in three dimensions by way of a model.

Another noteworthy contribution is Bloesch's discussion of actual molds, rising boards and bevel boards from a late-nineteenth to early-twentieth century shipyard located on the French side of Lake Geneva where 30 to 70 ton *barques* and *bricks* were constructed. Besides describing the actual objects and the building process, he also finds parallels with sixteenth-century Basque methods and even pre-sixteenth-century Mediterranean lofting techniques. The strength of this paper lies in the fact that it deals with real building practices and not theoretical descriptions often found in shipbuilding treatises. In a similar vein, Penzo compares the construction techniques from the earliest written evidence of Venetian boatbuilders to those of the present day and discovers a surprising continuity in methods, units of measurement, terminology and symbols. These papers clearly demonstrate that it is often the actual building practices that are illuminating and explicating in the old treatises.

It is satisfying to see a number of papers bearing on Italy's rich nautical heritage as that country moves toward institutionalizing the field of ship and boat archaeology. Although primarily a historical study, Bellabarba's presentation on the sailing qualities of Venetian galleys is exemplary. Here, based on contemporary travel journals, he documents the sailing speed and seaworthiness of these craft and convincingly shows them to be sophisticated sailing vessels. Further, he goes on to elucidate the effects these vessels had on the building programs of the navies of England, France and Spain.

Two other papers are worthy of mention. The first of these is Van de Moortel's re-examination of the Utrecht Ship, a late-tenth-century vessel with an expanded iogboat base extended with the addition of strakes and whales. Sometimes considered as a terminal stage in iogboat development, the author persuasively argues the idea that this vessel was a transitional type between iogboats and fully plank-built boats of the later Middle ages with possible connections to the evolution of the hulk.

Pipping's article on the *Vasa* whipstaff is excellent. As well as describing the components and operation of the system, he also discusses the ergonomic factors involved for the helmsman steering the vessel. This paper is particularly important in light of the lack of contemporary descriptions of whipstuffs and their operation.

It is difficult, in a short review, to do full justice to the scope and wealth of information contained in this volume. As the major forum on European ship and boat archaeology, the ISBSA publications embody much of the current thinking and new directions bearing on the latest issues and research questions in the field. Although the book is well bound and printed on good quality paper, the price will be a definite barrier for many, perhaps making it more appropriate for institutional libraries. The technical nature of most of the papers will appeal more to those with a firm grounding in shipbuilding techniques and terminology. Despite the unevenness and translation problems noted above, this book will be essential reading for those in the field.

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John Bockstoce, *High Latitude, North Atlantic: 30,000 Miles through Cold Seas and History*. Mystic, CT: Mystic Seaport, www.mvstic.org. 2003. 220 pp., photographs, maps, chronology, appendix, notes, index. US \$24.95, paper; ISBN 0-939510-82-0.

John Bockstoce, Arctic historian and archaeologist, has been travelling and working in the North since 1962. He is the author of numerous articles and books on the Arctic, including the award-winning *Whales, Ice and Men*.

By way of introduction Bockstoce sites the reader at Zenith Point, the western entrance to Bellot Strait, and defines it as the gateway to the eastern Arctic. He then follows with how and why he got there, a story covering twenty seasons, in the western Arctic, 1969-1988. Now, in 1988, aboard his vessel *Belvedere*, he transits Bellot Strait and proceeds eastwards into the Atlantic pursuing the thesis that contact between the Old World and the New, in high latitudes, has been regular since about A.D. 1000. Through journals, photographs and historical research, he hoped to record and share his journeys.

Nine chapters and an epilogue describe the voyages: 1991 North America to Scotland;

1992 Scotland to Spitsbergen and return; 1993 The Hebrides, Faroes, Iceland, and Newfoundland; 1994 Nome Alaska via the Northwest Passage to Sisimiut Greenland, and 1989 Sisimiut to New England; 1995 Cape Breton to Hawke Harbour Labrador; 1996 Icy Summer on the Labrador Coast; 1997 Newfoundland and the Gulf of St Lawrence; 1998 Northern Labrador; 1999-2000 Baffin Island; and the Epilogue, 2001 Sable Island.

In 1989-90 Bockstoce was struck with the notion to transit the Northeast Passage. Making plans for such a voyage he nevertheless continued planning for a series of voyages in the North Atlantic. Positioning *Belvedere* in Scotland in 1991 he was ready to do the Northeast Passage or alternatively, Spitsbergen. Unable to obtain the necessary permission from the Russians, he fell back on plan B, Spitsbergen.

From the outset the author shares the details of his plans. The results were sometimes entirely satisfactory, a crossing of the Atlantic, 2,000 miles in ten and a half days and only one gale (9) but on at least one other occasion, almost disastrous. Referring to Tidal Currents around The Faroe Islands, a booklet that shows in graphic and frightening detail the relative strength and dangers of the currents for each hour of the tidal cycle, Bockstoce and two companions independently calculated the optimum time of departure from Tvorory, Faroe Islands. Armed with their calculations, they visited the Tvorory harbourmaster who confirmed the correctness of their work and a suggested departure at 1:00 p.m.

Everyone, including the harbourmaster, had it wrong. "...I looked up in horror at the horizon ahead. It was all rough waves and frightening standing overfalls. At once we were swept right into it. With Andy fighting the wheel, steering at a right angle to our drift... *Belvedere* was sucked into a whirlpool... steep ten-to twelve-foot seas sloshed across the deck. The waves rolled us forty-six degrees" (54).

The voyage narratives are supported by track charts, numerous photographs and, with the exception of chapter one, detailed notes. Bockstoce's chronology of key events in Arctic exploration (185-189) includes details ranging from ca. 700 when Irish monks were in the Faroe Islands, to 1994 when the USCGC *Polar Sea* and CCGS *Louis S. St. Laurent* made the first surface traverse by ship from the Bering Sea to the Greenland Sea via the North Pole. Strangely, no mention is made of the Soviet nuclear powered *cehK&kzr Arktika*, which arrived at the

North Pole 17 August, 1977.

Sea harvests and recent lack thereof are discussed throughout the narrative. The Faroes whale hunt, Atlantic salmon farming, Basque fishing stations in the 1500s, overfishing in North Atlantic, Russian factory ships are just some of the many matters discussed. Among the Norse artefacts described, as would be expected, is an Inuit figurine found in an archaeological site near Kimmirut, Baffin Island. Comments about the lives of the inhabitants in lands that were once considered remote focus especially on hunting and fishing. Mining in Spitsbergen, Greenland and Baffin Island are also mentioned. The Second World War, the Battle of the Atlantic, including the remote weather recording and transmitting device placed by the German Navy at Martin Bay, Labrador in 1943 rate comment and a photograph. Like all first rate Arctic sagas, this one has a great polar bear yarn.

Photographic subjects are endless: ships, aspects of harbours, canals, weather phenomena (gales in Scotland, squalls in Baie de Gaspé, 'williwaws' in the Bay of Islands Newfoundland, mirage or *fata morgana*) and ice (sea ice in Larsen Sound and Hopedale, Labrador, glaciers in Arsuk Fiord, Greenland and ice bergs in Hudson Strait and St. John's, Newfoundland).

Two appendices, acknowledgments and an index complete the work. Appendix I provides details of *Belvedere*, her purchase, design, alterations to suit Arctic operations, navigation and communication systems and propulsion while the second lists voyages made by the author in various vessels from 1962 - 2001(194).

Dennis Conner a four-time winner of the America's Cup closes his foreword with "John's found away to tell a story, with his words and his photos, that is honest adventure, rivetting history, and great voyaging." Recommended for inclusion in high school libraries and those of the sea with High Latitude North Atlantic interests.

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D.K. Brown & George Moore. *Rebuilding the Royal Navy. Warship Design since 1945*. Annapolis, MD: Naval Institute Press, www.NavalInstitute.org, 2003. 208 pp., photographs, illustrations, appendices, bibliography, glossary, index. US \$ 59.95, cloth; ISBN 1-59114-705-0. Distributed in Canada by Vanwell Publishing Ltd.

