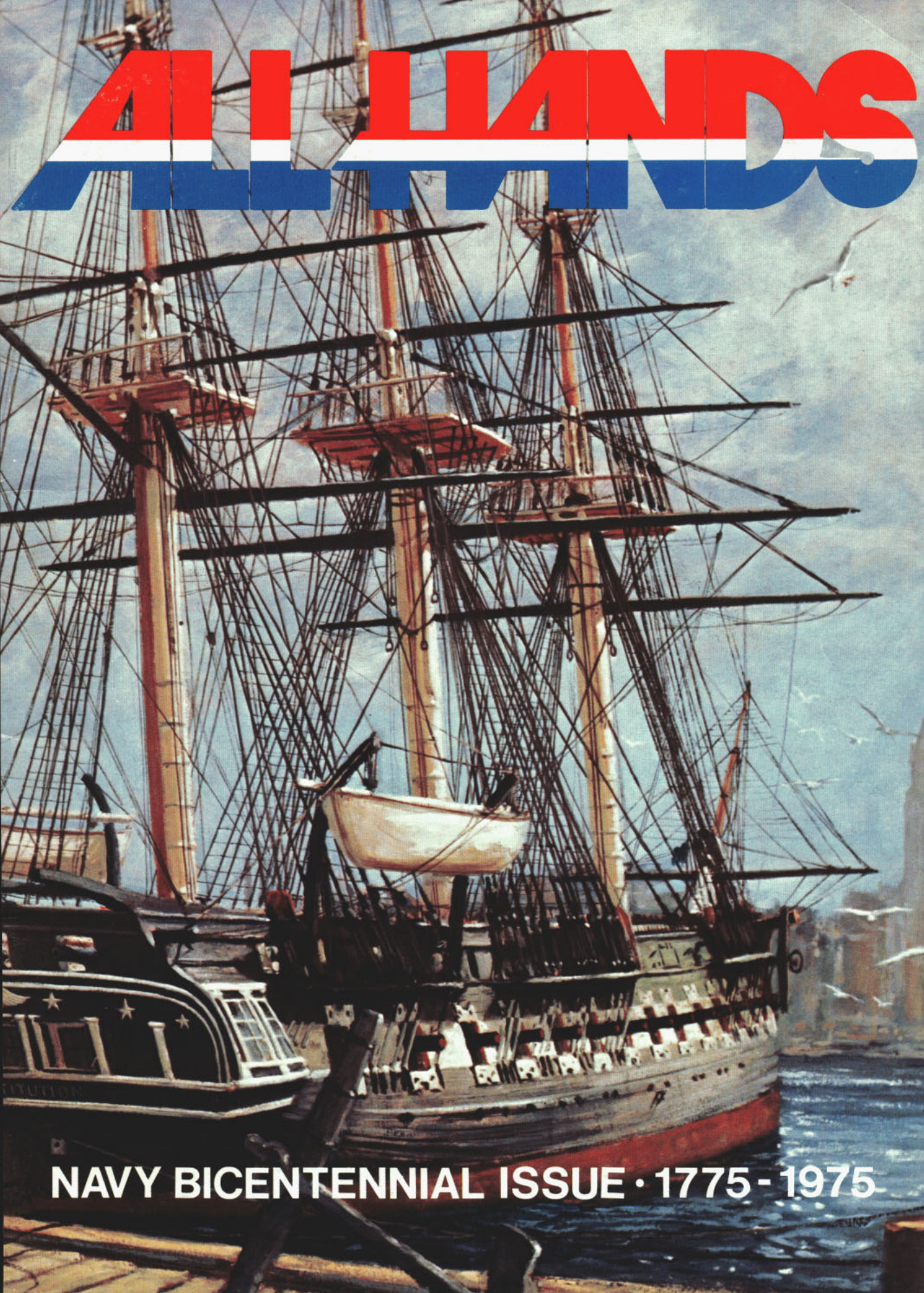
ALL HANDS



NAVY BICENTENNIAL ISSUE · 1775 - 1975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CAROLINA

NAVY BICENTENNIAL ISSUE 1775-1975

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ALL HANDS

MAGAZINE OF THE U. S. NAVY — 53rd YEAR OF PUBLICATION

FRONT AND BACK COVERS: An unusual sternside view of the Navy's oldest ship in commission, USS Constitution, with the modern Boston skyline in the background. It was painted by the artist John C. Roach, a Reserve ensign now on inactive duty.

AT LEFT: The Now Navy: Symbolic of the Navy's role on, over and under the seas are the following representatives of the fleet. Top: The nuclear aircraft carrier USS Enterprise (CVAN65); F-14As in flight. Second row: Commissioning ceremonies of USS L. Mendel Rivers (SSN686) with CGN37 in the background; the nuclear guided missile cruiser USS South Carolina (CGN37) and, below left, the flags which spell out her name. Bottom right: USS Thomas Jefferson (SSBN618) underway at sea. —Photos by LTJG R. A. Anderson, PH1 Lumzer, PH2 R. G. Edmonson, PH2 E. L. Hawkins and PH1 Nixon.

INSIDE BACK COVER: Portrait at top was provided by the Newport (R. I.) Bicentennial Commission and is published here with their permission. It is claimed to be a portrayal of a young Black sailor in the American Revolution. The painting below is that of a sailor in the War of 1812.

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NAVY

Navies are born out of the spirit of independence and under the threat of war; they are nurtured into maturity by the urgent demands of defense, sharpened by the encounters of conflict. So it was with the first American Navy.

The American colonies were heavily dependent on the sea for their livelihood. All along the coast there were harbors and shipbuilding docks which offered livelihood to many, and provided sustenance to thousands more. It is not at all surprising that when the conflict between the Americans and the British began, it was these ports at which the British struck initially, and it was also from these ports that the Continental Congress and the States sought to send out ships of a tiny and hastily organized naval force to harass the mightiest seapower in the world as well as its merchant fleet. A major aim was to capture enemy supply and munitions vessels.

What was life like in that first Navy? From where did its ships and men come? How was it organized? And, importantly, what role did it play in building the proud tradition of the United States Navy today?

Like its beginnings, the Navy of the American Revolution was fragmented into many parts, each often acting independently of the others. The result for historians and those looking back on that era is confusing. For instance, several naval engagements between the Americans and the British actually occurred before the Continental Congress authorized a Navy. One in particular captures the spirit of independence and defiance of the citizens of those early days.

It happened on 12 Jun 1775 when a party of Maine woodsmen led by Jeremiah O'Brien, armed with pitchforks and axes, attacked the British schooner *Margaretta* off the coast of Machias, at that time a Massachusetts town, but now a part of Maine. The British schooner was the first Royal Navy vessel to strike her colors to the rebelling colonists' cause. Inspired by this success, the woodsmen set out in search of British merchant ships. They presaged the popularity and later success of the American privateers striking at British cargo vessels in the waters off the Atlantic coast.

Four months later the Congress first authorized a Naval Committee and then ordered the acquisition and fitting out of a number of ships. (It was a close vote because some of the members questioned the possibility of any success in taking on such a powerful enemy at sea.) Thus the American Navy had officially begun (as of 13 Oct 1775) but some time would elapse before it would have any significant effect on the mighty British Navy.

IN 1775

The first Naval Committee bought and fitted out one 24-gun ship, *Alfred*, plus the 20-gun *Columbus*, and two brigs, *Andrew Doria* and *Cabot*. These were ready for sea in December 1775 and by the end of the next month, the tiny Continental Navy had obtained sloops *Providence* and *Hornet* and the schooners *Wasp* and *Fly*.

This fleet, however, was actually pre-dated by the little-known group of ships that came to be called Washington's Navy. During the summer of 1775, General George Washington was concerned as he saw British ships sail supplies and munitions in and out of the Boston harbor untouched. He needed supplies and ammunition for his own troops to carry on his siege of the British in Boston. Using funds provided for his Army, General Washington painfully assembled a small fleet of eight vessels that might capture some of the supplies and ammunition for his army.

The schooner *Hannah*, first of "Washington's Navy," was in service in September 1775. Seven other ships followed: *Lynch*, *Franklin*, *Lee*, *Harrison*, *Warren*, *Washington* and *Hancock*.

Washington sent two of his ships to the mouth of the St. Lawrence River, hopefully to intercept two unarmed brigs from England carrying muskets and gunpowder to Quebec. The ships, instead, raided Charlottetown, St. John's (now Prince Edward Island), sacking the city and kidnapping a British official, the acting governor. They took a number of small merchant ships as prizes (some of which belonged to Colonial patriots, unfortunately).

Washington's Navy was short-lived. It had its difficulties, but it must have been an eye-opener to the British in Boston. It was also responsible for the capture of one significant plum, the British transport *Nancy*, which carried a large amount of sorely needed supplies in the form of guns and ammunition. *Nancy* was captured by the tiny ship *Lee* under Captain John Manley. Another ship which achieved a record in combat against great odds was *Franklin*, whose captain, James Mugford, was killed when his ship fought off raiders outnumbering *Franklin's* crew many times.

Washington, however, found that most of his captains tended to be too independent-minded about following orders, preferring their own prize targets, and their crews were, he said, "a disorderly set." Eventually, he released the ships of the so-called Washington's Navy.

The new navy which the Continental Congress had ordered to be established began to come into being in the last months of 1775. The first commander-in-chief was Esek Hopkins, who put to sea the first squadron

of the Continental Navy on 18 Feb 1776. (Serving as first lieutenant, aboard the Navy's first flagship, *Alfred*, was John Paul Jones.)

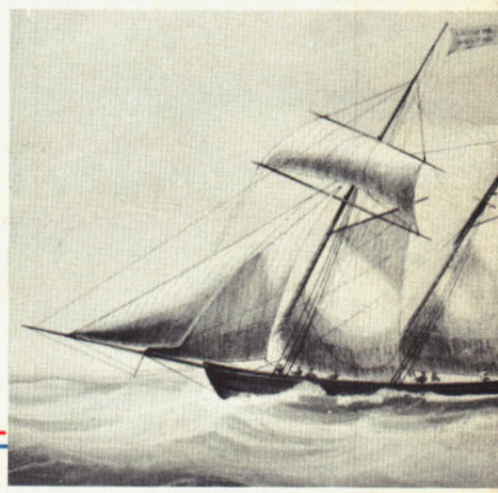
Hopkins' squadron raided New Providence in the Bahamas, which was significant not as a big battle, but as the first amphibious operation carried out by the American Navymen and Marines. The forts surrendered a number of cannons and supplies, which was the objective of the operation. Hopkins did not prove to be as effective a commander as had been hoped. He went on to Rhode Island where the British pursued him up the Providence River. Although the British ship *Diamond* was grounded, Hopkins failed to take advantage of the situation and allowed her to get away. He had previously permitted another British ship to escape when he could have taken her, so it was not long after that Hopkins' command was withdrawn from him by Congress.

In its continuing efforts to build a fleet, Congress had authorized the construction of 13 brand-new frigates which were well under way. All were solidly constructed ships with a number of guns, but even so, pitted against the established and superior British force—then the finest navy in the world—they were at a serious disadvantage.

The first problem: Because of the British blockade of the American coast, it was difficult for the newly outfitted ships to reach the sea. Such was the case with *Montgomery* and *Congress*, ships of 28 and 24 guns, which were built at Poughkeepsie on the Hudson River. When the British occupied the port of New York, these ships were bottled up and to keep the enemy from capturing them, they had to be destroyed. Two more ships built in Philadelphia suffered a similar fate. Some of the others were also blockaded in their home ports, and one ship, *Trumbull*, was bottled up for three years because she could not clear the bar in the Connecticut River after she was completed.

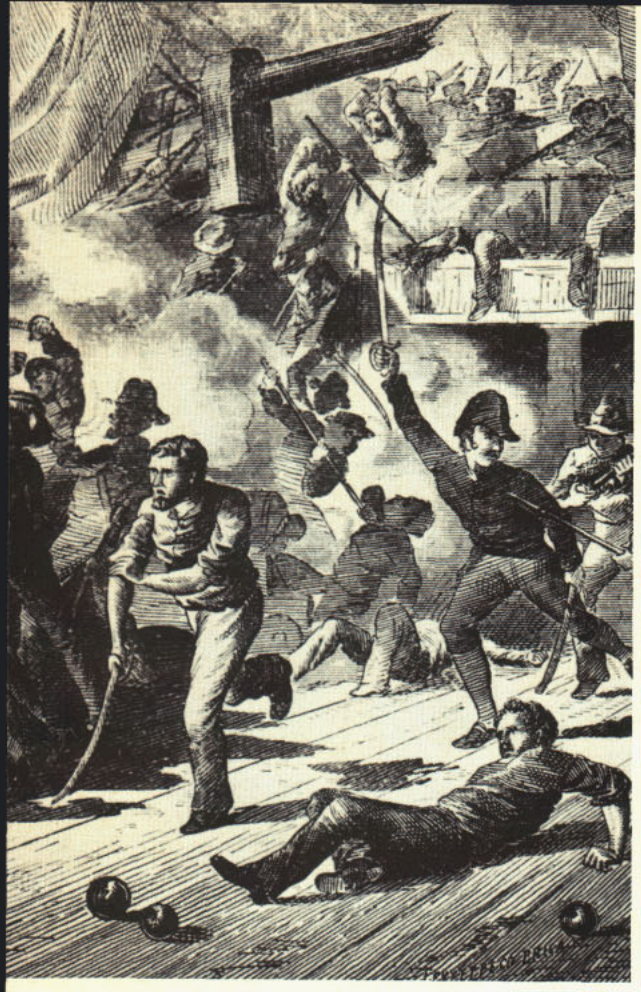
The new frigates of the Continental Navy had their moments, however. *Hancock* and *Boston*, both built in Massachusetts, set out together in mid-1777 and captured two British brigs, then were involved in separate actions with the British warships *Somerset* and *Fox*. After escaping from *Somerset* on 30 May 1777 they met *Fox* and successfully captured her a week later. In further actions the two Continental ships were pursued by the powerful HMS *Rainbow*. Following a 39-hour pursuit, *Rainbow* bore down on *Hancock* and captured her while *Boston* escaped. *Boston* continued to serve valiantly, in various actions, over a period of some three years. Her last action was in the defense of the Charleston, S. C., harbor where she was captured by the British in May 1780.

