

Preface

The authors of this book do not claim that mines won the war against Japan. Mines were eminently successful. What they did do was provide the knock-out blow in the maritime blockade of Japan which had almost been completed by the submarines of the United States Navy. Even at the very end of the war our submarines were unable to penetrate the Inner Zone of Japan and were thus incapable of completing the blockade by themselves. Mines played a very important, though not a decisive part, in the war.

—Statement made in the foreword of *Mines Against Japan*, a book prepared by Ellis A. Johnson and David A. Katcher in classified form in 1947. The Naval Ordnance Laboratory White Oak, Silver Spring, Maryland, published it in 1973.¹

There are few books devoted to the contributions to naval history of minelayers—ships, submarines, and aircraft—perhaps because the use of mines is considered ungentlemanly. Within the U.S. Navy, there has in the past, and there remains today among some senior leaders, disinterest or even disdain for mine warfare. Such attitudes date back to the American Civil War. Faced with the Confederate Navy's use of mines (then termed torpedoes), Adm. David Glasgow Farragut, USN, only grudgingly decided to employ these same weapons in retaliation. On 12 August 1864, he wrote to Secretary of the Navy Gideon Welles, "Torpedoes are not so agreeable when used on both sides, therefore I have resultantly brought myself to it. I have always deemed it unworthy of a chivalrous nation, but it does not do to give your enemy such a decided superiority over you." This perspective was not unique to Americans. During the Russo-Japanese war of 1904-05, British Admiral Sir Algernon Frederick Rous de Horsey, RN, declared that the laying of mines in the open sea was "the act of an enemy to the human race."²

Such attitudes prevailed at the onset of both world wars. Following Germany's attack on France through Belgium in 1914, and Britain's resultant entry into World War I, the Royal Navy's initial use of mines was defensive in nature. Fields were put down in the Dover Straits and in the approaches to British naval bases, ports and harbors in an attempt to protect the Fleet and merchant shipping from attack.

Despite these initial efforts, German submarines continued to sink vessels with near impunity, because only relatively small portions of the British Isles and the North Sea were then protected by mines. Forced to find other means to hold the submarines at bay, Britain began offensive mining in German home waters. This action also helped to blockade merchant shipping carrying desperately needed food, supplies, and war materials from entry into enemy ports.

This same progression from defensive to offensive mining took place in the Pacific in World War II. After Japan invaded China in 1937, she required resources available in Southeast Asia (colonized by the British, French, and Dutch) to sustain her war effort. In recognition of increased Japanese aggression, and to help prepare for the possibility of invasion, Britain and the Netherlands laid defensive minefields at Hong Kong, Singapore, and the Netherlands East Indies including Borneo. America followed suit in the Philippine Islands, and Australia in waters off that country and New Zealand.

During the three months following the attack on Pearl Harbor on 7 December 1941, Japanese forces captured Wake Island, blitzed the Philippines, and seized Guam, Hong Kong, Thailand, North Borneo, and Singapore. Finally, the loss of the Netherlands East Indies on 9 March 1942 knocked the British and Dutch out of the war in the Pacific. The U.S. lost Wake Island and Guam; and would later lose the Philippines on 8 May. The U.S. Pacific Fleet worked to prevent further expansion by Japanese forces, while Australia prepared for the possibility of an invasion.

Over the course of the war, a total of 21,000 U.S. mines were used against Japan, of which about 3,000 were laid by the Navy. Some were employed defensively. As Halsey and MacArthur's forces advanced up the Solomon Islands and New Guinea, and through the Bismarck Archipelago, and Spruance's forces through the Central Pacific toward Japan, the Allies laid mines to protect ports and harbors used by their naval forces from entry by Japanese submarines.³

In 1942, few aircraft or bases were available for aerial offensive minelaying, and accordingly, U.S. submarines were pressed into service. Seventh Fleet submarines based in Australia placed minefields along Japanese shipping routes in the Gulf of Thailand and the Gulf of Tonkin. Submarines from Pearl Harbor conducted similar operations off the coast of Japan and China. Because submarines were so profitably engaged in hunting ships with torpedoes, their mining effort was never large. But their intermittent minelaying throughout the war (carried out on 33 patrols) contributed a total of 658 mines in 36 minefields.⁴