The work of David K. Brown, RCNC, is familiar to all who study the ships of the twentieth century Royal Navy: not just a prolific naval historian, but also one responsible for designing many of the ships in service today. His series *Before the Ironclad* (1990), *Warrior to Dreadnought* (1997), *The Grand Fleet* (1999) and *Nelson to Vanguard* (2000) explore British warship design from the downfall of Napoleon until the defeat of Hitler. This latest book, co-authored by George Moore (with drawings by John Roberts) is to all practical purposes the fifth and final volume that completes the set. One small difference from the earlier four is that many of the official records remain sealed under the 'Thirty Years Rule', and of course the authors had to work within security constraints when discussing ships that are currently operational. Like the other books, the emphasis is very much on naval architecture and marine engineering - no apologies to those with a phobia of anything technical! There is brief mention of financial and political factors, but those are better covered elsewhere: in some respects, Eric Grove's *Vanguard to Trident* is almost a companion volume.

Those with an affection for the Royal Navy may find this a sad story, as the authors chart the decline of this once pre-eminent service to the second rank. Financial austerity has been a constant. Nevertheless, one golden thread is woven throughout the chronicle - innovative design work that kept British warships at the leading edge of naval architecture. The authors deal with a large amount of material, admittedly directed at a more technical audience. This isn't to say that the book is heavy going - far from it. The engineering concepts are explained concisely and clearly, and the style is very readable indeed. Best of all, the entire book is leavened with Brown's personal experiences and anecdotes, not to mention his subtle sense of humour (a "Snakes and Ladders" depiction of the design process!). There are a number of drawings outlining various design alternatives, and the book is chock-full of photographs, all clearly reproduced. A great example is that of HMS *Hermes* returning from the Falklands in February 1983: the caption points out the rust streaks typical of Second World War ships and notes that all the other ships of the task force, painted using modern techniques and materials, came home with their paintwork almost perfect. As one would expect, many points were driven home through operational experience, not least in the Falklands in the early 80s, and these are nicely summarised near the end of the book.

There is one illustration that this

reviewer thinks should have been included: for those readers not intimately familiar with the post-Second War fleet, a chart showing the evolution of the various "Types," including at least the class names, would have been very helpful indeed. Otherwise, you may find yourself constantly reaching for the appropriate *Jane's* or *Conway*, as I did. Granted, these "Type" designations, defined in 1950 - Type 11 and onwards for ASW; Type 41 onwards for anti-aircraft; Type 61 onwards for aircraft-direction - are explained at the start of Chapter 5, but graphical and/or tabular data would really have been helpful.

Canadian readers will find a number of interesting items - not only through the close family connections between the Royal Navy and RCN (after designing the *St Laurent* class - HMCS *Margaree* is given a beautiful 2-page photo spread - Sir Roland Baker went on to lead the RN's nuclear submarine programme), but some valuable lessons that ought to be heeded by those involved in the planning for the putative AOR replacement programme recently announced. Difficulties were encountered because of a lack of design resources - five million man hours went into the design of what became the *Invincible* class; and perhaps most importantly "constraints on size do not necessarily lead to a reduction in cost" (62).

In *Rebuilding the Royal Navy*, the authors have laid a keel that will be built up by subsequent generations of modern RN historians: I have every confidence that it will be frequently cited, and often referenced. This is definitely a book that should be acquired by anyone interested in late twentieth- early twenty-first-century warship building.

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Peter J. Dombrowski, Eugene Gholz and Andrew L. Ross. *Military Transformation and the Defense Industry After Next: The Defense Industrial Implications of Network-Centric Warfare*. Newport, R.I.; Naval War College, www.nwc.naw.mil/press. 2003. Newport Papers No. 18, Newport: Centre for Naval Warfare Studies, ix +86 pp., appendices, abbreviation, notes, selected bibliography, paper; ISBN 1-884733-24-7.

Newport Paper No. 18 from the Naval War College's Centre for Naval Warfare Studies examines the defense industrial implications of military transformation. The authors argue that

the challenges that must be faced and the changes that are required by the defence industry to meet the requirements of military transformation are not as new as transformation advocates argue. In essence, the study finds that current defense-oriented suppliers are likely to continue to dominate the Information Technology segment of any future defense market and that the suppliers of large platforms may be the most vulnerable to companies that sell to commercial customers or foreign navies.

The study examines in detail three sectors that are relevant to the future Navy: shipbuilding, unmanned vehicles, and systems integration. Using the Navy's Network-Centric Warfare (NCW) transformation vision, the authors find that future requirements imply a range of defense industry changes but not a requirement for a complete overhaul. To accomplish this the study is divided into five sections.

The study begins by introducing the key technology areas that the defense industry will have to develop and produce for the future Navy within the context of NCW. It is the examination of the requirements of NCW that lead the authors to choose the three industrial sectors mentioned above. They argue that using NCW as a point of departure will help the reader understand the defense industrial implications of both the navy and military transformation generally.

The existing innovation literature is examined to present and distinguish between what they call sustaining and disruptive innovation. Sustaining innovations are those innovations that build on familiar products in order to improve performance of established systems. In contrast, disruption innovations introduce new metrics that appeal to a different customer base with scope for significant performance improvement once introduced. The authors argue that the difference between the two types of innovations have significant implications for the transformation to NCW. In essence, will the requirements for sustaining or disruptive innovation to meet the challenges of NCW be met by traditional defense suppliers or new non-traditional suppliers?

Next, the study examines the major trends in the current defense industrial landscape to lay the foundation for analysing the specific sectors. After reviewing the defense industry consolidation of the 1990s and discussing some of the economic issues associated with fewer but larger defense firms in a near monopsony market place, the authors find that defense industry consolidation has been neither a catalyst of, nor

impediment to, defense industrial support to transformation. Next they examine the issue of globalization as it applies to defense industries and contend that defense industries will not undergo the same degree of globalization that is found in other sectors. The reasons for this can be summarized around the notion that there continues to exist a number of higher level impediments to defense related cross-border trade, investment and technology flow. This part of the study concludes with a brief examination of the commercial-military integration arguments that were commonplace in the 1990s. The authors argue that the need for an integrated industrial base to supply advanced technology, as suggested by military transformation advocates, may be premature. They point out that some large defense firms have actually shed commercial divisions and acquired more defense-related capability.

Finally there is an examination of each of the three industrial sectors identified earlier. Each examines the state of the sector today, discusses the connections to the NCW concept, including the performance metrics applicable to that sector, and then provides a sector evaluation. For shipbuilding, the study concludes that with the adoption of NCW, different firms may be able to compete with the traditional naval shipbuilders but the established firms will remain vital for the Navy to be successful in building the Navy after Next. Additionally, it is likely that shipbuilders will embrace sustaining innovations rather than disruptive innovations. In other words, there will be incremental changes to ship design.

Although the UAV sector is a fairly recent addition when compared to shipbuilding, it is thickly populated with a variety of firms. The authors argue that since the critical performance metrics of this sector are not yet clearly entrenched, there is significant scope for competing firms to offer better solutions than traditional defense firms. The study notes that the performance metric or group of performance metrics that set the standard for UAVs will be solidified through testing, experimentation and operational experience. Based on this expectation, the authors argue that those firms already producing UAVs will require sustaining innovation for performance metrics. On the other hand, new entries into the sector could prove more adept at presenting new technologies to the Navy that will maximize disruptive innovations, thereby establishing a clear advantage for the future.

Systems integration, the last of the three sectors, is perhaps the most critical for

NCW to be successful. The authors note that this sector is an independent sector of the defense industrial base with porous boundaries. This sector could allow firms from other sectors easier access than the shipbuilding and UAV sectors. As well, many firms have some systems integration capability already. Therefore, those with that capability, and particular those with military systems integrations expertise, will have an early advantage in meeting the systems of systems integration requirements required in NCW. For example, those organizations that specialized in the systems of systems integration for ballistic missile and air defence programs already have some experience. Consequently, sustaining innovation that exploits skills at the front end of a process should do well in solving one of the key challenges of systems of systems integration - defining the technical requirements of various systems components to ensure interoperability. This must be done early in the development process.

The strength of this study is the identification of a number of performance metrics in each of three sectors. This provides a basis for comparisons to be made within the Navy about competing technologies and it provides areas for the defence industry to focus its efforts in order to meet the Navy's requirements. Perhaps more significant in a broader context is the ability to utilize similar metrics in order to examine other areas of military transformation. For example, a similar set of metrics and a similar organizational structure could be used to analyze sectors directly linked to army transformation, such as combat vehicle platforms or systems integration of the future soldier system.

This is a very timely and well researched study that presents what some might consider technical information in a succinct and readily understood manner. Reading the paper should not be limited to those in the Navy. There are lessons to be drawn for all.