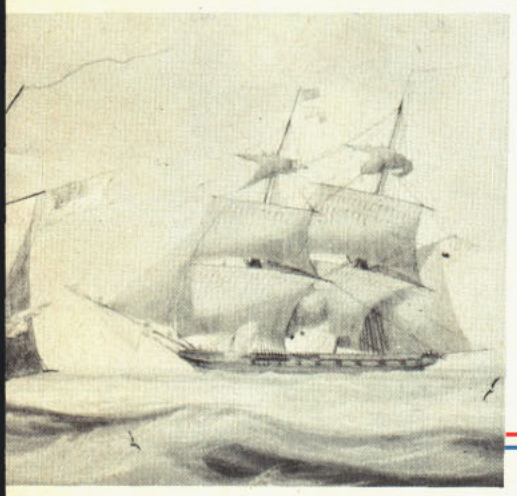
Hancock, after her capture by the British, went on to serve in the Revolution, but on the enemy's side. By a twist of fate, it was *Hancock* (renamed *Iris*) that captured a sister frigate, *Trumbull*, one of the original 13 frigates built for the Continental Navy. (The British crew were said to have called the American-built ship one of the finest frigates in which they sailed.)



Among the names associated with this new made-in-America fleet of frigates is that of John Barry who courageously commanded many ships, John Manley (who had captured *Nancy* while in Washington's Navy) and Abraham Whipple.

Skipper of *Providence*, Whipple, was a member of a three-ship force which found itself on the edge of a huge enemy convoy, heavily guarded, during a fog off Newfoundland. Sending armed boarding parties to the merchant ships, the Americans managed to take 11 ships as prizes, without being detected by the ships





Top: The fighting was fast and furious to ward off boarding parties. Above: A British frigate pursues an American schooner. Note slogan on pennant: "Catch me who can."

protecting the convoy. Cargoes and captured ships worth over a million dollars were dispatched back to the States.

There was still another facet to the Continental Navy. Ben Franklin, recognizing the importance of seapower as did George Washington, also sponsored a naval force that he could claim as his own. He also outfitted privateers in France. They have been labeled by some as Franklin's Navy. Working on the diplomatic front in Paris, the wily old inventor-postmaster-publisher began a begging-and-borrowing campaign—and the ships, funds, and—probably of greater importance—the interest that he helped to promote were of great value to the new nation as well as its infant Navy.

One of Franklin's aims was to disrupt British home-front shipping which would serve to demoralize the British people. He also wanted some British prisoners to exchange for American prisoners in English jails. In addition, he hoped elements of the British fleet would be forced back home to defend their own waters, thus relieving the former colonies of some of the blockade pressure. Finally, he wanted to encourage France to enter the war by some visible American successes at sea. His strategy worked on almost every count.

Among the most daring commanders bringing the war to British waters was John Paul Jones. (For more on this naval hero, check the section on significant events in naval history.) As skipper of *Ranger* he departed from France on 10 Apr 1778 for raids against the British. After capturing a number of ships he actually landed on British soil, raiding Whitehaven, in an attempt to capture the Earl of Selkirk. Some months later he took command of an old French ship (that had seen better days) which he named *Bonhomme Richard*, after Franklin's almanac character. She carried 42 relatively light guns, some in doubtful condition. Jones headed for the coast of Ireland, taking more prizes and destroying others.

On 23 Sep 1779, Jones encountered the British warship *Serapis* (with 50 guns) and a furious battle ensued, near the headland of Flamborough Head. As Jones wrote later, "Every method was practiced on both sides to gain an advantage, and rake each other; and I must confess that the enemy's ship, being more manageable than *Bonhomme Richard*, gained thereby several times an advantageous situation, in spite of my best endeavors to prevent it."

The two ships, lashed together with grappling hooks so neither could escape, pounded away at one another, and *Bonhomme Richard* began taking the worst of the beating. Her hold was filling with water and she was on fire in several places. According to one story, a gunner in a state of panic was about to strike the colors when Jones hurled his pistol at him, striking him down. The battle continued to be fought furiously with the outcome uncertain until the end (for more details see page 17).

Jones' situation was not helped by the gunfire from the accompanying American-built ship *Alliance*, commanded by a Frenchman, Pierre Landais, who showed up at the battle scene about this time and started firing indiscriminately at both ships, holing *Bonhomme Richard* still more. Jones pleaded with him to stop, but was not heeded.

What turned the tide of victory for Jones was his forces aloft. Armed with muskets and dexterously climbing along the interlaced rigging of the two ships, these men kept the deck of *Serapis* clear by shooting and dropping chains and other material down on the enemy. A member of Jones' crew climbed to the *Serapis* maintop and managed to drop a hand grenade

which ignited the powder and scattered cartridges on the gundeck.

In the man-to-man sea battle, the British were forced to surrender and the battle of *Bonhomme Richard* versus *Serapis* went down as one of the great naval battles in history.

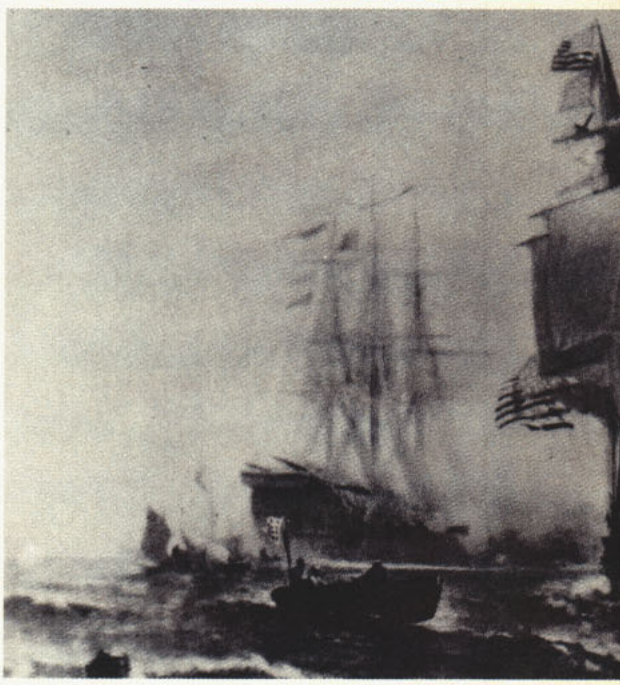
Still, the paths of history are not all that direct or as simple: there were state navies, for example, and the aforementioned privateers.

Turning back to the early years of the war, the states—without waiting for the Continental Congress to act—had begun outfitting their own navies. Rhode Island was the first—commissioning two armed sloops to put into Narragansett Bay and harass HMS *Rose*. While the sloops couldn't directly challenge *Rose*, of course, they did destroy one of her tenders and served as a harassment function against the landing of troops ashore.

The Massachusetts Navy may be considered to have begun unofficially with the armed band from Machias, described earlier. The first legislation to create a Massachusetts State Navy came in December 1775. The prizes captured were turned over to the Massachusetts Committee of Safety, a pro-independence group, which saw the value of an armed fleet. At its peak the Bay State Navy had 15 seagoing vessels and a galley, taking on mostly hit-and-run missions.

In South Carolina, where a main objective was to protect the Charleston harbor, the state put one of the most potent state navies into the water. Operating along with Georgia, South Carolina took as prizes several British merchantmen carrying priceless gunpowder. Virginia and Maryland put small fleets into Chesapeake Bay to protect shipping there, as did Pennsylvania in the Delaware River. None of these fleets could directly challenge the British warships, but they did afford some opposition to the smaller ships which the British operated in American waters, and more importantly, they challenged the free flow of troops and supplies by water.

By the time the war was over, the official Continental Navy had some 56 different vessels at one time or another, although it only managed to reach a peak of 27 ships, averaging 20 guns, operating at the same time. They captured a total of 196 enemy transports and warships, with an estimated worth of more than $6 million. The Continental Navy itself never numbered more than 3000 men at any one time, with a total of 123 officers. This tiny Continental Navy, hurriedly assembled when the colonies declared their independence, served not only to inflict damage on the proud ships of the Royal Navy, but also it lifted American morale with each of its victories. John Paul Jones, Gustavus Conyngham and Lambert Wickes were among those who brought the battle to the British on their own waters. (Conyngham had a captain's commission in the Continental Navy. He was also a privateer; see below. In a period of 18 months, he took some 60 prizes, becoming a terror to British shipping.) The news of daring raids and victorious battles at sea were acclaimed in the 13 youthful United States.



While the effectiveness of the Continental Navy itself was limited by its small size, there was another aspect of the naval war on the high seas, the previously mentioned privateering which played an important part in the ultimate victory over the British. On 2 Mar 1776, Congress gave authorization for the commissioning of private ships—privateers—to attack British merchant ships. The privateers multiplied rapidly because their

Left: John Paul Jones. Above: Joshua Barney, nicknamed the "Prince of Privateers." Below: First salute to Stars and Stripes is shown in painting as a French ship returns salute to Ranger entering Quiberon Bay, 1778.

captains and crews could share a very sizable portion of the prizes they captured.

From the standpoint of harassment to British shipping over lengthy sea-lanes, a vital role was performed by American privateers. Men from all walks of life signed up in these ships. Vessels of all types were converted for the purpose initially, and later were specially built to do their job. They were fast and reasonably well armed. Private financing to arm and fit them out was needed, but that was rarely a problem; a share in a privateer could mean a fortune almost overnight.

Privateers were effective because most British merchantmen cruised the seas unarmed or lightly armed. Therefore, any vessel which did have guns and could run an unprotected merchantman down was almost certain to have that ship at its mercy. Most merchantmen were incredibly slow because of their design and the heavy cargo loads they carried.

The British Navy began a system of convoys to protect its merchant shipping, but it was far from foolproof. The moment a merchantman dropped behind, she was in immediate danger, because a warship couldn't leave the convoy to protect just one ship. Then, too, convoys could protect only so many ships.

One of the most famous privateers was Jonathan Haraden of Salem, Mass., commanding the 16-gun *General Pickering*. Haraden once met a larger British ship and persuaded her crew to surrender by telling them his was an American frigate of the largest class. Another famous privateer, Joshua Barney, was called the "Prince of the Privateers" (he was also a commissioned officer of the Continental Navy). Barney met the British in a number of engagements and was once captured, but he escaped with the help of Benjamin Franklin. (Barney, like Haraden, lived to a ripe old age and gained further fame during the War of 1812 as a Navy captain seeing action in the Chesapeake.)

It is estimated that Congress issued more than 1600 commissions for privateers during the period of the Revolutionary War. The privateers operated not only along the American coastlines, but also some ventured far out into the Atlantic and even into the English Channel and the Irish Sea.

According to one reasonable estimate, the British were said to have lost some 2000 merchant ships, manned by crews totaling 16,000 to the American privateers. The merchant ships captured as prizes would be manned by prize crews from the privateer and sailed to a friendly port where the ships and cargo would be sold.

John Adams, later to become President of the United States, and an early proponent of the Navy, lauded the role of the privateers in cutting off supplies to the British.

There remains one more aspect of the naval war—that of the Allied Navy of France. The 13 United States had signed an alliance with the French in 1778. French naval forces under Admiral D'Estaing appeared immediately off the American coast; however it was the Battle off the Virginia Capes that was the most important French naval operation. This was at Yorktown, in 1781, where a combined land and sea effort was able to defeat the British. With Washington leading the land forces against Cornwallis, Comte de Grasse commanded a fleet to cut off Cornwallis' retreat or any British efforts to send in reinforcements. Although a peace treaty officially ending the Revolution was not signed in Paris until 3 Sep 1783, the tide had turned—and seapower had demonstrated its importance in that victory.

★ ★ ★ ★ ★ ★ ★ ★ ★

200 YEARS of NAVY JOBS

Most people think of ships when they think of the Navy, but more realistically, the Navy is people. Its job is accomplished through the effective use of people.

Today, many men are experts in some area when they enter the Navy. The majority, however, have only a general background, plus an ability to learn. They are trained in schools and on the job, then join ranks in special occupational fields.

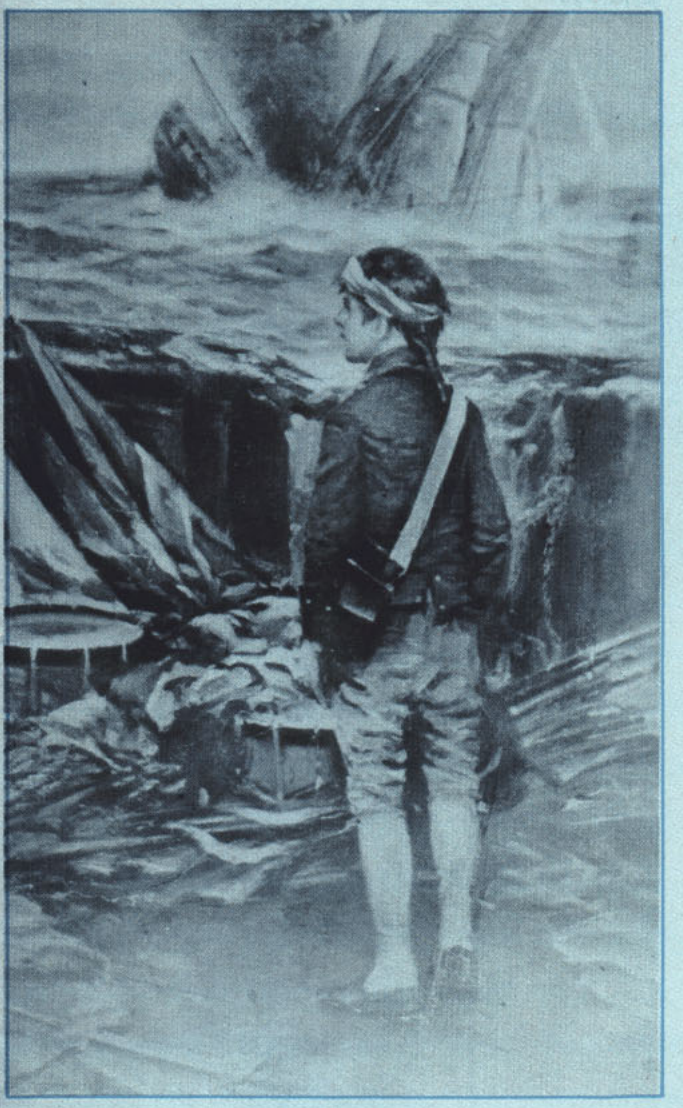
Organization is attained when all the various skills needed to operate the Navy are tied together in the enlisted rating structure. This system has evolved, as most other aspects of the Navy, more by the natural trend of events than by a planned development. Its history is as colorful as a rainbow of signal flags during full dress ship on the Fourth of July, but few modern Navymen are aware of the jobs performed by their predecessors.