With the exception of one operation in August 1942, early 1943 marked the start of offensive mining by surface minelayers. Between February 1943 and May 1944, U.S. Navy destroyer minelayers (DMs) and infantry landing craft (LCIs) laid 2,817 moored-contact mines and 12 magnetic-ground mines in seventeen fields in the South and Southwest Pacific.⁵

Also in early 1943, an aerial minelaying offensive began which would continue throughout the war, increasing in intensity and transitioning from a series of tactical operations to a strategic campaign.⁶

USN, USAAF, AND RAAF MINING AGAINST JAPAN

In early 1945, when U.S. Army Air Force B29 bombers became available, they sowed thousands of mines in Japanese home waters in an effort to force an end to the war. This effort to induce Japan to capitulate was codenamed Operation STARVATION. Between March 1945 and the end of the war, B29s mined every important port in the Japanese homeland, her Inner Zone. Japan's outer defense perimeter, or Outer Zone, roughly formed a 3,000-mile radius arc.

Quantities of mines cited in the following tables do not include British, Dutch, and Australian defensive mining, nor RN and RAF offensive mining in the Pacific. Also, a few more mines were dropped than those annotated "in target areas," which apparently reflect pilots not always including in their count, ones that fell astray.

U.S. Army Air Force Minelaying in Japan's Inner Zone

Aircraft Sorties	Total Mines	Enemy Vessels Sunk/Damaged	Notes
1,529	12,135*	294/376	Damaged ships include 137 that were knocked out of the war ⁷

* Mines laid by aircraft in target areas; number expended unknown

USN, USAAF, and RAAF Minelaying in Japan's Outer Zone

Minelayer	Total Mines	Enemy Vessels Sunk/Damaged	Notes
Submarines	658	27/27	Records from only 21 of 36 minefields
Ships	2,829	8/3	In support of tactical operations, and often in collaboration with aircraft
Aircraft	9,254*	186/154	Includes RAAF planting 2,512 U.S. mines in SWPA, and USAAF British mines in CBI
Totals	12,741**	221/184 ⁸	

USAAF: U.S. Army Air Force CBI: China-Burma-India Theater

RAAF: Royal Australian Air Force SWPA: Southwest Pacific Area

* Mines laid by aircraft in target areas; 9,829 mines were expended

** Includes 1,791 British mines and 106 dummy mines

A total of 1,075 Japanese ships were sunk or damaged by the 24,876 mines laid by USN ships, submarines, and aircraft, USAAF bombers, and Royal Australian Air Force PBY-5 Catalina flying boats over the course of the war. Included in this total were at least 109 combat vessels, and about one-quarter (by tonnage) of the prewar strength of the Japanese merchant marine. A comparison of the percentage of mines laid by aircraft, ships, and submarines and percentages of resultant enemy ship casualties (sunk or damaged) follows:

• Aircraft:	86% mines	94% ship casualties
• Ships:	11% mines	1% ship casualties
• Submarines:	3% mines	5% ship casualties ⁹

Even a cursory review of this data might well prompt the question, why in the world did the U.S. Navy employ surface minelayers, given the high risk to them, and apparent low yield of Japanese ship casualties? The answer is, ships could carry large quantities of moored mines into enemy waters, thus creating a complementary danger to that of ground mines laid by aircraft or submarines. However, they were at great risk when operating independently because, being neither as fast as planes nor as stealthy as subs, they could be easily detected and attacked.¹⁰

Aircraft became the minelayer of choice because they could rapidly sow mines in enemy waters and reseed those areas without fear of being endangered by ones they had previously laid. However, plane losses were much greater than those of ships or submarines conducting mining, owing to the high number of sorties they flew in hostile areas.¹¹