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Edwyn Gray. *19th Century Torpedoes and Their Inventors*. Annapolis: Naval Institute Press, www.NavalInstitute.org, 2004. x + 250 pp., illustrations, appendix, notes, bibliography, index. US \$32.95, cloth: ISBN 1-59114-341-1.

Since its introduction in the latter half of the nineteenth century, the self-propelled torpedo has profoundly changed naval warfare. Edwyn

Gray ably told the story of Robert Whitehead and the evolution of the first practical modern torpedo in two editions of *The Devil's Device*. Now, with *19th Century Torpedoes and Their Inventors*, he explores the concepts and inventions created by Whitehead's predecessors and competitors. The end result is an informative, intriguing and wide-ranging look at torpedo development, but one that often misses the forest for the trees.

This book is a companion volume to *The Devil's Device* and should be read as such. Gray begins with a useful introduction that demonstrates the self-propelled torpedo's place in the evolution of naval warfare. Each chapter that follows examines the evolution of specific innovations or the careers of particularly significant personalities. In the best monograph published in the last century, Gray discusses depth control and gyroscopic mechanisms, wire-guided control mechanisms, combustion chambers, contra-rotating propellers, rocket-propelled torpedoes, and spar torpedoes. He intersperses his narrative with descriptions and drawings of devices that ranged from the brilliant to the ridiculous in terms of practicality and deployability, another reminder of the hopeful and imaginative side of Victorian-era science and invention.

As a matter of course, Gray assumes throughout that his reader is familiar with the details of Robert Whitehead's contributions as explained in *The Devil's Device*. In terms of dealing with the technical details and specifications of torpedoes, this is an impressive research effort. Gray has combed the patent offices, technical journals and popular press of several key countries to good effect. While the technical details of some devices may never be fully understood, that owes more to ambiguous design than any shortcomings in Gray's research. His research, however, is less impressive as he moves away from technical details into the larger realm of naval history. At times, Gray relies too heavily on problematic sources. For example, in discussing John Ericsson's contributions, he repeatedly cites William Conant Church's "comprehensive biography" (91). Church's long association with Ericsson resulted in a biography whose objectivity has long been questioned; while useful to some degree, its shortcomings are well known. Likewise, Gray relies on Robert Wilson's autobiography in determining how Wilson first conceived of the screw propeller. Wilson claims to have first recognized the concept as a five year-old and then to have figured out how to make it work by age nine.

Gray almost uncritically accepts this account without corroboration, explaining Wilson's "inspirational reasoning" as "extreme precocity" (71).

Gray also consistently fails to incorporate recent research on larger issues into his narrative. For example, his discussion of the American Civil War would have been better informed had he consulted monographs by Raimondo Luraghi, William H. Roberts, and Robert M. Browning, Jr. Likewise, the context in which he discusses British naval developments would have been richer had it included works by Nicholas Lambert and David K. Brown. The recent relevant journal literature is almost entirely absent. As a result, the reader learns a lot about the minutiae of torpedo technology development but relatively little about what that meant in terms of warship design, tactical doctrine, or strategy.

Some readers will find Gray's organization of the book problematic. His decision to have each chapter cover a specific theme or group of inventors makes it difficult to put the many facets of torpedo development in context with each other. This difficulty manifests itself by constant references not only to devices mentioned in earlier chapters but also to weapons that have not yet been described but will be in the "next chapter." This forces the reader to put together an organized chronology of torpedo development on their own and makes it difficult for Gray's monograph to fully articulate the significance of multiple evolutionary threads as they interact with and respond to each other. The positive aspect of this approach is that the reader gains a more comprehensive understanding of the details of each development, but one wonders if the trade-off is worth it.

In the final analysis, this is a rewarding but frustrating book. Those looking for detailed explanations of the technologies associated with torpedo development in the late nineteenth century will find Gray's work an invaluable treasure trove, but those looking to understand torpedo development in a more holistic way or in the larger context of naval history will wish that Gray had written a slightly different book.

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Paul Gilje. *Liberty on the Waterfront: American Maritime Culture in the Age of Revolution*. Philadelphia, P.A.: University of Pennsylvania Press, www.upenn.edu/pennpress. 2004. 344

pp., illustrations, index, US \$ 29.95, cloth; ISBN 0-8122-3756-0.

In *Liberty on the Waterfront*, Paul Gilje has chosen a people whose experiences during the Age of Revolution have long been far from fully understood. Beginning with a discussion of how the concept of "liberty" animated and explains "Jack Tar's" behaviour, Gilje traces this idea through mariners' politics, family and gender relations, collective historical memory, and responses to reform efforts between 1750 and 1850.

As a whole, *Liberty* presents a well researched picture of how Atlantic mariners engaged—or did not engage—the political, cultural and social changes that shaped the Atlantic world between the mid-eighteenth and early nineteenth centuries. In arguing that "maritime society . . . was not a proletariat ready to assert class consciousness. . . . [nor] a group of would-be embattled patriots responsible for founding a nation," (xiii) Gilje challenges traditional views following Samuel Eliot Morison, and newer interpretations offered by Jesse Lemisch, Marcus Rediker, and Peter Linebaugh.

Gilje's work adds new dimensions to these now classic debates in his second and third sections, which scholars interested in antebellum reform movements and Early Republic historical memory will find most interesting. In his treatment of mariners' behaviour during the American Revolution, the impressment controversies of the 1790s, and the War of 1812, Gilje presents a story of mariners' survival in an age of maritime labour prédation, and demonstrates that revolutionary ideals such as patriotism and loyalty should be understood as fundamentally situational and contingent in a maritime world wracked by war. Gilje also highlights mariners' own use of print to integrate their stories into the national memory of the critical founding years of the new republic. In identifying seamen as objects of charity, and their publication of impressment and captivity narratives, Gilje makes a compelling case for the importance of mariners to larger port communities and the American nation as a whole. Ultimately, Gilje's research provides an important, overarching narrative organization uniting mariners' political agitation, labour prédation, religious reform, and self-understanding of their place within larger American culture.

Less convincing, however, are Gilje's periodization and his thematic constructs of "Jack Tar," and the ubiquitous waterfront. His

claim that maritime culture changed little between 1750 and 1850 contradicts well known changes in maritime labour brought about by industrialization, dropping freight rates, changes in ship and rigging design, and the political changes emanating from the Age of Revolution. Second, Gilje creates a ubiquitous "waterfront" that seems to be transferable not only across time but also space. This, too, is difficult to accept, as work by Daniel Vickers, Jeff Bolster and Eric Sager demonstrates that mariners from different port towns with different economic, racial and industrial compositions shipped out under very different auspices.

Most problematically, Gilje's defense of the "Jack Tar" stereotype, based heavily upon reform tracts, contradicts his own evidence that undermines such stereotypes. Gilje acknowledges in his seventh chapter that such images were constructed by reformers—many of whom were mariners themselves—seeking to highlight the benefits of religious and temperate living. Consequently, Gilje works against his own conclusions demonstrating that mariners were anything but the care-free stereotype he posits in his opening chapter.

Ultimately, however, *Liberty on the Waterfront* brings together many previously unlinked aspects of the maritime experience between 1750 and 1850 in ways that scholars interested in the social, cultural, and political effects of the Age of Revolution would be wise to visit. In bringing a coherent organization to this important and poorly understood subject—one that ties the maritime experience into larger cultural, political and social changes—is an important addition to the growing understanding of the Early American Republic.

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Eric J. Grove. *The Price of Disobedience: The Battle of the River Plate Reconsidered*. Phoenix Mill, U.K.: Sutton Publishing Limited, www.suttonpublishing.com. 2000. Viii +182 pp., maps, photographs, figures, notes, sources, index. UK £19.99, cloth; ISBN 0-7509-0927-7.

The hunt for the German armoured ship (*panzerschiff*) *Admiral Graf Spee* and her scuttling after a dramatic engagement has been the subject of two earlier major works and a motion-picture film. Eric Grove's revision of this well-known event is both fresh and inspired. Using new material from British and German

sources, his analysis provides many illuminating insights into the doctrinal, material, and intellectual conflicts experienced by the Kriegsmarine during its early conduct of trade warfare against Great Britain. In particular, Grove's treatment of the decisions taken by Captain Hans Langsdorff leading to the climactic demise of both the ship and himself is both balanced and sympathetic. Langsdorff's "disobedience" was to ignore his instructions to avoid engaging enemy warships, even if inferior, unless the risk entailed would further the principal task of destroying enemy merchant shipping. Grove asserts that Langsdorff erred greatly in venturing boldly towards Montevideo, where both convoys under close escort and independent hunting groups were likely to be encountered. Why he chose to do so is the worthwhile central theme of this engaging book.