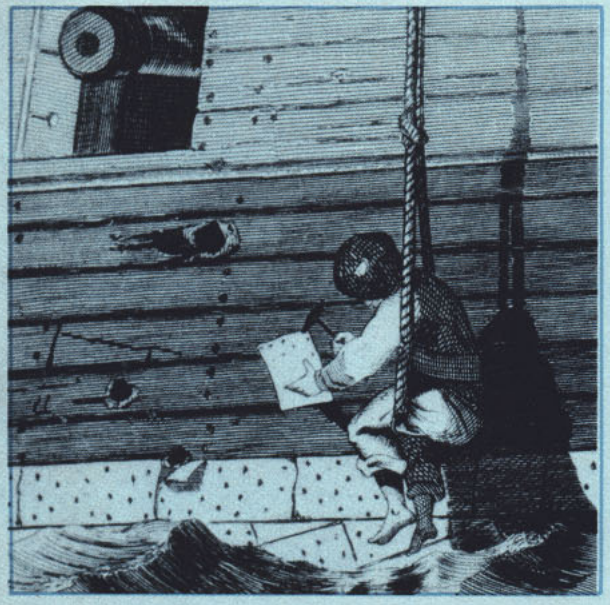
Landsman, for example, means nothing to most sailors today, though it was a fairly recent rating in the Navy; it was disestablished in 1921. By that time the Navy had long since phased out all of its bag room keepers, jacks-o'-the-dust, lamplighters and captains of the forecastle, afterguard, foretop, maintop and mizzentop.

That's not to say, of course, that a landsman didn't belong to the old Navy, and with all due respects to our saltier members, we mean the OLD Navy—which is now at the two-century mark.

But what about loblolly boys, coopers, quarter gunners and yeomen of the gunroom? Theirs was the Navy of Stephen Decatur, John Barry, Thomas Truxtun, Edward Preble and William Bainbridge; of 12-gun schooners like *Enterprise* and 36-gun ships like *Constellation*.

In those days (in the first decade of the 1800s) a British squadron was liable to stop American ships at sea and impress crewmembers into the Royal Navy. Or these same men might have had the experience of earning a share of the prize money from a captured





privateer. With probably less than $15 a month in basic pay, they could well use it. An organized rating structure, especially pay grades with periodic pay increases, was still in the far distant future.

Actually, the first feeble steps toward a rating structure had been taken in 1775 with the publication of Rules for the Regulation of the Navy of the United Colonies. This mentions the surgeon's mate, cook, armorer, gunsmith, master-at-arms and sailmaker. It also requires the captain to take care when any officers or volunteer seamen are turned over to his ship, not to rate them on the ship's books in a worse quality or lower degree or station than they served in their previous ship.

The jobs of Navymen have changed considerably since those days, when tars manned the sails and captains of the top bawled orders to the men aloft. It was an era when apprenticeships were served by most workers, and those seeking a career at sea were no exception.

Many sailors who joined up in this period might have started out as "boys." They might have entered the Navy at a "rendezvous center"—a public house or inn rented as a temporary recruiting station—or they might just as easily have been recruited by the captain of the ship in which they sailed.

Enlistments were for only one—later two—years at a time, or for the length of a cruise. Career opportunities for enlisted men, such as were available to commissioned officers at the time, were in the distant future.

Fresh recruits were brought on board, took a bath and were given a haircut. If after having been afloat for a time they were considered potential officer material, they might be designated midshipmen—usually before reaching their 20th birthday. This was very rare, however; midshipmen normally came on board as approved midshipmen. The crew slept in hammocks and lived mainly on salt pork and beef, supplemented by fresh fish caught from the ship by a detail assigned for that purpose.

For their efforts, boys of the early 19th century received a wage of $10.50 a month, plus a daily ration. The Navy, in return, guaranteed them the elements of an education and taught them how to be sailors. First they were taught the principal parts of a ship and the names and uses of all sails, spars and rigging; then some lessons in bending, unbending, reefing and furling sails and the handling of yards and spars were in order.

Graduating from the elementary to the practical level, the boys learned to be good oarsmen, became familiar with the compass, lead and helm, then learned how to be "moderately skillful and much comprehended under the head of marlinspike seamanship," as contemporary regulations stated.

From six to 12 boys from each crew were selected for signal training. They all learned gunnery and were given small arms drill and cutlass exercises.

If deserving of the privilege, having studied hard and kept themselves out of trouble, they could ask to go ashore one afternoon a week, in addition to Sunday

Facing page: One of a young recruit's first lessons aboard ship was in sail handling. Above: Painting depicts powder boy who served with John Paul Jones. Left: The ship's carpenter was responsible for frame and all wooden structures of the ship.

afternoon, which seems to have been free time for most who behaved themselves.

Navy boys usually grew up to be regular Navymen, earning what we would now call a rating. Seasoned Navymen in the sailing days formed the corps of supervisors who told inexperienced sailors what to do and when to do it. These inexperienced men were the landsmen, and they formed a large part of the seagoing service.

Landsmen were erstwhile civilians taken on board without training. Some of the jobs they performed could be done as readily in a ship as ashore. Many of them were tailors, cobblers, barbers and the like, who were also required to learn seamanship.

Some rated Navymen in the sailing days were considered officers of a sort. They were the forerunners of our present chief petty officers and warrant officers.

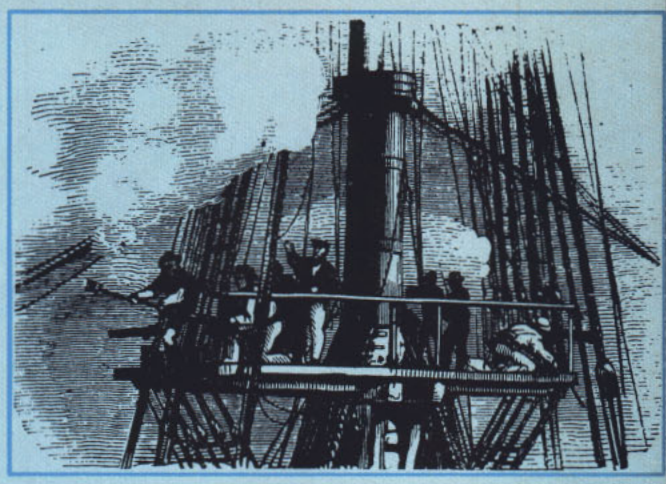
Several categories were referred to as being "civil officers." These included chaplains and surgeons, who remained in the officer ranks.

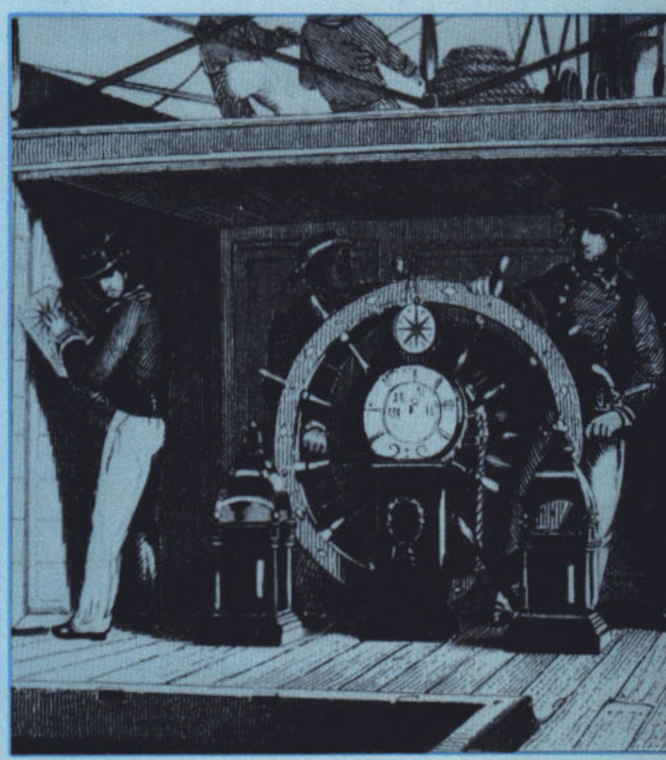
Another was the purser, listed as a noncombatant civil officer. He was appointed by warrant. Although his pay was trifling, he usually had the coziest quarters and his negotiations often brought him an income which could exceed that of the captain.

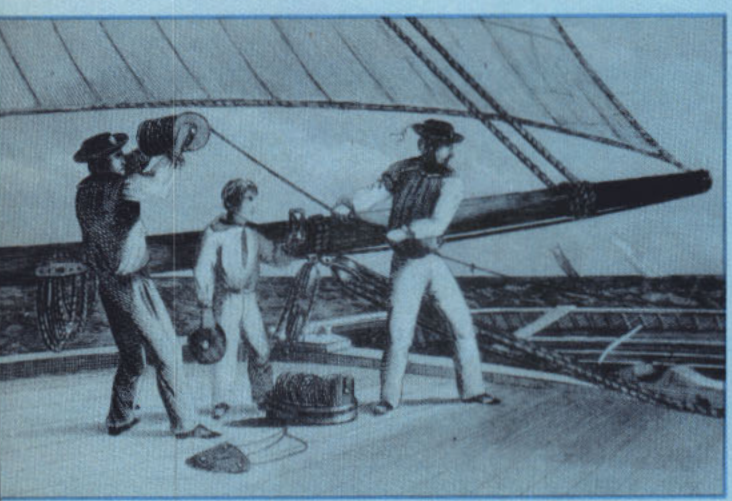
The purser was responsible for supplying the ship with provisions. He was assisted by the purser's steward, usually called "jack of the bread room," which later became "jack-o'-the-dust." Coopers (who made buckets and barrels) were also assigned to this duty at times.

The purser kept the small stores on board ship and was authorized to sell slops (clothing), tobacco and other small items sailors needed in those days, such as tin pots, spoons, pepper, mustard, knives, needles and thread. Before 1809 his profits were unlimited; after that date he was limited by law to a 50 per cent profit on tea, sugar and tobacco, 10 per cent on "slops," and 25 per cent on all other articles. If he couldn't prove to the skipper's satisfaction that he received only legal profit, no profit was allowed.

The early boatswain was appointed by warrant and







was among the more important men on board ship. He was usually a grizzled old salt who wasn't timid about giving orders and it never occurred to him that they wouldn't be obeyed. He was assisted by his mates and, though it is unlikely that he was unrecognizable in other respects, he nevertheless carried a silver bos'n's pipe and rattan cane that identified his position.

His pipe was the sailing ship's PA system. It could be heard 120 feet up in the rigging and in the deepest and darkest hold. His cane was an instrument of persuasion which, it was said, "cured more scurvy than the doctor, made cripples take up their beds and walk, and made the lame skip and run up the shrouds like monkeys."

The boatswain and boatswain's mates examined rigging, anchors, booms and boats and saw that the crew was not wasteful. In addition to supervising the deck crew, the boatswain was responsible for administering severe punishment such as lashings with the cat-o-nine-tails. This job was later given to the boatswain's mates, and subsequently abolished in the Navy as cruel and unusual punishment.

A boatswain had, in addition to his mates, a yeoman, a petty officer who accounted for the department's equipment, a rope maker (usually an experienced able-bodied seaman), and a cockswain who was in charge of boat handling. The cockswain drew his name from the cock (cog), a small boat aboard ship.

Another of the boatswain's men was the sailmaker, who was prominent in his own right. He had charge of and was responsible for the hundreds of yards of canvas which caught the power for his ship.

The sailmaker found and repaired defects in the sails, tallied and stored them, and kept a watchful eye to ensure that they didn't become waterlogged or that vermin didn't eat holes in them. He was responsible for all other canvas on the ship as well, including hatch covers, screens, chutes, hammocks and clothing bags.

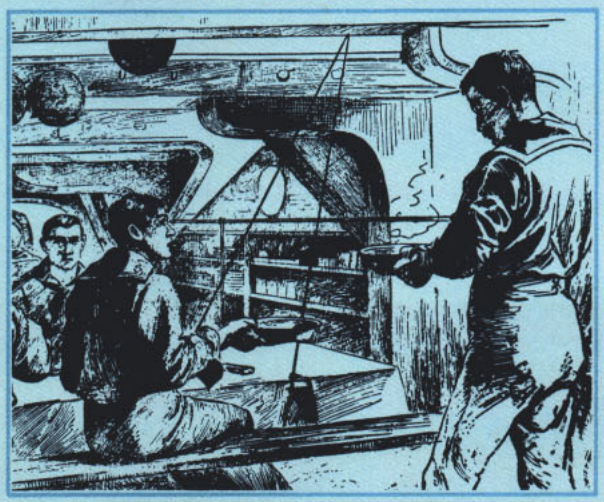
The ship's carpenter, also appointed by warrant, supervised a group of shipwrights (shipworkers) who were kept on board to repair the frame structure and all wooden structural members. Also working for the carpenter were other craftsmen who tended to the general upkeep of the vessel and repaired it during and after battle. When seams split, for example, they were caulked with pitch by the caulker.

The carpenter went aloft every day to inspect the masts and yards. If they were sprung or otherwise defective, a repair party would turn to. He examined lower deck ports for proper alignment, and made sure the ship's pumps, boats, ladders and gratings were all in good repair.

An interesting case in the origin of a rating is hospital corpsman. Early day surgeons were assisted by the surgeon's mate. He was a medical man and, like the surgeon, was considered a noncombatant civil officer. He was a combination yeoman, corpsman and leading chief.

The surgeon's mate kept a journal of diseases and treatment, weighed and accounted for every article of medicine, dressed wounds and ulcers and performed bloodlettings. He also supervised the loblolly boys.

The loblolly boy is first referred to in the American Revolution. This rating then appears in records of the



Facing page left: Sailors pay out log to figure speed of vessel. Facing page top to bottom: Rigging and masts had to be inspected daily aboard a sailing ship. Holystoning and cleaning wooden decks. Early quartermaster at the wheel. Left top: Each sailor was his own tailor. Left bottom: The sailmaker was responsible not only for the sails but also for all other canvas on the ship (plus his own mending). This included hatch covers, hammocks and clothing bags. Below: Sailors of late 19th century at mess.

NAVY JOBS

1798 muster roll of USS *Constellation*. Loblolly was a thick gruel, thus explaining how the boy who served it to patients derived this unusual appellation. The term also was nautical slang for medicine.

As the requirements of his job expanded, the corpsman's predecessor took on increased importance in the Navy. In 1839 the surgeon's steward rating was established, in turn becoming apothecary (1866). Navy Regs of 1870 refers to the rating as bayman (probably from sickbay-man), and in 1898 it became hospital steward. In 1917, hospital steward became pharmacist's mate which, in 1948, became the present-day hospital corpsman.

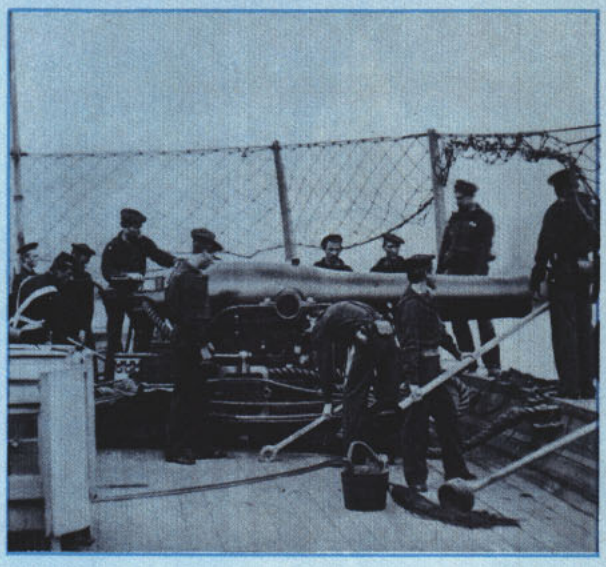
Not all ratings have similar histories because most of today's specialties resulted from later technical developments in the Navy. Besides, there were other considerations affecting the development of a formal rating structure.