Submarines could lay mines with great secrecy, and at distances beyond the range of aircraft operating from particular bases. However, they carried relatively few mines, were at risk when operating in shallow waters to deposit them, and thereafter had to avoid those areas. Moreover, commanders were averse to leaving on war patrols without a full load of torpedoes, having left some of their precious “fish” behind to free up space for mines.¹²

EMPLOYMENT AND CHARACTERISTICS OF MINES

Sea mines are categorized by means of positioning and means of detonation. The body of a moored mine is suspended in the water column, tethered to an anchor on the sea floor. Bottom mines (sometimes called ground mines) rest on the floor of a body of water. Moored mines, intended for use against ships or submarines operating near the surface, must be close enough to cause their targets harm. Being buoyant, moored mines typically have smaller explosive charges than do bottom mines. Bottom mines are primarily used against surface targets. Pressures at depths greater than a few hundred feet inhibit pressure and acoustic sensors, and the explosive force is suppressed.¹³

Photo Preface-1



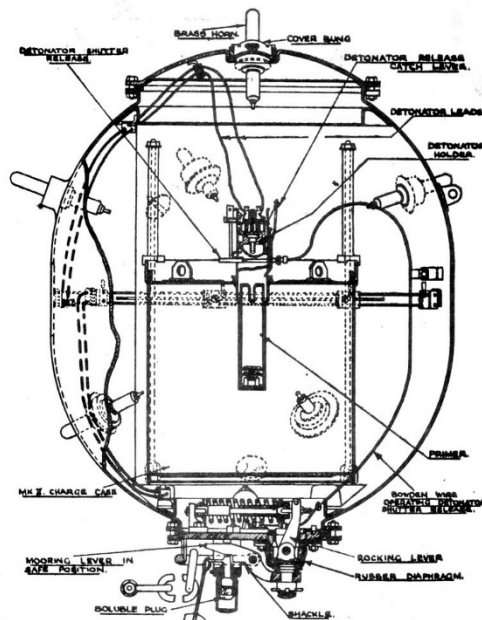
British Fairmile B motor launches, laden with moored mines and ground mines.
From the collection of Rob Hoole

A third type of mine is the drifting mine. Unanchored mines not affixed to or embedded on the bottom must sterilize themselves (become non-functional or self-destruct) within an hour after deployment (Hague Convention VIII of 1907 guidance). Because these type mines are indiscriminate in what they might damage or destroy, a Mine Danger Area must be clearly established and its boundaries widely disseminated in a Notice to Mariners (to prevent neutrals and innocents from entering it). Some countries ignore the

requirement for the ordnance to disable itself in an effort to gain advantage over, or parity with their adversaries. Drifting mines may also result from moored mines having broken adrift due to strong winds, waves or currents.¹⁴

Mines may either be controlled or independent and may be used offensively or defensively. Those which are controlled (command activated) are usually used in defensive fields to protect friendly harbors from enemy ships or submarines and are manually detonated from shore. Offensive mines are employed against opposing forces, targeting shipping routes, submarine operating areas, and harbors and ports utilized by them. Such ordnance operates autonomously. Once in the water, mines await unsuspecting target vessels to make contact or, for some types, pass close enough to trigger them.

Diagram Preface-1



British Mk 14 moored contact mine used in World War II.
Collection of Rob Hoole

Contact mines are designed to explode when a ship strikes one of several projections on the outside of the mine body. The earliest mines, such as the British Mk 14 (illustrated), utilized protruding horns for this purpose. Each horn contained the components of an electrical battery: a carbon plate, a zinc plate, and (inside a sealed glass tube) a

bichromate solution. When a ship bumped against the mine and bent a horn, the glass tube inside fractured allowing the liquid to come into contact with the two plates. This completed the battery, producing the voltage necessary to detonate the mine.¹⁵

More sophisticated “influence mines” do not require physical contact. They are activated by one or more predetermined criteria. These included: (1) the disturbance the steel hull of a passing ship or submarine makes to the earth’s magnetic field, (2) the sound its propeller cavitation and/or hull resonance (created by operating machinery) produces, (3) the change in water pressure caused by passage of the vessel, or (4) some combination of these influences.