The subject is treated in three sections that deal with the origins of the *panzerschiff* concept, the Battle of the River Plate, and the aftermath of the events. The battle is re-examined in 100 pages while the first and third parts are accorded only 45 and 30 pages, respectively. Given the familiarity of most readers with the events of the battle, more emphasis should have been placed on the other two parts as Grove's interesting analysis leaves the reader wishing for more of his insights. Nevertheless, many revelations are presented, including a major one that should serve to end the myth surrounding the origins and purpose of the 'pocket battleship'; a term that greatly distorts the actual capabilities of these decidedly limited ships.

Grove shows that design trade-off problems imposed on German warships by Treaty of Versailles limitations vexed the German naval leadership. *Graf Spee* was an innovative and unusual design, the product of extensive testing and careful consideration. Grove rejects categorically the oft-repeated claim that the *panzerschiff* "was designed for use against Britain's lifeline, her seaborne trade. He insists that *Graf Spee* and her sisters' real purpose was to prevent a French blockade of German ports by cruisers. Their 11-inch armament, high speed, and exceptional endurance were chosen to give an armoured ship sufficient 'legs' to avoid the French battlefleet while enabling them to dispatch patrolling cruisers (6). The seakeeping qualities of the *panzerschiff* were designed for the North Sea; they were intended for defensive operations near to supporting bases, not for extended operations in distant oceans. Their high endurance, made possible by diesel propulsion, which is usually

cited as 'proof of German intentions to engage in trade warfare, was a tactical tool that allowed the use of sustained high speed to achieve manoeuvre opportunities. This deduction is a major departure from conventional wisdom.

Grove details the many limitations that Hans Langsdorff had to deal with when *Graf Spee* was employed in a role for which she was not designed. Her diesel engines were significantly heavier than intended, which added to a general overweight condition. This resulted in poor sea keeping characteristics in heavy weather, made worse by a low forecastle, straight stem, and unarmoured bow that made *Graf Spee* a very wet ship. Her diesel engines were unreliable, demanded intensive maintenance, and created such vibration problems at high speed that they interfered with gunnery. In all, *Graf Spee* was not the fearsome weapon that the legend of the pocket battleship has perpetuated. Unfortunately, Grove claims that *Graf Spee* was more properly a 'light cruiser,' because her limited displacement did not allow thick armoured commensurate with her heavy armament and 'armoured ship' appellation (11). This categorization is misleading. Light cruisers were generally low endurance fleet support units whereas heavy cruisers were high endurance ships intended for trade warfare. *Graf Spee* was not designed for either fleet support or for trade warfare. The niche role intended for this unique type of ship continues to defy easy categorization.

The principal characteristics and dimensions of the different classes of ships involved, with the notable exception of those for the British heavy cruiser *Cumberland*, are described in detail but are not set out in tables. When taken with the inevitable desire to make comparisons between classes, the reader is forced to 'hunt' through the text. The effect of much useful research is largely lost on any but the most determined students, who will have to resort to tabulating the data for themselves. As usual, endurance and bunker age figures are not covered, which is a major oversight since the wide-ranging movements of *Graf Spee* imposed significant logistical requirements on both sides. Grove explains the vital contribution of the fleet support ship *Altmark* to German operations but largely ignores British support arrangements. Unfortunately, Grove perpetuates the myth that German support ships were not capable of alongside refuelling, claiming that this method was "later pioneered by the Americans" (21). By 1939, the USN had completely mastered alongside refuelling; the pioneering of this essential skill was accomplished in the First

World War, not the Second.

The main purpose of Grove's examination of the Battle of the River Plate is to assess the reasons why Captain Langsdorff chose to seek a risky engagement against British cruisers while still far from home. The author makes a convincing argument that the pressures Langsdorff felt came from the discontent of his own wardroom officers with their trade warfare mission, his personal experience with the German battle fleet at Jutland, and the distinguished history of the ship's namesake, Vice Admiral Maximilian Graf von Spee. Grove is convinced Langsdorff committed a fatal error in judgment. After a reasonably successful cruise, *Graf Spee* was on her homeward leg. In need of docking and engine overhaul, Langsdorff was tempting to seek a crowing victory; the destruction of a small but valuable convoy he believed was departing Montevideo. Despite the detailed analysis, Grove does not address the ultimate "what if question that would have brought the book to a more satisfying conclusion. What would have been the result if Langsdorff had brought *Graf Spee* home without striking into the Plate estuary? An otherwise fine effort is left unfinished by not postulating what 'the rewards of obedience' would have been had Langsdorff returned to a hero's welcome.

The balance of Grove's dispassionate analysis in the first section is noticeably less prevalent in the final two sections. Excellent line drawings are used to illustrate the positions of shell hits on *Graf Spee* but comparable drawings are not used to examine the damage done to *Exeter* (99). German gunnery, which scored hits with 11-inch guns against three opponents on 2.7 per cent of the shots fired is rated as "not very good." British gunnery, which scored hits with 8-inch guns at 1.5 per cent for *Exeter* and .97 per cent (charitably rounded up to "about one per cent") with 6-inch guns for *Achilles* and *Ajax* is considered an accomplishment "not to be underestimated" (167-168). By the final section, Grove has abandoned objectivity and unabashedly celebrates the British victory, enumerating the many awards bestowed to mark the occasion. No mention is made of awards to German participants.

Despite the noticeable change in tone towards the end of the text, Grove shows an impressive ability to understand and interpret the imperatives of German naval operations in their war against the western allies. This work, although not comprehensive, is a bold new addition to a more balanced appraisal of German naval objectives. It is a welcome addition to my

library and is recommended as a worthwhile title for both serious study and casual reading.

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Derek Hayes. *Historical Atlas of the Arctic*. Toronto: Douglas & McIntyre, www.douglas-mcintyre.com. 2003. 208 pp., illustrations, maps, bibliography, index. CDN \$75.00, cloth; ISBN 1 55365 004 2.

One of the most interesting and wide-ranging themes in the history of shipping is the quest for a passage along the northern coasts of Eurasia and America or via the central Arctic from Europe to East-Asia. From the sixteenth century on, the best navigators and sailors endeavoured to find a northern route to the East. In the nineteenth century, participation in an Arctic expedition was the highlight of a nautical career. Polar exploration pursued an unique geographic enigma that was closely tied to nautical challenges.

The first reports of the numerous more or less successful arctic voyage attempts were printed in the eighteenth century and Derek Hayes' *Historical Atlas of the Arctic* provides a similar type of overview. It is an exceptionally well-documented publication illustrated with some 300 maps. Derek Hayes shows us that the motivating forces behind the persons, organizations and nations involved were a nearly inextricable network which underwent significant alteration over time. Among the motives for exploration were discovering a new route to Cathay, China or Jesso, Japan (monopolised and supported by their own harbours); finding the Anian Strait, the name given to different geographical concepts involving a northern route; and exploiting noble metals and valuable minerals. Naturally, various Northern European nations dreamt of bringing the Far East trade under their control, instead of leaving it to the Portuguese and Spaniards. Later, scientific questions concerning meteorology, oceanography, bathymetry, geology and geophysics played an increasingly prominent role alongside geography.

By the nineteenth century geostrategic considerations began to be taken into account but by the twentieth century, these visions dominated. Not only was the Arctic surrounded by military bases but nuclear powered submarines and icebreakers were penetrating the central arctic basin.

According to recent statistics for

maritime traffic, the opening of a viable international northern sea route seemed to be within reach about twelve years ago. Today, however, not much attention is paid to such a route. One of the reasons is the gradual decrease in the rate per cargo unit for huge high tech vessels. In other words, the opening of the northern sea route would not cause a revolution of the maritime trade.

A chart or map is definitely a symbol of seafaring. When travelling ashore, a description of the way is often sufficient to find the destination. Travelling on the high seas is incomparably more complicated. Because seafaring is a very abstract undertaking, a chart is indispensable. The display of the surface of the earth in a form which reflects reality was a great intellectual challenge, not only because of the evolution of cartography but also because of the art of survey and the reaching of the areas previously unknown. The development of charts and maps is closely related to the history of discovering the globe as far as it gives an image of newly surveyed areas including the problem of geodetic projections necessary to reduce the three dimensional surface of the earth into two dimensions.