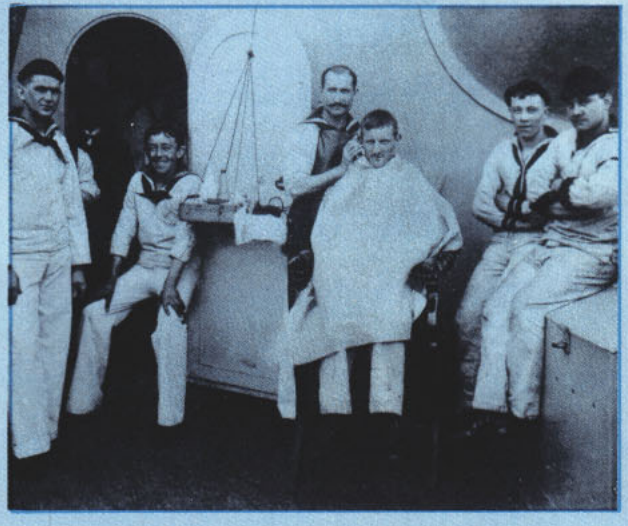
War with the Barbary pirates taught the Navy that little success was to be found in recruiting seamen for limited periods or for the duration of one cruise. If a man was scheduled for discharge before his ship was ready to return he had to be transferred to a ship leaving the Mediterranean. The operations in the Med were to continue through four summers—a reflection of the Navy's determination to accomplish the job at hand. Needless to say, a war being carried on so far from American shores was a difficult one and brought added hardship to the life of a crewmember.

Following settlement of the Barbary pirate menace, the period of the gunboat Navy emerged, during which consideration was given principally to defending our shores and harbors.

Continuing harassment of our merchant fleet by the British, however, resulted in the War of 1812. With more victories at sea than on land in this conflict, the U. S. Navy was brought into public favor, and the country assumed a growing awareness that a navy was always necessary for its protection.

This might be considered a turning point that contributed greatly toward development of a more permanent





enlisted rating structure. By 1870 there were some 30 ratings in existence, including several still in use today. Subsequently, in 1885, the first system of "job families" of the type we know today had been devised for enlisted members.

Also, the Navy had transformed itself from sail to steam, from wooden ships to ironclads. Some jobs required more training. New ratings were established as new skills were needed, then were superseded or augmented by even more advanced skills.

But the transition was not always smooth, nor were the new jobs necessarily easier than rigging shrouds to the mainmast. With the advent of steam, for instance, the Navy employed coal passers who had the job of feeding fires day and night.

Though jobs changed, the Navy's standards remained demanding. How do you think you'd qualify for the following? It's taken from the Regulations for the Navy, 1870, as amended in 1874, and it points up the whole field of enlisted training to qualify for advancement up the ladder to the warrant category of gunner.

"A candidate for the appointment of acting gunner must be a seaman of sober and correct habits, must be not less than 21 nor more than 35 years of age, and must, previous to the professional examination, pass the required physical examination.

"He must understand the manner of fitting magazines, shell-rooms, shell-houses, and lightrooms; the manner of stowing and preserving powder, projectiles, fireworks and all ordnance stores afloat and ashore; the manner of handling and securing guns.

"He must be able to put up all kinds of ammunition, to take impressions of vent and bore, to star-gauge guns, to adjust, verify and use sights, and to fit all gun-gear.

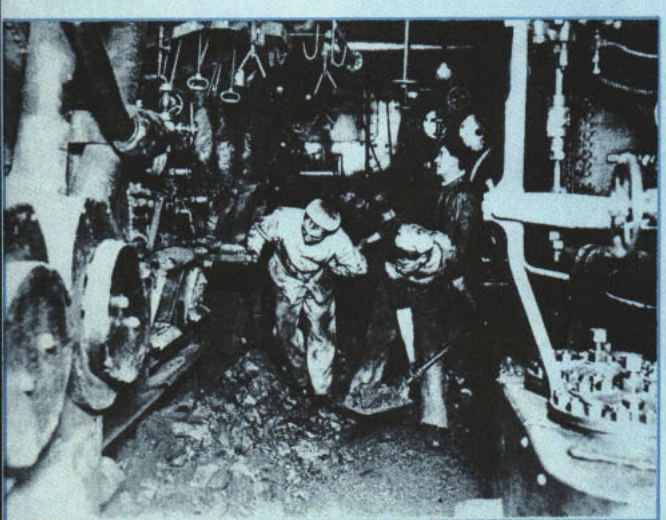
"He must thoroughly understand and be able to explain all fuses in use in the Navy.

"He must be fully conversant with all orders and regulations in regard to the care and handling of ordnance material and stores afloat and ashore, and with the charges of powder for guns and projectiles of every caliber.

"He must be able to read and write with facility; must understand the first four rules of arithmetic and proportion; must be able to keep the gunner's accounts correctly, and must have made a cruise in a seagoing vessel of war. . . .

"No acting gunner shall receive a warrant as gunner until after making a cruise of not less than one year, as acting gunner, in a seagoing vessel of war, and after a course of laboratory instruction at the Washington Navy Yard, he shall have passed a thorough examination before a duly authorized Board of Line Officers, and no acting gunner shall be so examined unless he shall present commendatory letters from his commanding officer."

One of the growing pains of the 19th century Navy had to face, especially in the periods between wars, was that of training men of many different nationalities who did not speak or understand English. In 1872, Commodore Stephen B. Luce, referred to as the father



Facing page left: Time for a haircut aboard USS Atlanta, about 1887. Facing page top: Civil War gun crew aboard gunboat Mendota. Facing page bottom: Navy men enjoy a pipeful of tobacco. Note: "Smoking lamp is lit." Left top: Crew of Navy ship of Civil War era. Left bottom: When coal went, so did coal passer or heaver rating. Below: Pigeon handler.

NAVY JOBS

of our naval training system, wrote Secretary of the Navy G. M. Robeson:

"Our ships go to sea manned by heterogeneous crews representing nearly every country on the face of the globe," he said. The commodore went on to point out that 35 countries were represented in five U. S. Navy ships in the Mediterranean and that less than half of all crewmen were U. S. citizens. (As late as the 1890s, so one story goes, there is said to have been a U. S. gunboat in Chinese waters that had only one American enlisted crewmember out of 135.)

The Spanish-American War saw the U. S. Navy emerge among the nations of the world as a seapower, and the Great White Fleet in the first decade of the twentieth century was a visual demonstration of that power.

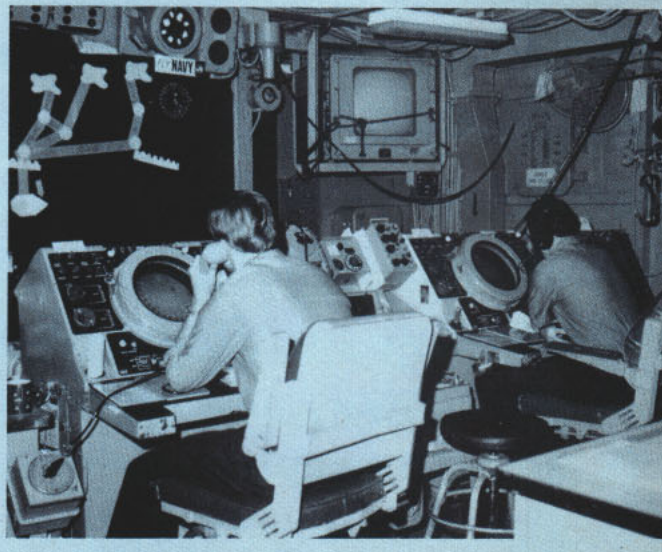
And as the Navy grew, so did Navy jobs. But the ratings were not quick to change.

The rating structure has passed through various stages of refinement since it was adopted in its present form. In 1886, a scale of pay grades extending from third class seaman to first class petty officer had been adopted. Enlisted men were grouped into three general classes according to the type of work done: seaman, special and artificer.

The next major alterations to the system, disregarding gradual changes, were posted in the early 1920s when many of our first aviation ratings were adopted. It was then that aviation riggers joined their seagoing shipmates, along with aviation carpenter's mates and aviation machinist's mates.

By the beginning of World War II, the rating structure was becoming inadequate to the problem of distributing the best-qualified men to critical billets. A major adjustment was needed to meet technological advances. A whole new group of ratings arrived with WW II—under the general heading of Seabees.

As an interim measure, existing ratings were subdivided to identify special skills. Radioman, for example,



Below: Today's Navy—flight deck action. Right from top to bottom: Computer systems are used widely throughout the fleet. Jobs, once thought for men only, are now performed by women also. A quartermaster calculates gunner's accuracy by triangulating shell splashes from negatives taken of firing ship and towing vessel. Helicopter direction control room aboard USS Guadalcanal (LPH 7). Facing page top: Underwater demolition team member. Facing page bottom: An aviation antisubmarine warfare technician (AX) checks control panel.

was split into radioman and radio technician. Later some radio technicians were transferred to the new sonarman rating. In turn, this rating was later split to include "sonarman harbor defense specialty."

The specialist ratings were established, and the famous Specialist (X) rating of WW II eventually became the catchall for jobs which could not be fitted elsewhere into the rating structure.

There was the Specialist (P)(VM) for V-Mail, the Specialist (P)(MP)—that was for Motion Picture Production and the Specialist (X)(KP) for Key Punch Operator. Does anyone remember those Specialists (X) who were pigeon trainers? They were called pigeoneers and their rating had the abbreviation SPX(PI). (Appropriately, pigeons were assigned to the aviation branch of the Navy.)

Before WW II, there were 30-odd ratings. By V-J Day, they had given way to nearly 200 wartime categories. Then in September 1945, the Navy launched studies directed toward finding a classification system which would serve both peacetime and wartime needs. The resulting rate, rating and warrant structure, implemented by the then new Manual of Qualifications for Advancement in Rating, went into effect 2 Apr 1948. It was the product of intensive research by Navy personnel experts, aided by seven petty officers with wide experience in the ratings themselves, of numerous conferences with representatives of the Navy bureaus and offices concerned with particular rating categories and, finally, based on recommendations submitted by Fleet and training commands.

The past two decades have seen some new ratings join the others, indicating technological advances. For example: Electronic Warfare Technician, Data Systems Technician, Missile Technician, Ocean Systems Technician. But in each case a need had to be strongly demonstrated before the change was made.

Today, the rating structure is divided into 11 groups, each of which reflects similarities of the ratings, shipboard organization and bureau affiliations. An example of the latter is the construction ratings, Group VIII, which have many dealings with the Naval Facilities Engineering Command. The groups include: Group I (Deck), Group II (Ordnance), Group III (Electronics), Group IV (Precision equipment), Group V (Administrative and Clerical), Group VI (Miscellaneous), Group VII (Engineering and Hull), Group VIII (Construction), Group IX(Aviation), Group X (Medical), and Group XI (Dental).

In the Navy today there are six general apprenticeship ratings (seaman, fireman, constructionman, airman, hospitalman, and dentalman) and 72 general rating categories augmented by 20 service ratings. That sounds like a lot and the Navy is now at work to revise, consolidate and improve its classification system.

Earlier it was said that the rating structure is a product of evolution. It is also a product of modern management. The latter is the key to enlisted career development and serves as a basis for training programs, detailing, advancement and simply putting to the best use the talents of thousands of Navy people.

At the present time the Navy Enlisted Occupational System, known as NEOCS, is undergoing a review as a result of recommendations made by the Freeman Board. The planning for the implementation of the study changes is already underway, and will make significant improvements in the Navy's classification system. For more on this, see the ALL HANDS issues of December 1974 (page 5) and March 1975 (page 50).

Many Navy people today take pride in the fact that they can trace their ratings back a century or more. Others are happy to know their skills are as new as the age in which we live. But it is the combination of these skills, old and new, that keeps the Navy afloat. Without them, ships couldn't sail, airplanes couldn't fly and equipment couldn't function. Such is the contribution of each and every Navy person.

—JO1 Ken Testorff

SIGNIFICANT EVENTS

The following article is a brief summary of selected highlights of 200 years of U. S. Naval history. Because of limited space, many other important or significant events have been eliminated or mentioned in a few words. For a more complete outline of naval history, see the chronological series that has been published periodically in ALL HANDS: The Early Navy and The Birth of the Nation, 1775-1855, *Part I, January 1973*; 1856-1913, *Part II, July 1973*; The Emerging Era of the Modern Navy, 1913-1941, *Part III, October 1973*; World War II, 1941-1945, *Part IV, July 1974*; The Cold War Years and the Emergence of the Electronic, Nuclear, Supersonic Navy, 1946-1959, *Part V, March 1975.*

One more increment of the chronology will appear in a forthcoming issue; it will cover the years from 1960 to the present, as the U. S. Navy enters its third century—on, over, and under the seas.

From sailing ships to nuclear submarines, from biplanes to lunar modules—the U. S. Navy has been in on it all. In 200 years, the Navy has done too many things to cover them all in one issue, but at least some of the more notable and significant events deserve special mention in our bicentennial year.

A Navy Is Born

At the outbreak of the Revolutionary War there was no American Navy. Colonists had to begin their war at sea against the British with private ships manned by merchant seamen, farmers, soldiers and backwoodsmen. On 13 Oct 1775, the Second Continental Congress met at Philadelphia and changed this when they approved the acquisition and fitting out of two naval vessels. The United States Navy was born.

For a capsule history of the Navy in the Revolu-

IN NAVAL HISTORY

tion—the years 1775 to 1783—see the article on pages 2 to 7. The importance of the war at sea is pointed up by the fact that the antagonists were separated by 3000 miles of ocean. And it is significant that the battle which ultimately convinced the British that the war was lost was at Yorktown when Cornwallis surrendered to Washington and Rochambeau. Here was a classic case of a general facing the opposing forces of the enemy—confronting him on land while his back was to the water with an unfriendly fleet cutting off any probability of retreat. That was the fleet of America's ally, France, led by Admiral Comte de Grasse. An American destroyer, the second U. S. Navy ship to be named in his honor, will be launched in 1976 during America's Bicentennial Celebration.