BRITISH, DUTCH, AND AUSTRALIAN MINEFIELDS

Almost all of the mines collectively sown by British, Dutch, and Australian forces in the Pacific were put down in defensive fields. These included fields laid off Hong Kong, Singapore, and the Netherlands East Indies as part of unsuccessful defenses against Japanese invasion; and in fields off Australia and New Zealand to help guard against possible invasions of these countries—which did not materialize.

BRITISH OFFENSIVE MINING

In 1944, No. 159 and 355 Squadrons, Royal Air Force, and two flotillas of Royal Navy submarines began offensive mining in the South-East Asia Command (SEAC) theater; created by the Allies in August 1943, following the fall of Singapore and the Dutch East Indies. The SEAC encompassed the land areas of India, Burma, Ceylon (Sri Lanka), Malaya, northern islands of Sumatra, and Siam (Thailand), the Indian Ocean and the Arabian Sea. The RAF was generally allocated targets in Burma and Siam, while the submarines were left to mine the Malacca Straits, at that time outside air range.¹⁶

The Royal Navy and Royal Air Force laid a total of 263,850 mines in all theaters of war, sixty percent for defensive purposes. In the Far East, a handful of World War I vintage British destroyer-minelayers laid 6,273 mines in the approaches to Hong Kong and Singapore, doing a fine job. Unfortunately, Japanese invasion forces arrived over land, not by sea. In 1944-45, as part of Allied offensive mining, RN submarines sowed 501 mines in the Malacca Straits. The only offensive mining by a ship in the Far East took place in December 1941, when HMS *Express* laid eighteen mines in the southern approach channel to Penang.

British Minefield Types/Numbers of Mines			
Type Minefield	Far East	Elsewhere	#Mines
Defensive	6,273 ship-laid	153,719	159,992
Deep Trap		26,546	26,546
Offensive	519 ship & sub-laid	76,793	77,312
Total number of mines	6,792	257,058	263,850
Ships/Submarines/Aircraft			#Mines
HMS <i>Adventure</i> , and auxiliary minelayers (converted merchantmen)			149,720
fast minelayers			18,450
coastal minelayers, local defense destroyers, and mining tenders			22,448
destroyers			7,143
coastal forces craft			7,014
submarines			3,429
aircraft			55,646
Total numbers of mines			263,850 ¹⁷

A portion of the 55,646 mines planted by British aircraft (RN and RAF) in the war were 3,235 of 4,374 mines laid by Allied aircraft within the SE Asia Command between February 1943 and July 1945. Use of “Deep Trap” minefields cited in the first table (unrelated to the subject matter of this book) was initiated in August 1944 to endanger U-boats which had penetrated anti-submarine defenses to the west of the British Isles and had started to take a toll on cross-channel shipping.¹⁸

AUSTRALIAN MINELAYING

A single surface minelayer HMAS *Bungaree* was responsible for all the defensive fields sown in Australian and New Zealand home waters, and off Allied bases at (1) Noumea, New Caledonia, (2) Port Moresby (on the Papuan Peninsula of New Guinea), and (3) in the Torres Strait between Australia and New Guinea. Her first operation was at Port Moresby on 14 August 1941, and her last mining of the war at the same location, 29-31 December 1943. *Bungaree*, a converted 357-foot cargo vessel, laid a total of 9,289 mines in five areas.

- 5,226 Mk 14 along the Great Barrier Reef
- 1,468 Mk 14 and 593 Mk 17 at Noumea
- 910 Mk 14 at Port Moresby
- 680 Mk 14 off New Zealand
- 412 Mk 14 in the Torres Strait¹⁹

The heavy cruiser HMAS *Australia* (D84) carried out the only offensive mining by a ship—eighteen A Mk 1 magnetic ground mines laid at anchorages in the French Kerguelen Islands, South Atlantic, in