There are good reasons why we seldom find books which illustrate the history of the discovery of an area by the extensive use of maps and globes. Old charts are more difficult to work with. Archives tend to restrict the handling of these materials since maps are usually rare and fragile. Furthermore, to obtain a complete overview of a region one usually needs the resources of several archives. Fortunately, the current trend of digitizing of map collections has facilitated the procedure significantly. Researchers can have a look at the maps without even touching them. I must take the opportunity to remark that a historical atlas is not the term for a collection of old charts or maps.

Editing of the *Historical Atlas of the Arctic* is a great task for which one should congratulate the editor as well as the author. That the author works on a difficult terrain must have been clear to him. The very first map, which is said to be Mercator's concept of the north polar regions, immediately provokes questions: The source does not seem sufficiently referred to. The basis of the chart is not really the Mercator map given as a offshoot to his *Mappa Mundi* from 1569 (map 17 in the book) but rather, it is from a map printed in the *Atlas sive Cosmographicae meditationes de fabrica mundi et fabricati figura* (Atlas or cosmographie considerations about the creation of the world and the shape of the created) published

posthumously in 1895. An interesting item in this chart is the depiction of Nowaya Zemlya as a double island with the clearly separated Vaygach Island in the south. That means how interesting and accurate the surveys of Barentz 1594-96 might have been, in two points especially important for the navigation he was in error! In that sense this map is a step back. It is clear that it would be nice to hear more about its genesis.

The above remark is not a criticism. It merely illustrates that the history of cartography, especially of the Arctic, is full of problems and mysteries. The author is no doubt a specialist on the history of cartography of the Canadian arctic so that even the most demanding readers will be satisfied with those sections of the book.

On a positive note, Hayes has made wide use of maps which were edited in a German journal: *Mittheilungen aus Justus Perthes' Geographischer Anstalt über wichtige neue Erforschungen auf dem Gesamtgebiete der Géographie* von Dr. A. Petermann (Information from Justus Perthes' geographical establishment about important new investigations on the whole field of geography by Dr A. Petermann.) - known as *Petermanns Geographische Mittheilungen* (PGM). Petermann has often been discredited as an armchair geographer, but this criticism could be applied to most geographers since they mainly interpreted the data supplied by explorers and surveyors. August Petermann (1822-1878) was a master in that field. His maps of North America and Australia, for example, were by far the best available at the time. His journal, from 1855 to the First World War is a unique source for the international history of polar research. The quality of his maps satisfied highest requirements. This is true for the data as well as for the technical and aesthetical layout. During his lifetime, however, Petermann strongly promoted some hypotheses still connected with his name: for example, the existence of a central arctic land reaching from Greenland to Bering Straits; a navigable polar sea (with the vessels of his time) but more or less bordered by an ice belt (which one has to overcome before one can reach the pole by ship). To support his ideas Petermann did not hesitate to use weak data. A good example for this is given with the map 182/220 where *Wrangel Land* stretches over four degrees of latitude.

It is understandable that the text was not burdened with the citation of the sources and no doubt experts will miss some important charts, but under the viewpoint that a book like the one presented never claims completeness this

is no flaw.

I bought the book spontaneously and did not have to regret it because it is a fine book important for everybody who is interested in the history of cartography and polar research.

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Lewis Johnman and Ian Johnston. *Down the River*. Argyll, Scotland: Argyll Publishing, www.skoobe.biz, 2001. 126 pp., photographs, UK £ 12.99, paper; ISBN 1-902831-31-4.

Iron shipbuilding was born on the upper reaches of Glasgow's River Clyde, where, in 1831, the first sea-going, iron-hulled steamship, the forty-ton *Fairy Queen* was built by John Neilson. By 1842, four shipbuilders had established themselves within the city boundaries and marine engines were being manufactured by David Napier and James Elder. Given the proximity of iron deposits in the adjacent Lanarkshire coal fields, the future looked bright.

By 1900, more than two hundred thousand workers were employed in shipbuilding and the many related enterprises, but working conditions were atrocious and a lack of trust between labour and management had permeated the entire industry.

Although business had boomed during the First World War, by the 1930s, a lack of orders resulted in mass unemployment and enormous hardship. While modernization and diversification were encouraged by the government, most owners, and unions, were opposed to change. The situation remained unaltered until the Second World War. Then, after a brief post-war boom, the Clyde yards suddenly found themselves unable to compete with new subsidized operations in Norway, France, Italy and Japan, all of which had long since abandoned riveting for welded steel hulls and had adopted modern modular and line production techniques.

Between 1962 and 1964, no fewer than seven of the larger Clyde yards were forced to close and, in 1965, Fairfields, which employed more than 3,000 workers and had thirty-two million pounds worth of orders remaining on its books, declared bankruptcy.

The government of the day attempted to restore viability. Fairfields was taken over, some older yards were closed and others, both profitable and non-profitable, were grouped together under the management of well-known captains of industry, none of whom had any

background in shipbuilding.

When that did not work, the yards were nationalized. This did not work either, so those yards which still appeared viable were privatized. For some, this meant either take-over and closure by a former foreign rival, or a slow death by attrition. As a result, by the year 2000, only three yards remained in operation, Govan Shipbuilders, Yarrow's and Ferguson's.

Authors Johnman and Johnston's title is well chosen and their contention that all three major participating groups - management, unions and government - must share the blame for having sold this once-great industry "down the river" is well argued. But their methodology leaves something to be desired. The contents of *Down the River* consist of a rather haphazard series of personal interviews, bracketed between a brief general introduction to the history of Clyde shipbuilding and, under the title "Collapse", a relatively detailed four-and-a-half page essay on its demise.

Both the introduction and summation might serve their purpose adequately for anyone familiar with the history of Clyde Shipbuilding. Those unfamiliar with the subject, however, will find themselves quite bemused by some content of both these and the interviews. One example is the term "Dilutee", which derives from a situation which arose during the Second World War. When a man completed his apprenticeship, was laid off, or quit a shipyard job, he was likely to be drafted into the armed forces. This created a critical shortage of workers and it was decided that young women, with minimal training, often as little as six weeks, could undertake journeymen's work under the supervision of experienced workers. This created a work force with diluted skills, hence "dilutee" workers.

The interviews with former workers, managers and owners will be of considerable interest to anyone who has worked on Clydeside during the last half century, but the unbroken succession of full-page portraits by Ian MacKenzie becomes tedious after the first few pages. One cannot help but feel that photographs relevant to the trades the interviewees describe, or to the yards in which they worked, with, perhaps, a little inset portrait in the text, would have been much more interesting.

The text has been poorly edited. There are some spelling errors, such as Medians being spelled "Meechan's," occasionally the word usage is a little peculiar and at times, the text is confusing.

Good editing, better illustrations, a glossary of terms and an index could have saved this book, but, as it is, *Down the River* is likely to

appeal only to those with a specific interest in, or familiarity with, the subject matter.

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Mark Jones, ed. *For Future Generations. Conservation of a Tudor Maritime Collection. The Archaeology of the Mary Rose, Volume 5.* Portsmouth; The Mary Rose Trust, 2003. 145 pp., photographs, illustrations, tables, appendices, bibliography, index. US \$ 45, cloth: ISBN 0-9544029-5-2

As stated by the editor, Mark Jones, the book "provides an introduction to the conservation programme devised for the *Mary Rose*." (Back Cover) As volume five in the series "The Archaeology of the Mary Rose", the book progresses from the nature of the seabed environment, to the conservation of a wide variety of materials, and finally, includes a section on exhibition and storage. It is intended for conservators, archaeologists, historians, researchers and the general public interested in artifact conservation.

The book is very well structured. In general, the sources are excellent and support the text. The bibliography includes important references for archaeological conservation from laboratories around the world. It also lists, however, publications that do not support some of the treatments chosen for the project such as the use of cellulose nitrate and soluble nylon for the conservation of ceramics. The index eases the search for information and increases the value of this work as a reference.

The contents of the book follow the progress of the project from an examination of the seabed environment and storage of the finds, through the conservation of the various types of materials found, to a discussion of exhibition, storage and future directions. In each chapter, the editor moves from the generic to the specific, thus making the *Mary Rose* story all the easier to grasp. For example, he begins by analyzing seabed conditions in general and then moves to the specific site conditions that influenced the state of the *Mary Rose*. In each section dealing with specific materials such as, wood, metals, or ceramics, the editor proceeds in the same way - from general principles of material chemistry and artifact composition to the specific challenges encountered with the objects found and how they were overcome.