One symbolic event in which the tiny new Navy played a significant role is appropriate to mention here—that was the first official recognition by a foreign nation of the American "Stars and Stripes" flag. On 14 Feb 1778, John Paul Jones sailed into Quiberon Bay, France, in *Ranger* and saluted the French fleet anchored there. A nine-gun salute was given in return. A gun salute given to a revolutionary government was a significant signal of the country's recognition. France, therefore, became one of the first foreign powers to recognize the struggling government of the American colonies. It was not the first—that claim belongs to the Dutch, who had given recognition to an American flag (not the Stars and Stripes) at St. Eustatius, an island in the West Indies belonging to Holland, in 1776.

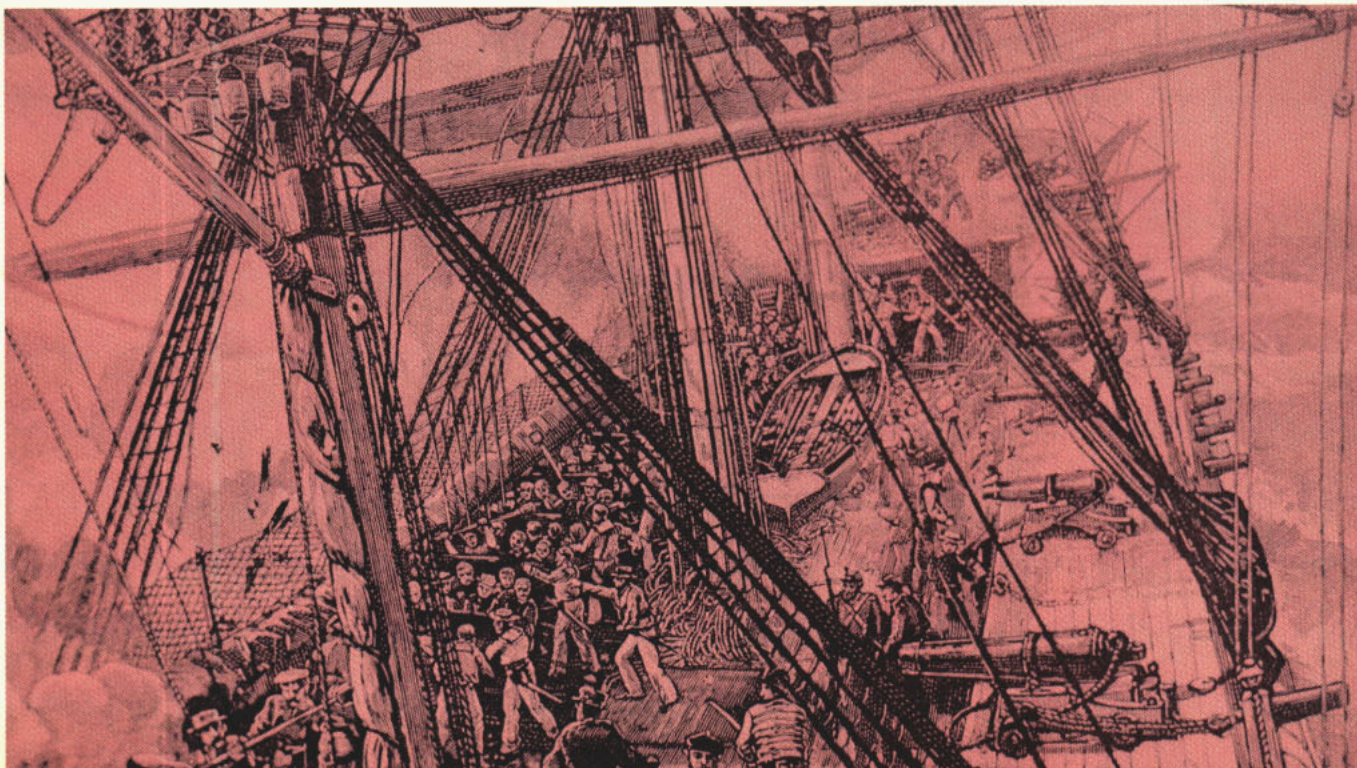
John Paul Jones again was the main character during a notable event and the author of a statement that was symbolic of the spirit of the newborn Navy. On 23 Sep 1779 in *Bon Homme Richard*, John Paul Jones and his crew defeated the superior British frigate *Serapis*. The highlight of the battle came when, after being asked if he had struck colors, Jones replied, "Struck, sir? I have not yet begun to fight!" The words inspire Navymen to this day.

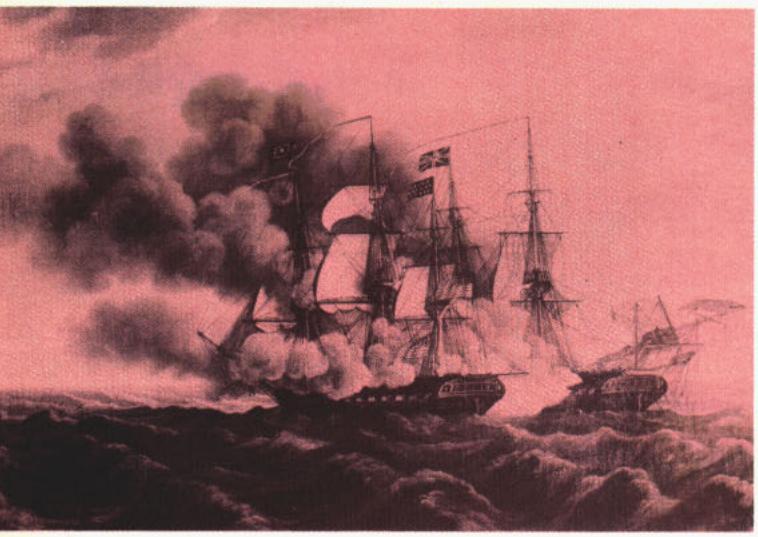
U. S. Navy—The Early Years

Between America's two wars with Great Britain, the early U. S. Navy was involved in two other conflicts. The first was the "Quasi-War" with France, 1798-1801, which was entirely a naval war. It followed worsening diplomatic relations with France, including a refusal by the French secretary of foreign affairs, Talleyrand, to receive U. S. representatives unless a bribe was paid and a loan granted. The famous expression "Millions for defense, but not one cent for tribute," originated at this time. The Quasi-War was the baptism of fire for the United States Navy under the new Constitution. Such historic ships as USS *Constellation*, *Constitution* and *United States* were in this action.

In the War with the Barbary States, the U. S. Navy was sent to the Mediterranean to deal with the Barbary States who were forcing other nations to pay ransom

Below: Constitution versus Levant and Cyane during War of 1812. At left: General Washington meets the French aboard ship. French were to become allies of the Americans, and the French fleet under Admiral Comte de Grasse played important role, including significant part in the siege of Yorktown.





for safe passage through the Mediterranean Sea. During the campaign, Lieutenant Stephen Decatur and 84 seamen slipped into the harbor at Tripoli on 16 Feb 1804 and burned the captured frigate *Philadelphia*. Not a single American Navyman was lost. Britain's Admiral Lord Nelson described the raid as "one of the most bold and daring acts of the age."

The War of 1812

Brought on, in part, by British impressment of American seamen, the War of 1812 soon became an excuse for England to make her presence felt and demonstrate her power on the American continent. During this war, on 19 Aug 1812, Captain Isaac Hull in *Constitution* defeated the British frigate *Guerriere*. *Constitution* earned her nickname "Old Ironsides" here, but more importantly, the victory convinced Congress and President Madison that a stronger Navy was needed to win the war and protect the country.

Almost a year after Hull's important victory, another notable event occurred in naval history. On 10 Sep 1813, Captain Oliver Hazard Perry defeated a British squadron on Lake Erie and wrote his dispatch, "We have met the enemy and they are ours." Perry's win cut British supply lines on the Great Lakes, gained control of Lake Erie and strengthened the American claim to the Northwest Territory.

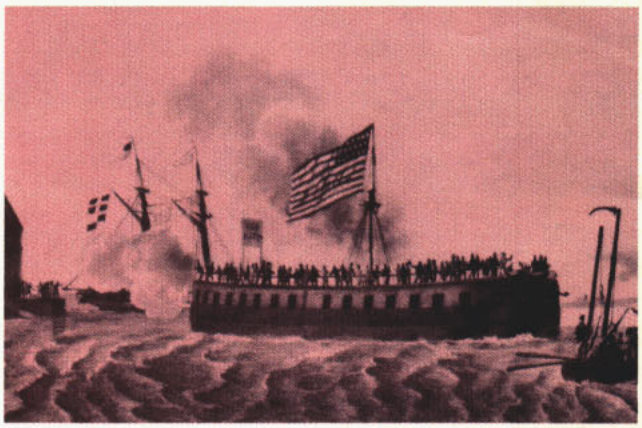
Important Strides

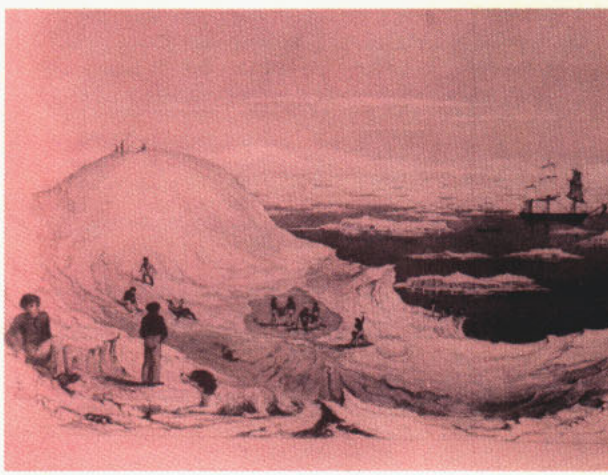
The War of 1812 lasted until 1814, and as in all its conflicts the Navy was turning its attention to new methods of advancement. Some important strides forward were made in ship design. In 1814 the world's first fully steam-powered warship, USS *Robert Fulton*, was launched at New York. Originally called *Demologos*, it was renamed for the inventor who worked on its design and construction. The Navy's *Fulton* was the first to be designed and built as a steam-only ship.

USS *Princeton*, which was the Navy's first successful propeller-driven steamship, came some decades later. Launched on 5 Sep 1843, she had an innovative propeller which eliminated the vulnerable paddlewheels and permitted ships' engines to be placed in protected below-deck spaces.

In these years of peace, the Navy also took the first steps in Antarctic exploration. Notably, when Lieutenant Charles Wilkes visited the subpolar region in January 1840 and proved conclusively that the icy land was, in fact, a continent.

War again loomed on the horizon in the 1840s. In May 1846, following a series of incidents resulting from the admission of Texas as the 28th state in the Union, and the crossing of the Rio Grande by Mexican troops, the Mexican War was declared by the United States. It was largely a land war, but U. S. Navy involvement





in this conflict included blockade of port cities in the Gulf and protective action by the "Mosquito Fleet" during the first large-scale amphibious operation in U. S. military history. This called for the landing of some 10,000 U. S. troops at Vera Cruz, said to be at the time one of the most powerful fortresses in the Western Hemisphere. (The Navy itself was not equipped to carry out such an operation at that time.) Marines too were involved in this war—they marched with Scott to Mexico City, from whence came the phrase "halls of Montezuma" in the famed Marines' song.

The Navy had a hand in an important event in diplomatic relations when Commodore Matthew C. Perry

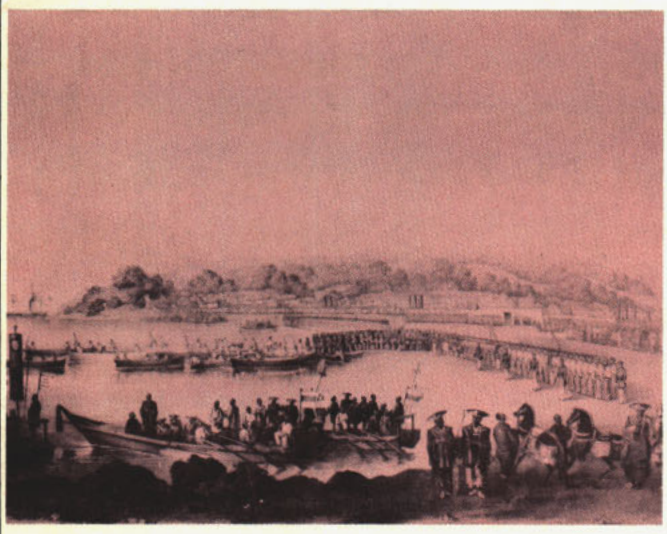
signed a treaty with Japan on 31 Mar 1854. It opened the country's ports to American trade and provisioning of ships. England and Russia soon followed with their own treaties, all modeled after Perry's.

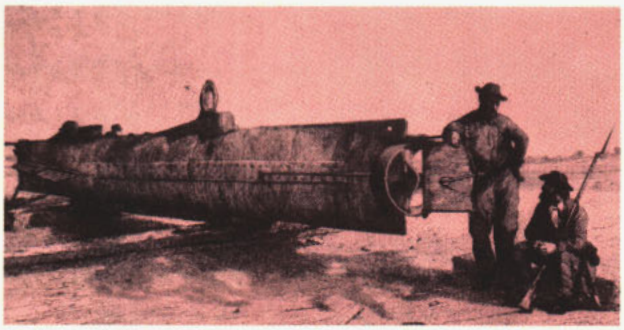
The Civil War

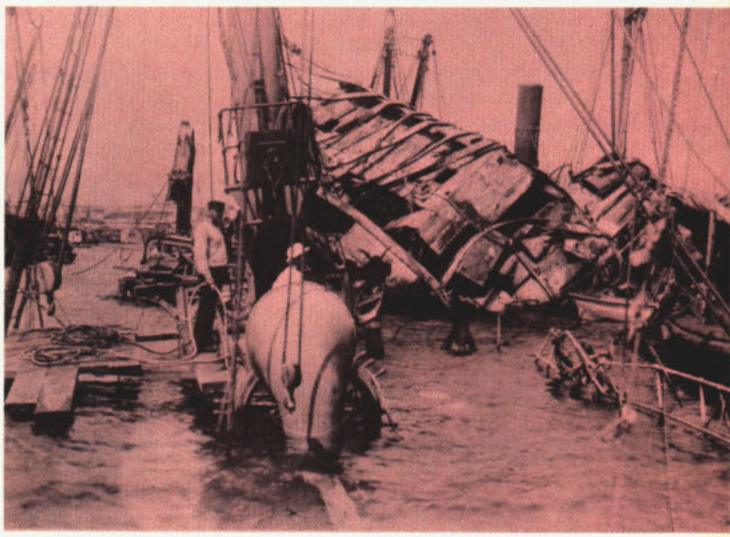
This sad and bloody struggle between the States was the stage upon which many notable events in the U. S. Navy's history were set.

A tight Union blockade of the South led to the first ironclad battle, fought between USS *Monitor* and CSS *Virginia* (ex USS *Merrimack*) at Hampton Roads, Va., on 9 Mar 1862. After four hours *Virginia* broke off the engagement, and no one could say for sure exactly who won, but it did prevent the blockade from being broken. The battle also insured Union supremacy of the sea, and made wooden Navy ships obsolete.