November 1941. This operation was conducted in an effort to prevent continued use of the remote area by German raiders for resupply. The term “raider” referred to converted freighters armed with hidden guns and torpedoes (“wolves in sheep’s clothing”) preying on Allied shipping in the Pacific and Indian Oceans.²⁰

Royal Australian Air Force PBY-5 Catalinas performed all other offensive mining, a truly herculean effort involving 1,130 sorties (by RAAF No. 11, 20, 42 and 43 Squadrons) to plant a total of 2,512 mines between April 1943 and March 1945. The Australian “Cats” prowled the night skies, carrying U.S. ground mines from Mine Assembly Depot No. 1 at Darwin. The mining was over a wide area from Kavieng, New Ireland to Wenchow, China, with most of the effort devoted to four general areas:

- Celebes 519 mines
- Borneo 489 mines
- China 436 mines
- Java 425 mines
- All other 646 mines²¹

The fabric-clad Catalina patrol planes were slow, cumbersome and poorly armed; requiring them to rely upon stealth by arriving over their targets at night in the dark and at a low altitude. These planes carried two mines each (one under each wing) into almost every Japanese-held harbor of importance. By laying their minuscule loads with great precision, they forced enemy shipping into deeper waters to become the prey of USN submarines and easier targets for USAAF bombers.²²

Remaining undetected was paramount to success, and mostly the Japanese didn’t know the planes were there or how they got there. By flying low and slow (sometimes at less than 200 feet), the PBYs’ pilots sought to avoid discovery by enemy radar and fighters. Nevertheless, a considerable number of aircraft were lost (32 CATS and 330 crew) on the dangerous long-range missions—many in excess of twenty hours.²³

COMPARISON OF RAAF, RN, USAAF MINELAYING

Although numbers of mines laid by the RAAF was small in comparison to that of the Royal and U.S. Army Air Forces, the number of ships sunk or damaged, sea traffic disrupted, harbors closed and shipping delayed was high in proportion to the effort expended. The Royal Air Force, operating from bases in India and Ceylon, made fewer sorties

than did the RAAF, but their B24 Liberators carried much larger loads—3,235 mines in 663 sorties. Royal Air Force mining began on 10 January 1944 in Burma at Moulmein (present day Mawlamyine) on the Irawaddy River and ended on 10 July 1945 at Bangkok.²⁴

DUTCH DEFENSIVE MINELAYING

Prior to the capture of the Netherlands East Indies by Japanese forces on 9 March 1942, Royal Netherlands Navy mine warfare ships (and other Allied naval units) were divided between bases on Java Island, Tandjong Priok (the port of Batavia, today Jakarta) in the west and Soerabaja (today Surabaya) in the east. In addition to measures taken before the war, the Dutch mined Soerabaja and Tandjong Priok with four fields each in December 1941. Other fields were laid in Madoera Strait, separating Java and Madoera, and elsewhere in the Netherlands East Indies: (1) the entrances to the Pelambang River and off Tuban Island, Sumatra, (2) Ambon Island, and (3) Tarakan Island, off northeastern Borneo.²⁵

Early 1942 found British, Dutch, and American forces fighting to hold the Malay Barrier, the term for a string of big islands stretching from the Malay Peninsula to New Guinea, most of them belonging to the Netherlands. If Japan gained possession of these rich territories, teeming with oil, rubber, and other strategic materials, she would be practically self-sufficient. Once in control of Molucca (“Spice Islands”) and the Sunda, Lombok and other straits between the islands, Japanese forces might pour into the Indian Ocean and threaten British India and Australia. An ABDA (American-British-Dutch-Australian) combined command set up on 15 January 1942 to try to prevent this eventuality lasted only six weeks. The short-lived ABDA force included the small U.S. Asiatic Fleet, based at Soerabaja after fleeing the Philippines.²⁶