The *Mary Rose Trust* is not a conservation research facility and for this reason

well-established treatments were generally used. For example, nearly all of the wooden objects and the hull itself were treated with polyethylene glycol. Other techniques such as hydrogen reduction of the iron objects might be considered controversial. However a precedent had been set by the use of this treatment on the *Vasa* years before. (Barkman, L., "Conservation of Rusty Iron Objects by Hydrogen Reduction," In: *Corrosion of Metal Artifacts - A Dialogue Between Conservators and Archaeologists and Corrosion Scientists*, Washington, DC, 1977, edited by B. Brown, B. Floyd, H.C. Burnett, W.T. Chase, M. Goodway, J. Kruger, and M. Pourbaix (Washington: National Bureau of Standards, 1977), pp. 155-66.) This might have been the only realistic approach to rapidly remove chlorides from thousands of cast and wrought iron objects. The two chapters on wood and metal are the most detailed. Those describing the conservation of the other materials have shorter sections on the material science and here again generally included well established treatments. All of the chapters discussing conservation treatments contain tables which list the treatments used to preserve a selection of artifacts composed of a particular material. The inclusion of a chapter on the requirements for the storage and display of the conserved objects is an important addition. Many conservators would agree that the responsibilities of conservation do not end with the completion of the treatment.

As with any publication that reports on a specific project, the treatments used were specific to the needs of the *Mary Rose* hull and artifacts. While providing an excellent overview of the field of archaeological conservation, this book should not be considered to be the only reference required when treating marine objects. Also, the book might have benefited from the inclusion of more publications that do not support some of the treatment choices such as hydrogen reduction, cellulose nitrate and soluble nylon. However, the final assessment of this work would describe it as a useful addition to the body of conservation literature and a must read for those interested in the *Mary Rose* project.

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Hermann F. Koerbel. *Geschichte der Österreichischen Polarforschung/History of the Austrian Polar Expedition*. Vienna, Austria: Arctic Research Consortium Austria, www.arctic.at, 2003. CDN \$85, €55, compact disk; ISBN 3-9501733-0-7.

This CD largely consists of a tabular collection of data compiled mainly from monographs rather than a comprehensive history of Austrian polar research. What text there is, is often an excerpt from another source, not always identified. How these data are connected with the Austrian nation is often unclear. Moreover, the lack of bibliographical references makes it very difficult to check specific details.

There are a lot of inaccuracies in the text which are often due to an attempt to praise Austria or Austrians. For example, the *German Greenland Expedition Alfred Wegener, 1930/31*, completely backed by the Notgemeinschaft deutscher Wissenschaft (Emergency Coalition of German Science) is called the Great German-Austrian Greenland expedition. Julius Payer (1841-1915), an Austrian member of the German Expedition to Greenland, 1869/70, on the ship *Germania*, is named the explorer of *Kaiser-Franz-Josef-Fjord*. Against the rules governing all participants of the expedition, Payer named newly explored topographic features after the Austrian Emperor and other high-ranking Austrians upon his return. To avoid a huge scandal (at the very least), the Bremen Polar-Society was forced to confirm the names. Not surprisingly, while most of the participants and organizers of the German expedition to East Greenland maintained close contact for decades, contact with Payer was avoided.

Today, Austria's eight million inhabitants occupy an inland area of 84 thousand square kilometres, making Austria one of the smaller members of the European Community. At the time of the Austrian Polar Expedition, however, pre-First World War Austria was a huge empire - a real international superpower with several ports on the Adriatic Sea. In a famous naval battle in 1866, Austria defeated Italy near the island of Lissa (now Vis) on the Dalmatian coast and ended Italian supremacy in the Adriatic. With the decline of Venice came the rise of the cities of Trieste (now Trieste, Italy) and Fiume (now Rijeka, Croatia). Both cities soon became international ports and shipbuilding centres. Two big liner-companies were established and considerable sums were invested to the upgrade of Austrian navy.

Although Austrian naval development was under way by the mid-nineteenth century, lack of enough instructors or new enrollee to fill the ranks meant that foreigners were taken as well, such as the German-born Carl Weyprecht (1838-1881), about whom we will hear later. The growth of the Imperial Navy was mainly promoted by Wilhelm von Tegetthoff (1827-1871). He remains famous, not only in Austria,

but even in Bremerhaven on the shores of the North Sea where he entered port with his badly torn up frigate, *Schwarzenberg*, after breaking the Danish blockade of the German Bight. Tegetthoff was also a keen promoter of scientific investigation of the oceans and was organizing an Antarctic Expedition when he died unexpectedly. Although Tegetthoff's plans were not realized, an Arctic Expedition was undertaken in its stead.

Mainly privately financed and established within a few weeks, the Austro-Hungarian Northpole Expedition lasted from 1872 to 1874. The expedition leader was the German-born Weyprecht while his officers and petty officers were of various origins and most of the crew came from Dalmatia. There were no scientists on board. The expedition vessel *Tegetthoff*, which was built in Bremerhaven, drifted imprisoned by the pack ice from the west coast of Nowaja Semlja against the southern *Franz Josef Islands* which came in sight August 30, 1873. After a forced second wintering over, Payer with a small group managed to cross the archipelago in northern direction, an amazing achievement. On their return, they soon realized that if they did not abandon ship they were risking the lives of the men. Following a dramatic voyage back, the expedition eventually came to a happy end. Unfortunately, Payer's fascinating report of the expedition, a best-seller at the time, was never translated into English. This is a pity as the expedition, its background and its impact is of great historical interest.

Besides Austrian participation with a station on Jan Mayen Island during the International Polar Years (1882/83 and 1932/33) there are no other important Austrian polar expeditions. While the CD offers some original research, it will be up to the individual to decide if the data it contains justifies the purchase.

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Robert Moore. *A Time To Die, The untold story of the KURSK tragedy*. Toronto: Random House Canada, www.randomhouse.ca, 2002. 271 pp., map, diagram, index. \$34.95, cloth; ISBN 0-679-31202-1.

When the huge five-year-old Russian submarine *Kursk* disappeared during a major fleet training exercise in the Barents Sea north of Murmansk on Saturday August 12th, 2000, after a major series of unexplained explosions, a remarkable sequence of illustrative but not entirely startling events ensued. The story reveals Russian

reluctance to announce failure or bad news to seniors, their inability to accept assistance from Western rivals despite the completely inadequate technology of their own sadly neglected naval service, and the legacy of the still operational "cold war" with the Allies.

The explosions were strong enough to be identified by various outside seismologists, especially in Norway, and certainly aboard the highly secretive patrolling submarine USS *Memphis*. The Americans had been monitoring the exercise but, of course, could neither announce what had been heard, nor ask questions until they had withdrawn later in the week. Russian naval vessels had no idea of what had caused the explosions until *Kursk* failed to participate with them later in the day, and by late Sunday had not responded to signals.

In fact, the explosions occurred when the crew of *Kursk* were loading a presumed faulty torpedo in preparation for an exercise firing. This explanation was based on deductions by Allied submarine and torpedo experts, and only reluctantly and belatedly confirmed by Russian naval staff. Too long in storage and improperly maintained owing to severe financial stringencies within the armed forces, the torpedo had exploded. This started a fire in the forward compartment which detonated the rest of that compartment's torpedoes two and a half minutes later. The cause of the initial explosion is now considered to be due not to the warhead, but to the quite unstable and dangerous HTP - high-test peroxide fuel used to drive their major torpedoes. The Royal Navy's submarines of the *Excalibur* class, employing HTP fuel, were not nicknamed "Exploders" for nothing, and all Allied submarine forces had abandoned HTP years before.

The explosions had, in fact, blown off *Kursk's* bow, flooded the five major compartments immediately aft, including the entire command compartment and killed everyone there almost instantly. *Kursk* plunged to the bottom some 350 feet down, landing upright; the three after compartments remained watertight preserving 23 survivors. An emergency buoy built into the boat forward never released, and there was no possibility of blowing any of the buoyancy tanks from those aft compartments. There was enough air for three or four days, with modest provision for reducing the carbon dioxide that would accumulate from the survivor's breathing. At that depth water began leaking in slowly through the propeller shaft glands, both increasing pressure in the compartments as well as flooding them, which in turn increased the likelihood of fire. The trapped crew had to wait

for rescue from the surface as Russia had scrapped their two rescue submarines some six years before. In dim and dimming emergency lighting, the surviving officers made lists of the men crowded in the ninth and aftermost compartment and waited, silently.