On the Mississippi River, the capture of Vicksburg, Miss., by the combined naval forces of Rear Admiral David G. Farragut, Acting Rear Admiral David D. Porter and the commander of the Army in the West, U. S. Grant, gave the North control of the entire river. Among other things, this cut off important Confederate supplies of food and clothing coming from Louisiana, Texas and Arkansas.







Far left: Constitution forces Guerriere to surrender near Boston, 1812. Second column, above: The first ship to be named Fulton is launched in New York City, 1814. Bottom: view of Antarctica, 1840, during Navy exploration. Above: Commodore Perry is greeted in Japan, 1852. Top right: Confederate submarine CSS H. L. Hunley, 1863. Right: Aft view of sunken USS Maine, 1898.

At Charleston, S. C., CSS *H. L. Hunley* "torpedoed" and sank the steam sloop of war USS *Housatonic* on 17 Feb 1864. Although the attack is believed to have been made when *H. L. Hunley* was at least partially surfaced, the event is notable because it is considered to be the first successful submarine attack. (See page 32 for the "Submarine Navy ").

In the same year, on 5 August, Farragut damned the torpedoes and went full speed ahead to win the Battle of Mobile Bay. This victory closed the South's most important port (since New Orleans had already fallen) and tightened the Union blockade. Along with Sherman's capture of Atlanta, Farragut's victory may also have been one of the factors leading to the reelection of President Lincoln. It certainly played a major role in the outcome of the war.

Spanish-American War

At the end of the last century the U. S. and Spain became involved in diplomatic disputes revolving around Cuban independence and wrongs done to our trade and citizens there. On the evening of 15 Feb 1898 the battleship USS *Maine* swung at anchor in Havana harbor when a terrific explosion suddenly tore through her, killing 250 American Navymen. Real cause of the disaster has never been uncovered, but it was a factor in bringing on the Spanish-American War. "Remember the Maine" became our battle cry.

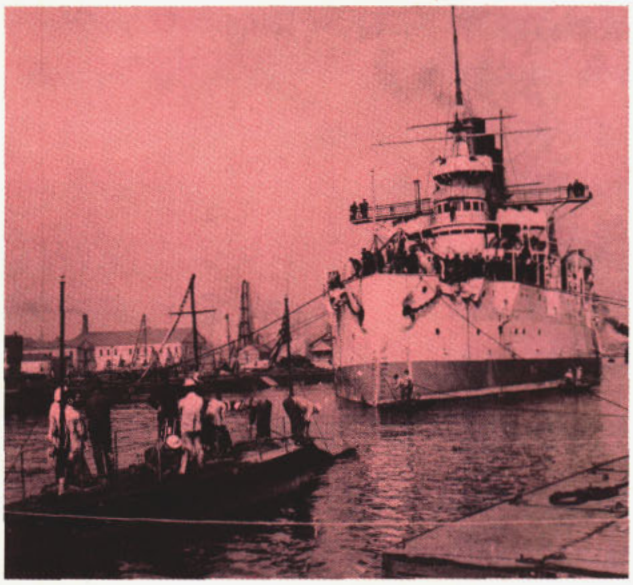
Most remembered event in this short war was when Commodore George Dewey steamed into Manila Bay on 1 May 1898 and ordered, "You may fire when you are ready, Gridley." Dewey's resounding victory destroyed Spain's naval power in the East and was instrumental in bringing the war to a swift conclusion. The action also impressed European nations with the growth of American seapower.

Shortly after the Battle of Manila Bay, U. S. naval forces at Cuba cornered the Spanish Atlantic Squadron

at Santiago Bay. On the morning of 3 Jul 1898 the Spanish tried to break out of the bay and were annihilated. Cuba and Puerto Rico fell shortly afterwards. The war came to an end.

Turn of the Century

The 20th century began with a world at uneasy peace. The U. S. Navy took the time before World War I to develop some new weapons. In April 1900 the Navy accepted its first operational submarine, USS *Holland*.



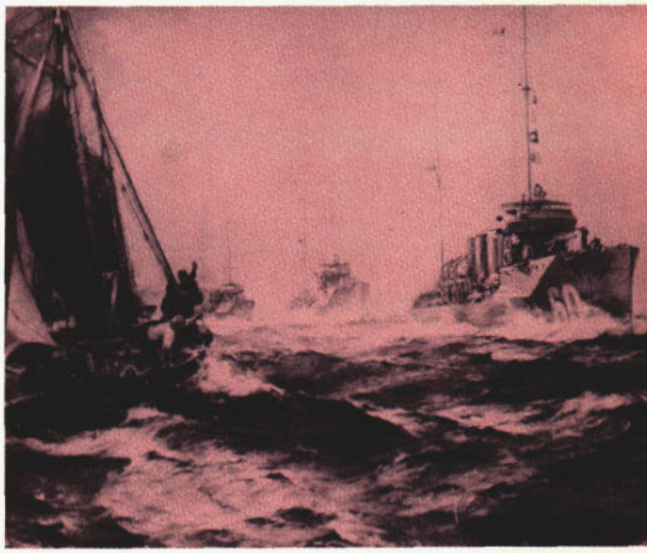
In the following year the first destroyers were launched—500-ton ships capable of 28 knots. Fire control methods were improved and telegraphy was introduced to the Fleet. Another giant step in weapons development came on 12 Apr 1911 when Lieutenants Glenn Ellyson and Jack Towers began flight training under Glenn Curtiss, becoming the Navy's first aviators.

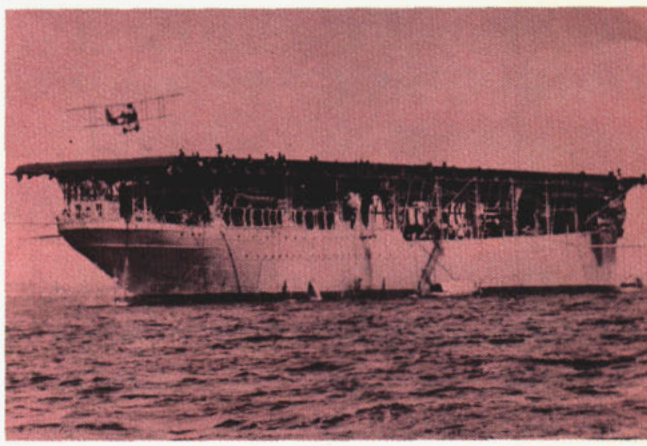
Navy involvement in exploration continued during the century's first decade: a most notable event occurred on 6 Apr 1909—Commander Robert E. Peary, accompanied by Matthew Henson, achieved the long-sought goal to reach the North Pole.

In pre-WW I days, the Navy also carried out its role as a diplomatic arm of the Government. On 16 Dec 1907 the Great White Fleet left Hampton Roads, Va., for a round-the-world cruise to show the flag. The exercise demonstrated U. S. power and purpose and successfully thwarted a developing war with Japan over the Open Door Policy.

World War I

Although the United States entered the first world war late, there was sufficient time for the Navy to make plenty of history. First historic event came on 4 May 1917 when six American destroyers commanded by Commander Joseph K. Taussig steamed into Queenstown, Ireland, becoming the first U. S. Navy ships to commence operations in European waters. The event, billed as the "return of the *Mayflower*," was a great morale booster and aid for the Allied forces. The incident is probably best remembered by CDR Taussig's simple remark upon reporting to the British admiral in charge: "I shall be ready when refueled, sir."





Another notable event of WW I came on 17 Nov 1917 when the destroyers *Nicholson* and *Fanning* became the first U. S. ships to sink an enemy submarine— U-58, 10 miles east of Queenstown, Ireland.

The Navy got its first flying ace during WWI too. Lieutenant (jg) David S. Ingalls, flying a Sopwith *Camel* over Nieuport, shot down his fifth enemy aircraft in six weeks (see page 80-81).

The U. S. Navy's most significant WWI contribution was the convoying of millions of troops through submarine-infested waters without a loss in transit to Europe. In this effort, Navy destroyers performed a vital role.

Between the Wars

The flying machine proved itself in WW I, and two notable events between world wars were involved. The

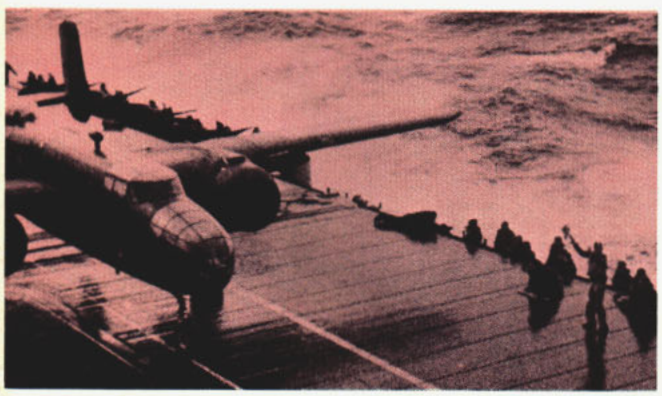
first occurred on 27 May 1919 when the Navy flying boat NC-4 landed at Lisbon, Portugal, and became the first plane to complete a transatlantic flight. Continuing on to Portsmouth, England, her whole trip took less than 71 hours' actual flying time.

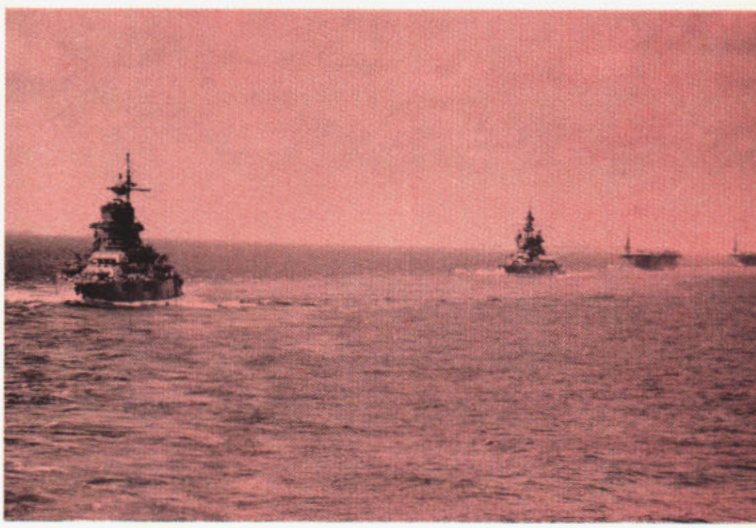
Second event took place on 20 Mar 1922 when the rebuilt collier, *Jupiter*, was commissioned USS *Langley* and became the Navy's first aircraft carrier. On 17 October the first landing while underway was accomplished, carrying out the promise of a shipboard landing and takeoff a decade earlier. *Langley* spent a great deal of her time in training Navy pilots and the importance of this later bore fruit in the Pacific against Japan.

One other air feat between wars was notable—in November 1929 a Ford trimotor named *Floyd Bennett* carried Commander Richard E. Byrd and his crew on the first flight over the South Pole. CDR Byrd thereby became the first man to fly over both poles.

World War II

On the morning of 7 Dec 1941 the Rising Sun came out of the west when the Japanese pounced on Pearl Harbor. On that morning, over 15 U. S. Navy ships were sunk or damaged, including all eight of the Pacific Fleet's battleships; some 3400 Navy and Marine Corps personnel were killed or wounded. The U. S. declared war on Japan the next day.





Far left: U. S. submarine Holland. Ship at right is Russia's Retvizan, circa 1902. Top left: "Return of the Mayflower," when first U. S. ships arrived in European waters during WW I. Bottom left: First landing on Langley, 1922. Above: Army B-25s ready for takeoff from USS Hornet for Doolittle's raid on Tokyo, 1942. Right: Task force sails from Saipan after landing Marine and Army troops, June 1944.

Four short months after the attack on Pearl Harbor, the U. S. struck back at the heart of the enemy. On 18 Apr 1942, 16 Army Air Force B-25s, commanded by Lieutenant Colonel "Jimmy" Doolittle, were launched from USS *Hornet* for an attack on Tokyo. This first raid on the Japanese homeland did relatively little damage, but boosted American morale tremendously.

In the following month the Battle of the Coral Sea was fought. An American victory stopped the Japanese advance toward Australia and New Zealand. It was also the first battle in history where opposing ships did not exchange shots, but attacked each other with aircraft.

In the next month, June, another battle, considered one of the most decisive battles in world history, was fought when the Navy defeated a Japanese invasion fleet heading for Midway Island. It altered the balance of power in the Pacific in favor of the Americans. Like the Battle of the Coral Sea, it was a major loss for the Japanese.

In November 1942 the naval Battle of Guadalcanal was fought—After three days of bitter fighting, the Japanese naval forces retreated and U. S. Marines were able to secure the island. With the fall of Guadalcanal, the southern Solomons came under Allied control and Australia was in less danger of attack.

On 19 Jun 1944 U. S. Task Force 58 caught the combined Japanese Fleet steaming out of Tawi Tawi in the southern Philippines. The Battle of the Philippine Sea ended with the Japanese carrier forces short of ships, planes, gas and pilots. Unable to replace these, the Imperial Navy was never able to recover from her losses, although many desperate battles were to follow.

Final blow to the Japanese Navy came on 23 Oct 1944—in a last chance effort to salvage the Philippines, they sent a naval force consisting of battleships and other ships they could muster together to Leyte Gulf to attack the U. S. Fleet. Their plan backfired and the operation was a complete failure—the deciding catastrophe for their navy. The ensuing loss of the Philippines severed their empire and the homeland was cut off from its main source of supply from the south. With the losses at Okinawa and Iwo Jima, the war in the Pacific was approaching its final days.

Earlier, on the Atlantic side of WW II, the U. S. Navy had been fighting off U-boats in the long, running Battle of the Atlantic, protecting convoys bound for Europe. Eventually the German sub menace was contained, and England and Europe got vital supplies and troops safely.

The Navy's most notable Atlantic action may have been its part in the 6 June invasion of Normandy, the largest amphibious operation in history. The greatest armada ever assembled carried out minesweeping,

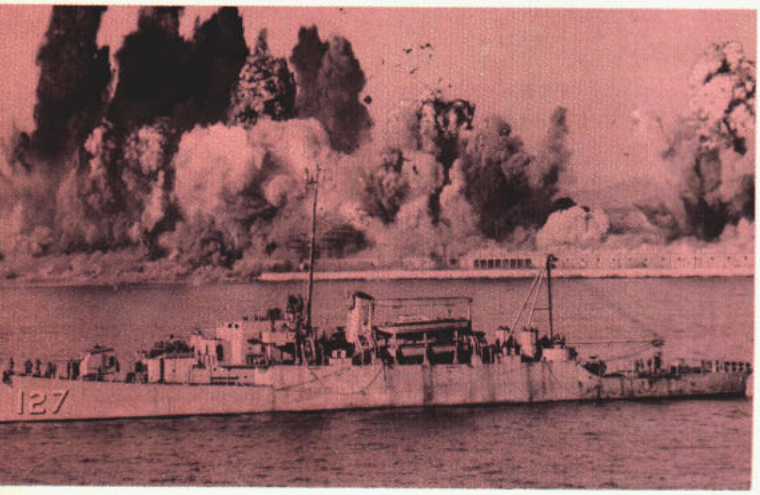
shore bombardment, amphibious operations and supply and troop transportation. These enabled the Allies to successfully complete D-Day landings and eventually push on to Germany.