Rapid advances down through the Netherlands East Indies by two powerful Japanese attack groups (the Eastern, under Vice Adm. Ibo Takahashi, and the Western, under Vice Adm. Jisaburo Ozawa, comprised of heavy cruisers and destroyers escorting army transports), culminated in capture of the Dutch possessions. Following Japanese victory over the ABDA Fleet in the Battle of the Java Sea on 27 February, invasion forces began landing on Java the following day. As ensuing naval actions (the Battle of Sunda Strait and Second Battle of the Java Sea, 28 February-1 March) resulted in additional Allied losses, remnants of the ABDA Naval Force tried to escape to Australia. Many of the fleeing ships were sunk by the enemy in route, others made it.²⁷

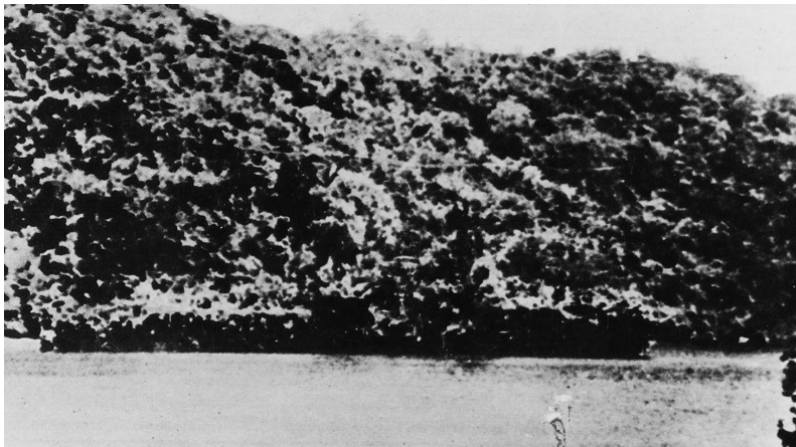
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The commanding officers of some ships—ones damaged, with insufficient fuel to make the voyage, or which were judged to have little chance of surviving an encounter with enemy forces out on the open sea, due to their light armament—scuttled their vessels to prevent capture by the enemy. Their crews then had to hope to catch a ride on some other departing ship, or face death or capture on the island. In similar circumstances at Guam, Hong Kong, Singapore, and in the Philippines, American and British crews had, or would face this same unpalatable dilemma.

Of the eight Dutch Navy minelayers, only NLMS *Willem van der Zaan* escaped the Netherlands East Indies.

Date	Minelayer	Disposition
11 Jan 42	<i>Prins Van Oranje</i>	Sunk by the Japanese destroyer <i>Yamakaze</i> and Patrolboat 38 while proceeding to Soerabaja after laying mines near Tarakan, Borneo
15 Feb 42	<i>Pro Patria</i>	Scuttled in the mouth of the Musi River near Palembang, Sumatra
1 Mar 42	<i>Willem van der Zaan</i>	Left Java area on 1 March, arrived unscathed at Colombo, Ceylon, on the 9th and joined British Royal Navy's East Indies Station
2 Mar 42	<i>Rigel</i>	Scuttled at Batavia
6 Mar 42	<i>Serdang</i> (Lt. C. A. E. Rhee)	Scuttled near Soerabaja
7 Mar 42	<i>Gouden Leeuw</i>	Scuttled at Soerabaja
8 Mar 42	<i>Krakatau</i>	Scuttled at Madura, an island off the northeastern coast of Java ²⁸

Photo Preface-2



Dutch minesweeper HNLMS *Abraham Crijnsen* covered with tropical foliage and camouflaged as a jungle island while escaping from Soerabaja, Java, in March 1942. Naval History and Heritage Command photograph #NH 87905

Some ships decided to take their chances at sea, and gamble on avoiding death by Japanese naval gunfire or aircraft bomb during the 850-nautical mile trek to Australia. On the afternoon of 3 March, three 80-ton auxiliary minesweepers of the 4th Minesweeper Division stood out of Soerabaja. Despite seemingly impossible odds, the 74-foot *Merbaboe* (HMV10), *Rindjani* (HMV11), and *Smeroe* (HMV12) reached Broome, on the northwest coast of Australia, on 10 March. During a week of chugging along at 10 knots, propelled by a single Caterpillar diesel engine, members of each 14-man crew had manned the two 30-caliber Lewis machine guns fitted in the diminutive minesweepers.²⁹