At 5 p.m. that Saturday, Naval Headquarters ashore near Murmansk were advised that communications with the *Kursk* had been lost. An elderly rescue ship, the ex-merchantman *Mikhail Rudniski*, was told to stand by. Not until 11:30 p.m. was an emergency message issued that a submarine was missing. At around 4:30 the next morning *Kursk* was identified in 350 feet, badly damaged forward. The rescue vessel could only stay over her for a short time due to old and depleted batteries. It carried no divers, although for experienced, well-equipped divers, 350 feet is not a great challenge. President Putin, in office only three months and on holiday in the Black Sea area, decided to remain there, a decision which caused much bitter and vocal comment later. By noon on Sunday, leaked details of the sub's loss reached the families of the *Kursk's* crew, but they were told that all were safe and rescue was under way. There had been, in fact, no contact with anyone in the sunken boat. At 5:30 p.m. a Russian rescue vehicle descended, but could not "lock on" to the rescue trunking on *Kursk*. Bad weather unfortunately thwarted further progress.

On Monday the 14th, Norwegians informed their Russian counterparts at Murmansk that they had heard of the sinking and offered a rescue vehicle and diving help. They were told "The situation is under control, no help is needed." The British Assistant Ambassador in Moscow also offered RN skill and help, and was refused. Nevertheless, both Norwegian and British forces began preparing to send help, in case they were asked. With political 'hard liners' in Moscow continuing to refuse the Western Allies' help, it was not until mid-week that the Navy at Murmansk accepted the offers, asking for help early Wednesday from Norwegian offshore oil divers. By the end of that day a fully equipped offshore diving support ship was on the way to Tromsø to pick up RN divers flown over and some of their own gear and then to the Barents Sea. Seven days after the explosion, the rescue ship arrived with an RN-chartered support ship reaching the site late on Saturday. They are ordered to stay clear and not dive on the wreck.

Meanwhile, the Russians announced the loss was probably caused by collision with another Western submarine, or perhaps a surface vessel. They said they were in touch with the crew, that there was a strong current and the

submarine was listing, making rescue difficult, but it was proceeding. All this was pure fabrication, to appease seniors and the now surprisingly vocal, hostile and demanding *Kursk* families and other Russian submariners. The public uproar was in itself a fascinating example of the change in democratic operations within Russia. Even as late as 8:27 p.m. on Saturday the 19th, the Norwegians and RN divers were refused permission to attempt to "lock on" to the submarine, now found to be lying with only a small list and in minimal current. Not until 11:06 on Sunday morning, eight days after the huge explosions were heard, did an RN diver tap on the hull, and get no response. On Monday morning the escape hatch was opened, and the aft compartment found to be not only fully flooded but, at some stage, subjected to a flash fire. All 23 crew were dead. Several notes were found on the bodies which were not removed until *Kursk* was lifted and brought ashore a year later, in October, 2001.

Moore tells the story in excellent although not intrusive detail. He is a competent reporter, and makes good use of his access to both the Naval commands in North Russia, Norway and the U.K. and all the divers who worked over the wreck. To this day, officials in Moscow remain unhelpful, suspicious and secretive, worried that the Allies are merely trying to spy inside one of their submarines. The extensive coverage of the sinking at the time and since in the Western press has offered a fascinating glimpse of the old Russian political regime stubbornly holding on to the tenets of suspicion, non-cooperation and reluctance to tell seniors and politicians bad news, while the Navy gradually react to the time-honoured sailors' maxim that they help each other in times of deep duress.

As a final note, the *Kursk* tragedy is a warning lesson to all countries that operate submarines not to allow their rescue provisions, or even rescue co-operations, to deteriorate, and thus put at hazard the lives of submariners. A nation dare not have one without the other. There have been several books on the *Kursk* disaster, but this is one of the most readable and informative, even for a non-naval reader, and an interesting sociological study as well.

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Andrew David, Felipe Fernandez Armesto, Carlos Novi, and Glyndwyr Williams, eds. *The Malaspina Expedition, 1789-1794: Journal of the*

Voyage of Alejandro Malaspina, Volume II, Panama to the Philippines, London: The Hakluyt Society, www.hakluyt.com, in association with the Museo Naval, and with the assistance of the Ministerio de Asuntos Exteriores, both of Madrid, 2003. xx + 511 pp. Illustrations, charts, sketch maps, bibliography. £55.00, cloth. ISBN 0 904180 81 6.

This second volume of Malaspina's journal takes us from Panama to the Philippines by way of the Pacific coast of North America and the Marianas. The expedition had originally intended to visit Hawaii and Kamchatka, but on arrival at Acapulco Malaspina received orders from Madrid to investigate Ferrer Maldonado's 1609 supposed Strait of Anian in 60° North. This change of plans radically altered their itinerary, but fortunately brought Malaspina to Vancouver Island briefly in the summer of 1791.

This volume is, therefore, of special interest to Canadian readers as it covers his exploits in the Pacific Northwest and his visit to Nootka. He was working to a tight schedule and had to cram in this Maldonado foray *and* cross the Pacific before the monsoon season broke in the Philippines. He therefore had little time to linger.

Sailing north from Acapulco, the expedition made its first landfall at Yakutat Bay in Alaska. Here Malaspina made contact with the Tlingit and his artists recorded their giant mortuary and totem poles, perhaps the first of any West Coast Indian tribe. More interesting, however, was the topography, which had the very real appearance of being Maldonado's fabled Northwest Passage. Alas, Malaspina was quickly disillusioned. The head of the bay was found to be nothing but a solid wall of ice. Sadly naming it 'Port of Disenchantment', he realized what his scientific training had told him all along, that he had been sent on a wild goose chase. Coasting back down the Alaska Panhandle his two purpose-built corvettes successfully weathered a full hurricane off the Dixon Entrance before putting in to Nootka. It says much for the quality of his ships and seamanship that they needed virtually no repair.

Spain had now been at Nootka for more than two years. Though relations with Maquinna had not always been harmonious, Malaspina made it his business to cultivate the chiefs' friendship. Nevertheless, his first function on arriving at a Spanish port was to arrange for a detailed survey to be made of the approaches, and to determine accurate observations of latitude and longitude.

Sailing after only two weeks, he caught

up at Monterey with the forerunners of another Spanish expedition which only that summer had become the first Europeans to penetrate the Georgia Strait, the body of water lying between Vancouver Island and the British Columbia mainland. Once back in Acapulco, Malaspina sensed the area's importance and detached two of his most able lieutenants, Galiano and Valdes, to examine these waters further. He then set out across the Pacific to the Philippines on his fourth visit to that far-flung corner of the Spanish Empire having made careful plans for the six months he would spend there. The remainder of this second volume of his journal is taken up with reports of his officers and scientists on their varying surveys among the islands.

The Appendices carry a detailed examination of the Maldonado myth. It is easy for us to be wise after the events, but in the Age of Enlightenment, the theoretical geographers still had an important say. Only two weeks after the signing of the Nootka Convention in Madrid, the Royal Academy of Sciences in Paris had heard most rational arguments as why Maldonado might indeed be right. Spain, in alliance with the tottering throne of Louis XVI, could ill afford to ignore her northern neighbour, Floridablanca's government had no alternative but to order Malaspina north. To bring the modern reader up to date with eighteenth century thinking, the editors have diligently examined the relevant sources.

Malaspina's name is so unknown outside of Spain even today that a newly published international encyclopaedia on world discovery (*Salentiny, F., Encyclopedia of World Explorers, Cologne & London, 2002*) makes not a single mention of the expedition. Whereas accounts by James Cook and other explorers were eagerly rushed into print and translated into foreign languages, it has taken an amazing two hundred years for an English edition of this important Spanish journal to appear. And it is only now, with the second volume, that the real quality of this beautifully crafted translation is becoming apparent. The four editors wisely recruited an international team of scholars to add their expertise, with the result that this Hakluyt edition is likely to become the definitive text of Malaspina's journal in either the English *or* the Spanish languages. This is in no way to deprecate the 1990-1994 nine-volume Museo Naval edition in Spanish, which covered a wider range of activities by the same expedition.

It was no easy task to translate Malaspina's archaic Spanish into modern English, and thus the footnotes provide a much needed explanation of the Spanish world to

foreign readers. Spain was an empire when Drake and Hawkins were but babes-in-arms. The world at large is still unaware of the many Spanish expeditions that crossed the Pacific, quite apart from the annual dispatch of the Manila galleon (*Landin Carrasco, A., Espaha en el Mar: Padrón de Descubridores, Madrid, 1992*). Not for nothing did Oscar Speke term that ocean 'the Spanish Lake'.