Korea

Following WW II, the U. S. Navy turned its attention once again to Antarctica with an important event called Operation Highjump, which began to get underway in 1946. Seaplanes flying from the open sea and the airstrip at Little America photographed the interior and coastline of the "white continent."

But scientific and exploratory pursuits were interrupted by the outbreak of the Korean War.

Three days after the decision, supported by the United Nations, was made to give the Republic of Korea air and naval assistance—29 Jun 1950—the cruisers USS *Juneau* and USS *Dehaven* fired the first bombardment of the war.

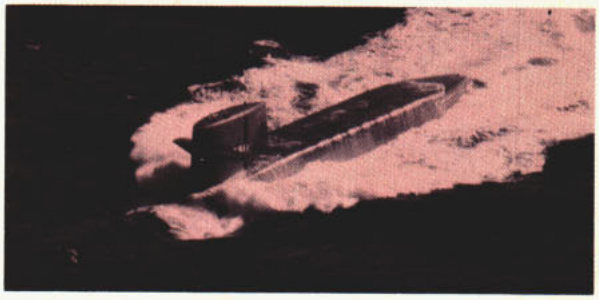


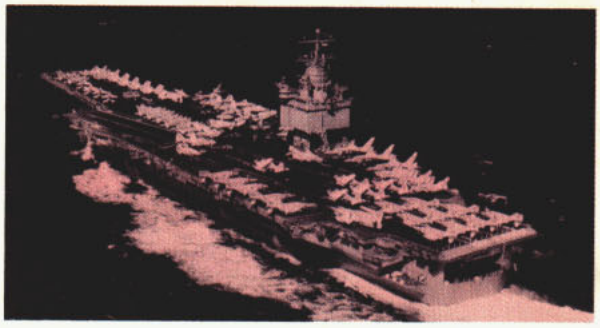
Most notable event of the war came on 15 Sep 1950 when the amphibious landings at Inchon began, under massive shore bombardment by U. S. Navy ships. The successful operation cut enemy communications, split their forces and resistance dissolved in the area. *Missouri's* shelling of supply roads far inland demonstrated a new concept of the Navy's ability to intervene successfully in a ground operation whose main action is far ashore.

From Korea to the Space Age

With hostilities in Korea ended, the Navy picked up projects which had been temporarily dropped, particularly in the scientific field. Many notable results have come from these activities.

In nuclear propulsion, the U. S. Navy has been a world leader. On 17 Jan 1955 the world's first atomic submarine, USS *Nautilus*, swept into Long Island Sound on her maiden voyage. Four years later, on 9 June, USS *George Washington* was launched—the world's first nuclear ballistic missile submarine. In 1960 another nuclear sub, USS *Triton*, became the first ship to circumnavigate the globe under water.





Submarines were followed by the world's first nuclear-powered surface warships, the guided missile cruiser USS *Bainbridge*, launched 15 Apr 1961, the guided missile cruiser USS *Long Beach*, commissioned 9 Sep 1961, and the attack carrier USS *Enterprise*, commissioned 25 Nov 1961. On 3 Oct 1964 these three ships ended Operation Sea Orbit—a 64-day long, around-the-world, unreplenished cruise.

Exploration of Antarctica continued. On 31 Oct 1956, a Navy R4D aircraft named *Que Sera Sera* became the first aircraft to land at the geographic South Pole. A seven-man party remained at the pole for 49 minutes and set up navigation aids for future flights.

At the other end of the world, another notable polar

event took place when USS *Nautilus* became the first ship to reach the North Pole as she passed under it on 3 Aug 1958 on her way from Hawaii to the Atlantic.

Space Age

Navy notables occurred in another area of exploration—space. On 17 Mar 1958, *Vanguard*, a three-and-one-half-pound payload, developed by the Naval Research Laboratory, was placed into orbit to test the system designed for launching earth satellites during the International Geophysical Year (IGY). Now the oldest manmade satellite in orbit, it is expected to remain aloft for 2000 years.

During the past dozen or so years the Navy's participation in the U. S.'s manned space program has brought many unforgettable moments. On 5 May 1961, for example, Commander Alan B. Shepard, Jr., made American's first suborbital flight. The 15-minute shot in *Freedom* 7 went 116.5 miles into space.

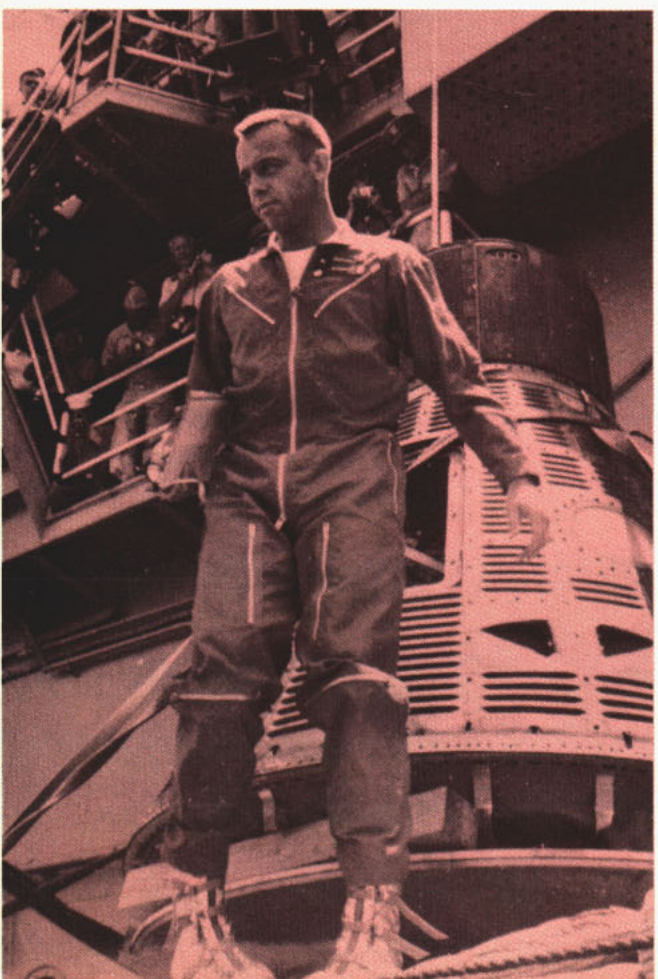
Former Navy pilot Neil Armstrong became the first man to set foot on the moon on 20 Jul 1969. On 14 Nov 1969 an all-Navy *Apollo* 12 crew (Commanders Charles Conrad and Richard Gordon and Lieutenant Commander Alan Bean) lifted off from Cape Canaveral on the second lunar expedition. Another All-Navy crew (Captain Charles Conrad, Jr., and Commanders Joseph P. Kerwin and Paul J. Wietz) splashed down on the first Skylab mission on 22 Jun 1973. The team had set numerous records and accomplished virtually all of its objectives.

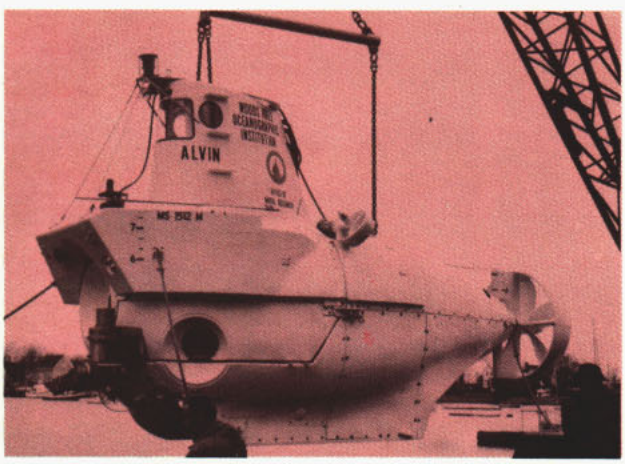
In the past several years Navy scientific endeavors have had notable moments in yet another element—under the sea. *Alvin*, the Navy's first deep-diving vehicle which can properly be called a submarine, was successfully tested at 6000-foot depths on 20 Jul 1965. In the next month 10 aquanauts, including astronaut Commander M. Scott Carpenter, entered the Sealab II capsule, 205 feet down off the coast of La Jolla, Calif. Carpenter remained underwater for 30 days in a successful experiment of submerged living and working conditions. Finally, another notable event in the Navy's oceanography program came on 25 Jan 1969 when the first nuclear-powered, deep-submergence research and ocean engineering vehicle, NR-1, was launched. The five-man vessel is capable of operating for weeks at a time at great depths.

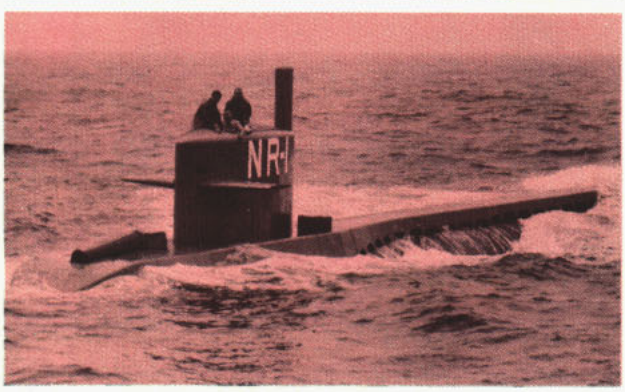
History and the Navy—it's a big story, and an exciting one. We've only been able to ripple the surface here, but that's O.K. Maybe we've whetted your curiosity a little, maybe enough for you to want to take a closer look at your Navy's past. That would be A-O.K., certainly appropriate during our bicentennial.

—JO1 Tom Jansing, USN

Far left: A patrol frigate waits to pick up a Navy demolition team responsible for the destruction of the docks at Hungnam, 1950. Second column, top: USS George Washington, first ballistic missile submarine. Middle: USS Enterprise, first nuclear carrier. Bottom: Que Sera Sera, first aircraft to land at the geographic south pole. Below: America's first man in space, Commander (now RADM) Alan B. Shepard. At right: Alvin, under Navy research contract, was first deep-diving submarine. Bottom right: NR-1, Navy's first nuclear-powered oceanographic research sub.







ON - UNDER - OVER SURFACE NAVY

The thirteenth day of October 1775 marks the official birth of our Navy. That's when the 2nd Continental Congress established a naval committee and authorized the fitting out of two vessels, one of which would carry 10 carriage guns and several swivels for intercepting transports carrying "warlike stores and other supplies for our enemies . . ." Shortly thereafter, a naval committee pushed through a bill authorizing two additional ships. This was the small beginning of a surface fleet that would sail the oceans' highways and grow into a seapower second to none.

The 13 united colonies knew they were taking on the world's No. 1 Navy, and it didn't take long for the naval committee to get into action. They started off with what they could get fastest—revamped, armed merchantships. Four commercial vessels, including the *Alfred* (see below), lying in Philadelphia were taken for conversion; two schooners and two sloops were added later.

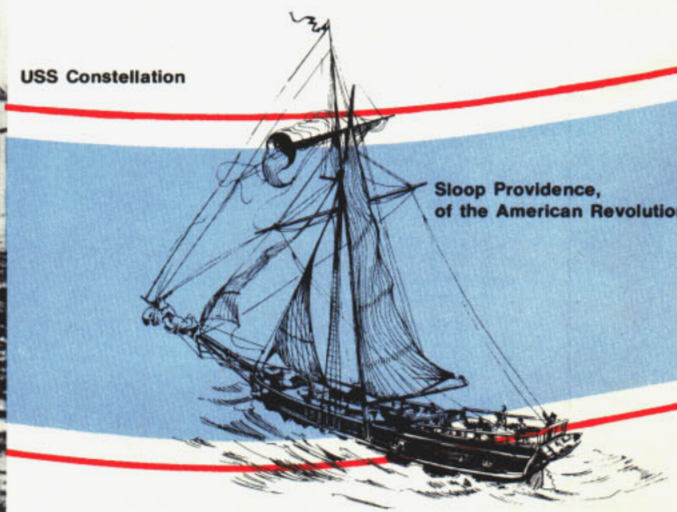
In those days, what constituted a "warship?" During the Revolutionary War and into the nineteenth century, naval vessels were grouped into three major classes. They were:

- *Sloops-of-war.* These were small sailing warships carrying 10 to 20 guns on one deck only. (The gun ratings varied with the era.)
- *Frigates.* The cruisers of their day, these were next in size. They generally rated from 28 to 44 guns which were mounted on the spar and gun decks immediately below.
- *Ships-of-the-Line.* The battleships of the sailing days. Largest of all sailing warships, they were equipped with 64 to over a hundred guns of various sizes. Two or more gun decks located below the spar deck were their distinguishing feature.

These then were the main classifications of ships in the navies of the Revolutionary War days (although our Navy's ships-of-the-line did not come into existence until years later, long after the Revolutionary War).

Another group should be mentioned here—the privateers (see page 6). The privateers were commissioned by the Continental Congress and by individual states to capture enemy merchant ships as prizes of war.

Typical of the independent "fleet" of privateers was the schooner, a small, fast, flexible, flush-deck ship that carried smoothbore cannon. With small ships like these schooners, the colonists broke the British stranglehold on main New England harbors, by slipping past the Royal Navy's men-of-war and hiding in inlets. Unable



USS Constellation

Sloop Providence, of the American Revolution

to meet the British head-on, the American ships outmaneuvered them and jabbed here and there instead of standing full force and slugging it out.

To get back to the ships of the Continental Navy—Not long after the razing of the Massachusetts port of Falmouth (now Portland, Maine), the Congress voted to build 13 frigates (of 24 to 32 guns) and to convert six merchant ships ranging from *Hornet* of 10 guns to *Alfred*, with 24 guns. *Alfred* had the distinction of being the U. S. Navy's first flagship and is said to be the first U. S. naval vessel on which the "Flag of Freedom" was hoisted (by John Paul Jones).

Here are some other early Navy ships which convey an idea of what made up the Continental Navy. *Providence* was a 12-gun sloop; *Lexington* was a 16-gun brig (converted from a merchantman); and *Bonhomme Richard* (see page 5), a loan from the French, was an old East Indiaman.