The Dutch minesweeper HNLMS *Abraham Crijnsen*—at 186 feet in length, a behemoth in comparison—was the last ship to successfully escape from Java. She accomplished this by sailing close to the coast at night and hiding, camouflaged as an island with trees and foliage, by day. She eventually reached Fremantle, some 900 nautical miles down the coast from Broome, on 20 March 1942.³⁰

DUTCH OFFENSIVE MINELAYING

The Dutch submarine HNMS *O-19* was one of those to escape the Netherlands, and subsequently reached Ceylon to continue operations under British control. She was refitted in the UK from February 1943 to May of the following year, and arrived at Fremantle, Australia, in September 1944. Capable of carrying forty Vickers T III mines, she carried out two mining missions. In her maiden operation, she laid mines in the main channel between Babi Island and the Java coast, about thirty miles west of Batavia, on 3 January 1945.³¹

On 9 January, during a patrol off the south coast of Borneo, *O-19* sank the converted Japanese gunboat *Shinko Maru No. 1*, but sustained severe damage in an ensuing counterattack from the escort. Following temporary repairs at Darwin, the submarine was able to make it back to Fremantle. She carried out her second and final mining mission on 13 April, laying forty mines in the northern entrance to the Banka Strait, separating Sumatra from Bangka Island in the Java Sea. While en route, *O-19* sank the tanker *Hosei Maru* with gunfire on the 10th. It is possible that the tanker *Yuno Maru* and store ship *Hyaski Maru* were both sunk in her minefield.³²

However, *O-19*'s luck had nearly run out. After making a torpedo attack on a *Nachi*-class cruiser, she was depth-charged and forced to bottom, suffering damage, but once again made it back to Fremantle. The submarine was docked, but due to poor overall condition, she was deemed unfit for further war patrols. In July, while running stores to

Subic Bay, Philippines, for use by the 8th Flotilla, *O-19* grounded. After determined efforts by the submarine USS *Cod* (SS-224) to pull her free, *O-19* was declared a total loss and destroyed with explosives two days later. The *Cod* is today a museum ship in Cleveland, Ohio.³³

STAND OUT TO SEA ABOARD NAVY MINELAYERS

It is not possible in a reasonably-sized book, to provide amplifying information about all the events and actions that made up the Allied mining campaign against Japan in the Pacific. As set down in this preface, massive mining by U.S. Army bombers in Japan's Inner Zone, in the last few months of the war, accounted for nearly one-half of all the mines laid by aircraft, ships and submarines up to that point. Moreover, this period accounted for well over half of all Japanese vessels sunk or damaged by mines during the war. Up until March 1945, the bulk of offensive mining was also carried out by aircraft, followed by ships, and submarines, in that order. While enemy losses due to surface minelayers lagged behind even those of submarines, mining by Allied ships denied ports, harbors, and sea passages to enemy forces, and forced Japanese shipping further offshore, where it could be attacked by submarines and aircraft. This is the story of the surface minelayers which have been largely consigned to the dustbins of history.

Chapter 1 takes readers to Guadalcanal, where three old "flush deck" U.S. Navy destroyers, of World War I vintage, were sent in late January 1943 (with a full load of American Mk 6 moored, contact mines) to help prevent the "Tokyo Express" from evacuating Japanese troops from the island. Forces of enemy warships regularly raced down "the Slot" (New Georgia Sound) between the Solomon Islands to attack any ships caught out at night off Guadalcanal. The brilliant cover art by Richard DeRosset depicts the *Tracy* (DM-19), *Montgomery* (DM-17), and *Preble* (DM-15) laying mines at 20 knots, to hurry the operation, as Japanese destroyers hurl toward them at 35 knots—a combined closing speed of 55 knots. Off the ships' starboard bows, PT boats engage in combat with the leading ships of the force, as it draws ever nearer.