The translation highlights differences between the British and Spanish navies. The Spanish two-tier system of officers created a more distant relationship between captain and crew. Familiar with the flogging of deserters, we find Malaspina's treatment of his offenders excessively soft. And desert they did in droves, every time a ship reached a Spanish port. But the welcoming sound of their own language in the bars and fleshpots ashore was not a temptation that British seaman in the Pacific had to suffer, so perhaps we should not judge Malaspina unfairly. The fascination of this edition is that we are let into the world of *el Armada Real*, the royal navy of Spain, a pleasure too long denied those of us in the English speaking world. An admirer of Cook, Malaspina not only used British chronometers, as a scientist and trained hydrographer, he selected specialists from a wide variety of disciplines to accompany him, not all of them Spanish.

The high standard of illustration set by the first volume continues here in the second. In contrast to the oil colour artists who accompanied Cook's expeditions, Malaspina limited himself to pen-and-ink draughtsmen who might occasionally enhance a subject of particular interest with a watercolour wash. Many of their landscapes are reproduced here in sepia, which accentuates the almost photographic-like quality of the detail. Malaspina was first and foremost a surveyor, and thus a few of his charts are included, some of them being British reprints. But his task went far beyond the mere recording of the visual, he was also required to report on the political and economic conditions in the colonies he visited, for to Spain this was no South Sea voyage, but the much needed examination of an ailing empire. It is difficult to find flaws with this fine book. The decision to translate Spanish place names into their English equivalent sometimes makes it difficult to identify the original, and the pressure on both editors and the Society to complete such a major undertaking occasionally shows through. For instance, with the sketch maps provided of the Philippines, it is difficult to follow the routes of Malaspina's scientists throughout the islands. This is regrettable as it is therefore difficult to identify eighteenth century place names today.

It would be wrong to end this review without one final comment. The tedium of those endless days at sea in the age of sail often give rise to equally boring reading. But it was their very expertise at sea, in handling these same conditions, that brought a captain to his position in command of a vessel. The Hakluyt Society was indeed fortunate in having, as their principal editor, a man who is both seaman and navigator, and thus uniquely gifted to interpret Malaspina's journal for us. Andrew David's footnotes, explaining the inner workings of Malaspina's mind, add appreciably to the enjoyment of the narrative.

This first English edition of a long overlooked Spanish voyage of exploration cannot but be an important contribution to the history of discovery. We look forward with pleasure to the publication of the final volume next year.

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Lawrence Paterson. *U-Boat War Patrol. The Hidden Photographic Diary of U 564*. London: Greenhill Books, www.greenhillbooks.com. 2004. 206 pp., photographs, appendices, bibliography, notes, index. UK £25.00, cloth: ISBN 1-85367-575-X.

Depending on what one hopes for in a book on wartime submarine exploits, you can get a pedestrian story narrative, a journalist's enthusiastic fabrication of near-truth, or a well scripted and entertaining or harrowing history by a participant. This book is something quite unique: as the sub-title says, it is the interpretation from the diary of one U-boat's single ten-week war patrol in the summer of 1942, along with a collection of over 250 photographs taken by a professional photographer sent along on the patrol. The story is well scripted by Paterson, not himself a submariner but an amateur expert, with only occasional actual brief direct quotes from the boat's KTB or war diary. What makes the volume of the greatest interest is the selection of photos and their coverage.

Unearthed in April 2000 in England, the photos were "liberated" at the war's end in Brest, and retained in a small box by one of the returning servicemen. They found their way to the Royal Navy's Submarine Museum at Gosport, where Paterson researched the story behind them and then prepared the narrative.

It has been said of C.S. Forester that one could use his Hornblower series as

Seamanship Manuals on how to lay a bomb ketch or work a frigate off a lee shore in a gale. Similarly, the photographs, the accompanying cut-lines and the description of what was happening could serve as a valuable working guide for training U-boat Watch Officers. The boat was a standard Type VII "Ocean" boat, with, one gathers, the very popular KL Reinhard "Teddy" Suhren as her CO. The patrol was from the French port of Lorient southwest across the Atlantic to the Caribbean and return. During the patrol, Suhren sank five freighters and tankers (he claimed another, but it was not sunk - a very common error when the attacker could not surface to see actual results); refuelled and transferred torpedoes and stores at sea twice, and suffered several damaging depth charge attacks by Allied ships and aircraft. Two crewmen had to be returned to base by returning U-boats due to illness and injury but all the rest returned unscathed - even by 1942 an accomplishment in itself. By 1942 Suhren was a highly experienced officer, much of that expertise gained as a First Watch Officer and on five previous patrols in this boat as CO. - on one of which he sank the Canadian tanker *Victolite*. He was careful of his men's health and well-being, but tended to be rather irreverent toward Naval and Nazi hierarchy, earning rebukes by Grand Admiral Doenitz on two occasions.

The details of the photography, inboard, on the conning tower and on deck, give an excellent and rather rare picture of life aboard - the crowding, the running repairs required, moving the one-ton reload torpedoes from under-deck storage into the tubes, the constant lookout watch, and the camaraderie of 45 men jammed into the soon malodorous crowded messes. The publisher has wisely included a few less than fully satisfactory photos that were important to the tale; for example, a grainy night shot of an exploding 88mm. shell hit on a freighter for instance. In their far wider and more comprehensive selection and description, that portion alone is much better than in Otto Giese's *Shooting The War* (Leo Cooper, London, 1994)

The narrative is clear and strongly supports the accompanying photos, although Paterson's style becomes rather florid toward the end of the book. His descriptions of ships attacked and some extraneous detail tend to give one the impression of 'everything goes in', but given that this is a 200-page narrative of one patrol, the detail is acceptable if occasionally tedious. The book opens with a few pages of background on Suhren and the U-boat war in general, and finishes with a brief but very satisfactory Epilogue outlining the fortunes of the

members of the crew we meet during the patrol and of U564 - which was later sunk under another CO.

Altogether a most interesting and even useful addition to the U-boat war bookshelf, and refreshingly different from predecessors this reviewer has seen.

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Steve Ritchie and fellow writers, *As It Was: Highlights of Hydrographie History from The Old Hydrographer's Column*, Hydro INTERNATIONAL Volumes 1-6. GITC bv, P.O. Box 112, 8530 AC Lemmer, The Netherlands, 2003, 118 pp., maps, colour & bw illustrations, "Further Reading." paper. ISBN 90-806205-5-6.

This delightful book will be of interest to both the general reader and those with specialty knowledge. Rear Admiral Ritchie is, of course, well known in hydrographie circles. *Hydro INTERNATIONAL* had the wonderful sense to publish columns by him, and his invited fellow writers, on "As it Was" subjects of hydrography. The forty-eight columns published here range from sailing directions of the second century AD to current precise location charting in the North Sea oil fields. Along the way, the topics cover fifteen different countries from the arctic to the antarctic, occident and orient; important developments in hydrography; biography, and personal anecdote and recollection. The "Canadian content" includes a biography of Henry Bayfield, an account of Joseph Bouchette's survey of Toronto harbour and a description of the removal of Ripple Rock. Every article is well illustrated.

As one might expect, given the origins of the material, it is easy reading - a book that can be picked up and put down, suitable for dipping. But it is all well worth reading, and along the way, there is both some masterly writing and fascinating information. For example, the fate of Malaspina is described this way. "On return from the voyage, after pressing his unsolicited political advice on the King's Chief Minister, he was denied the opportunity to work on the hydrographie material he had brought home or to publish his journals" (50). That is certainly a unique way of saying he was imprisoned, and then banished. Or, in the discussion Ferdinand Hassler, founder of the United States Coast Survey, we learn that "his few luxuries onboard [his unique horsedrawn spring-mounted carriage] included a locker stocked with Swiss wines" (60).

That comment sent me to my books on wine to discover that Switzerland does indeed have a small wine industry.

This book will be of great value to the student for two reasons. First, the descriptions of equipment and methods are clear, simple and straight forward. They will be a tremendous aid to anyone working in the field who does not have experience at sea. Second, at the end of most pieces is a brief "further reading" suggestion. While these might lack the formality of a bibliography, they should not be ignored. They highlight material in German and French as well as English. Many of the sources cited are old journals, special publications in countries such as Turkey, or society newsletters, none of which would likely show up in a computer search today.

This book will have an honoured place on my bookshelves.

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