Following this riveting action, Chapters 2, 3, and 4 offer summary information about U.S. Navy, Royal Navy, Royal Australian Navy and Royal Netherlands Navy minelayers, before progressing to Chapter 5, the beginning of chronological operations. Some readers may choose to move on to the heart of the book, and return to the earlier chapters as necessary, which also provide an account of the minelaying by HMS

Australia in the Kerguelen Islands, and a listing of the battle stars and Battle Honours garnered by Allied minelayers.

With this overview in their wake, readers may now stand out to sea (vicariously) seven decades ago, with sailors of the Allied Mine Forces in the Pacific Theater. One or more of the following definitions may prove useful while progressing through the book:

NAUTICAL TERMS AND USE OF THE BOOK'S INDEX

- Aft: Toward the stern, relative to some object (“aft the deckhouse”).
- Armada: A large fleet of warships, though the term may be used symbolically to signify any large moving group of vessels.
- Athwartships: Across the ship from side to side.
- Atoll: A ring-shaped coral reef or a string of closely spaced small coral islands, enclosing or nearly enclosing a shallow lagoon. The largest island of an atoll often has the same name as the atoll, just as the largest island of an island chain often has the same name as the chain.
- Caliber: The bore-to-barrel-length ratio of a naval gun, obtained by dividing the length of the barrel (from breech to muzzle) by the barrel diameter to give a dimensionless quantity. For example, a 3-inch/50-caliber gun has a barrel length of 150 inches.
- Scuttle: To cause a vessel to sink by opening the seacocks or making holes in the bottom of its hull.
- D-Day: The unnamed day on which a particular operation commences or is to commence.
- Dead in the water: Not moving (used only when a vessel is afloat and neither tied up nor anchored).
- Deckhouse: An enclosed structure built on the ship’s upper or main deck, usually the navigating station though the term can refer to any simple superstructure on deck.
- Fathom: A unit of measurement equal to six feet, used to measure water depth.
- General Quarters: Battle Stations.
- Gun(s) opened: To begin firing a gun or guns.
- Land: To put ashore. Disembark.
- Lighter: Flat-bottomed barge.
- Master: The commander of a non-military ship.

- Rating: The rating of a sailor is a combination of rate (pay grade, as indicated by the number of chevrons he or she wears) and rating (occupational specialty, as indicated by the symbol just above the chevrons).
- Roadstead: A sheltered offshore anchorage area for ships.
- Stand (past tense stood): Of a ship or its captain, to steer, sail, or steam, usually used in conjunction with a specified direction or destination, e.g., “stand into port.”
- Stoker: An engineering rating responsible for feeding coal into the firebox of a boiler providing steam to the propulsion turbine. “Stoker” survives as an unofficial term for a marine engineering mechanic in the Royal Navy to this day.
- Vessel: Any craft (from largest ship to smallest boat) that is capable of floating and moving on the water.

Former sailors picking up a book such as this one often desire to ascertain whether or not it contains any references to a ship(s) in which they served. In acknowledgement of this fact, an extensive index is included. To reduce its size, multiple ships listed on the same page or pages in the text are combined into a single entry. Entries for American ships are located under their associated ship type headings. For example, the minelayer *Aroostook* can be found under Ships and Craft, as well as the sub-categories: United States, Navy, mine warfare, and minelayers. A reader searching for a particular foreign ship should review all entries under the heading for that country.

The names of HMS *Redstart* and HMS *Thracian* casualties, identified on pages 67-68, are not listed in the index unless there are additional references to these individuals in the book. The same is true for U.S. Mine Forces involved in Third Fleet operations against Japan (pages 279-282), Appendix A: Japanese Ships Sunk by Allied Mines (305-312), and Appendix B: RAAF Awards (313-314).

Photo 1-1



“Mining the Tokyo Express” by Richard DeRosset depicts the USS *Tracy* (DM-19), USS *Montgomery* (DM-17)—shielded from view by the *Tracy*—and USS *Preble* (DM-15), laying mines off Guadalcanal the night of 1 February 1943, trying to prevent an approaching force of nineteen Japanese destroyers from evacuating enemy troops from the island.