With the end of the Revolutionary War, followed by the establishment of a new federal government, the infant U. S. Navy went into eclipse. By war's end in 1783, the Navy was down to five ships. These were disbanded shortly thereafter, with the frigate *Alliance*, the last of them, being sold in 1785.

It didn't take too long, however, before the need for a Navy was realized, since America's small merchant fleet was being molested on the high seas. In 1794, a Navy-conscious Congress authorized the construction of six frigates. They were to be of a new design—long and strong. They possessed a combination of firepower and class. One of these was *Constitution* (see page 62), completed in 1798. Rated a 44-gun, she was known to sail at 13½ knots. *Constitution* was 175 feet long, (at her gundeck), with a tonnage rating of 1576 tons, and her mainmast towered 105½ feet above her decks.

Constitution fulfilled the thoughts and dreams of President John Adams who did so much in the role of forming the U. S. Navy. It was under Adams in 1798 that the Navy Department was established and the administrative organization of today's Navy began to take shape. One of the first jobs of the newly formed U. S. Navy was that of fighting an undeclared war with France. During this "war," our small Navy came through again. It took 85 French ships.

The Tripolitan War and War of 1812 saw bigger ships coming into the Navy. Typical was our first ship-of-the-line, *Independence*, followed by the 74-gun *North Carolina*. The latter, authorized in 1816, was a true ancestor of the battleship, and had an awesome punch.

Harnessing the power of steam was the most important development in the surface Navy during the first half of the 19th century. Steam began to replace the not-so-reliable wind as a means of propulsion and promised to eliminate some of the hazards and delays caused when ships were blown off course or left dead in the water.

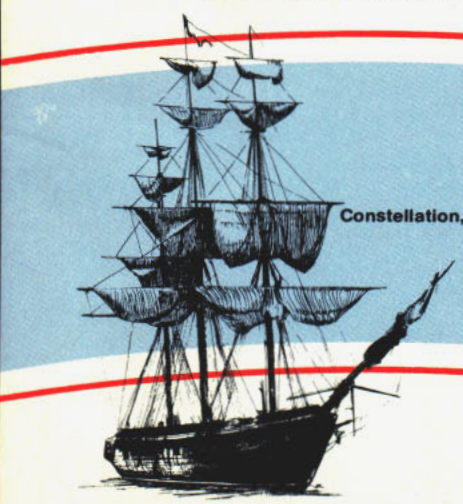
The basics of steam power had been known for centuries before being applied to ships (its principle was known by the ancient Greeks). However, it was Robert Fulton, who demonstrated successfully its practicality as a commercially viable steamboat. After making a number of important modifications to James Watt's basic steam engine, Fulton had sailed his riverboat *Clermont* up the Hudson River in 1807. Fulton helped build *Demologos*, the Navy's first warship to use steam. She was originally intended for defense of the port of New York during the War of 1812. She was rechristened *Fulton* in his honor and served the Navy under that name.

Many old-time Navymen, however, could not picture steam-powered machinery replacing wind and canvas. Even after she had proved herself practical, *Fulton* was later equipped with sails by leaders of the old school and was not very active (she was later housed over and used as a receiving ship).

The Navy continued to expand its sailing fleet. From 1815 to 1840, more 74-gun ships-of-the-line were built. In 1837 the Navy launched the 3104-ton *Pennsylvania*, largest of America's ships-of-the-line. By that time the American merchant fleet had several hundred steam-powered vessels and many of the problems involving steam propulsion were being solved. In 1841 the Navy launched USS *Missouri and* USS *Mississippi*, our first ocean-going, steam-driven capital ships.

Through the efforts of farseeing men like Commander Matthew Calbraith Perry, USN, the Navy was becoming more steam-conscious. Perry, who is referred to as the "Father of the Steam Navy," had been enthusiastic about the possibilities of steam while in charge of construction and in command of the Navy's second steam frigate *Fulton*. Steam was now hailed as the most important naval development since the cannon.

While advances with steam were slow, the Navy had been making other strides. It began making its ships with iron instead of wooden hulls. The year 1843 saw the launching of the Navy's first iron-hulled warship, the paddle sloop *Michigan*. This side-wheeler was 163 feet long. It displaced 685 tons, had a barkentine rig



Constellation, launched in 1797

"Lucky Little Enterprise," 1799-1823

SURFACE NAVY

and was powered by a 170-horsepower, two-cylinder steam engine. Without using her sails, *Michigan* was capable of making eight knots.

The newly built steam ships posed problems if engaged in battle for their paddlewheels and steam engines could easily be damaged by enemy fire. To help remedy this, the paddlewheel housing was designed so that it was enclosed behind five-foot-thick walls and set in an inboard channelway (this had been Fulton's design for *Demologos*).

Improvement of steamships had to overcome problems one by one. Stronger engines still had to be developed; screw propellers were needed to replace the paddlewheel; coal as a fuel had to be recognized as more efficient than wood. All of these changes didn't happen overnight, and required long and agonizing periods of trial and error. But in the 1840's new ideas were being explored and voiced by their proponents.

Wooden hulls were also on the way out. In 1848, *Vermont* was launched as our last wooden ship-of-the-line.

The Civil War brought many fantastic ships to a now rapidly changing Navy. Both Union and Confederate navies were engaged in frantic shipbuilding programs. It brought the era of ironclads into full swing.

Launched in 1862, *New Ironsides* was a powerful ironclad and had the finest armor yet, and once survived 50 hits.

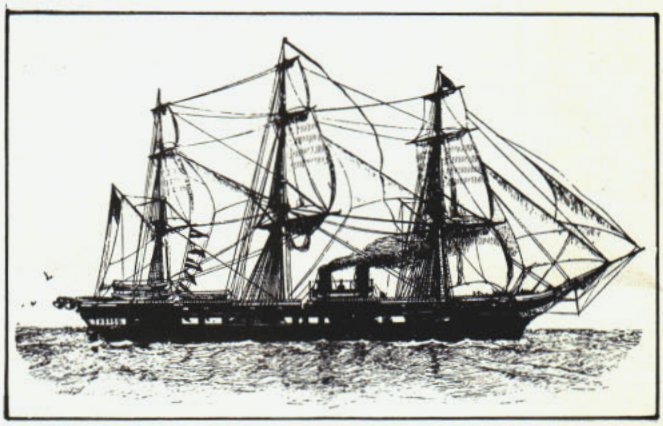
The Civil War also gave us those two famed ironclads of a new type, *Merrimack* and *Monitor* (which also sported a turret). *Monitor* was ungainly, called a "cheese box on a raft," but she and her Confederate counterpart (renamed *Virginia*) rang up the curtain on the era of the ironclads. The battle of the ships was indecisive, with both sides claiming victory.

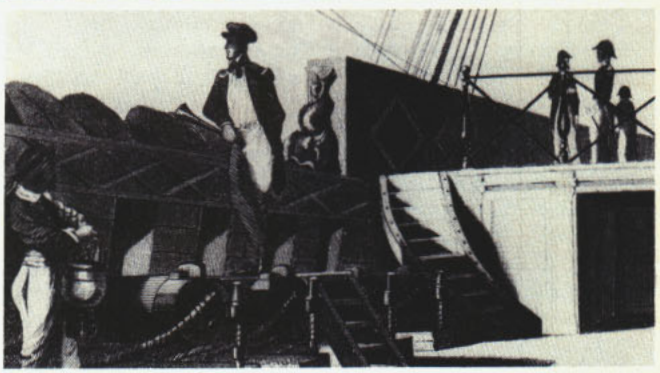
Also appearing on the scene were riverboats, rams and gunboats. Probably more changes and advances were made in ship designs during the four years of the Civil War (1861-65) than during any prior period of similar duration since our Navy had its start in 1775.

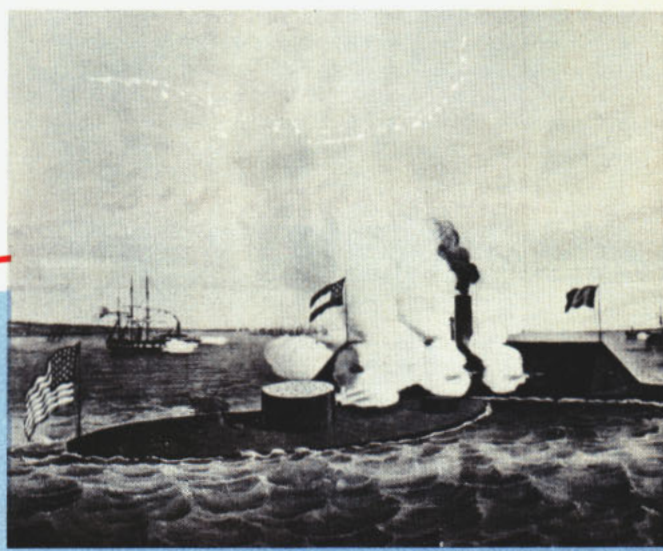
From 1861 to 1865 the number of ships grew from 90 to 670; officers from 1300 to 6700; enlisted men from 7500 to 51,200; and the annual budget increased from $12 million to $123 million. Also during that war a number of special ship classes designed for special tasks were developed. Following past traditions, many were made specifically to fight on rivers and close to shores, where most naval action took place.

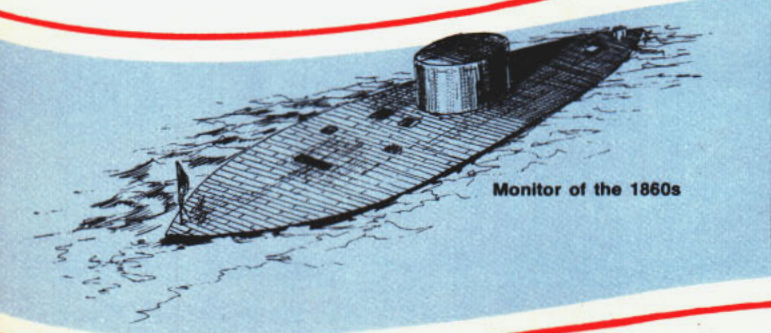
Still, after the Civil War the Navy had begun to experience a downward trend. A year and a half after the war, the total number of Navy ships was 236, of which just 56 were in active squadron service.

If steam power was the major development in shipping during the first half of the 19th century, iron construction of ships would be the outstanding development of the second half. However, the two developments had to go hand in hand. The advantages of steam power were recognized by all the navies of the world,







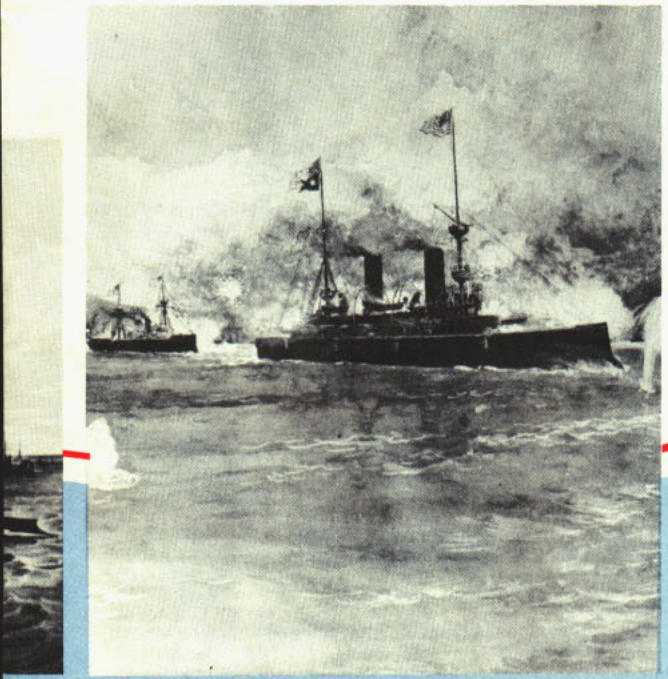


Monitor of the 1860s

but iron warships called for large steam engines to power them, and the engines in turn called for bigger ships to accommodate them.

The shipbuilding world had now turned its eyes to iron, first as a framing product and then as a material for the entire ship. When iron was first used in framing, it reinforced ships so they could be used to ram their opponents as well as fire on them. It was several years before an economical way to process iron strong enough for the entire construction could be found. (Aside from war, wooden ships had the advantage of being cheaper to build than iron ships.)

Above left: U. S. frigate Franklin, laid down in 1854 and built from "razeed" ships-of-the-line. Center left: Deck scene. In early 19th century Navy. Bottom left: Monitor and Merrimack battle it out in 1862. Above: The twin-screw protected cruiser Chicago was built in 1880s by John Roach, who played important role in developing iron ships. Below: Admiral Dewey's squadron in Battle of Manila.



One of the major proponents of iron ships was John Roach. An emigrant from Ireland, he learned the trade of iron molding in his youth. In the 1870s he built many iron ships for the merchant marine. He came to be known as "the father of iron shipbuilding in America." He was also to build ships for the U.S. Navy.

But by 1881 the Navy did not have a single armored ship left.

Conditions throughout the world, however, made the country somewhat aware of the Navy's state. In 1882 and 1883, Congress once again came to the Navy's rescue by authorizing construction of the "protected cruisers" *Atlanta*, *Boston*, and *Chicago* and the dispatch boat *Dolphin*. Their "new look" appearance, despite the fact that they had both masts for sails and stacks for smoke, heralded the "new Navy"—a steel-hulled Navy which presaged the end of the ironclads introduced only 40 years earlier. These new cruisers were in the 13-to 14-knot class. They sported new guns, new types of turrets and armor.

With an uneasy international situation in the last decades of the 19th century, public interest was revived and the Navy once again began to regain strength. Continued changes were made as the new steel Navy took on new shapes. Still clinging to the past, *Newark*, a 4098-ton protected cruiser, was the last of the Navy's warships to be fitted with sails. She was launched in 1890 and commissioned the following year. However, she incorporated many improvements and has been labeled as "the first modern cruiser in the U. S. Fleet."

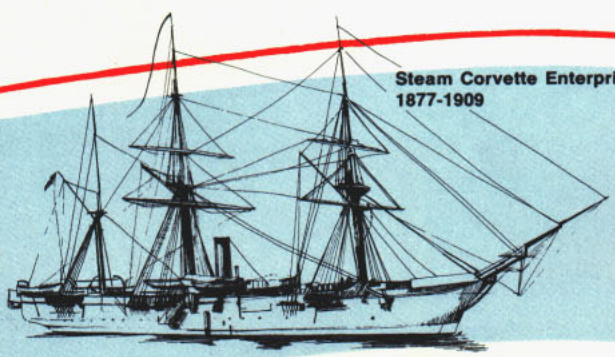
With the development of the torpedo, long-range torpedo boats made their debut. Among the first to join the Fleet (in 1890) was the 22.5-knot *Cushing*. The Navy acquired 16 fast torpedo boats and three 185-tonners capable of speeds of 27 knots.

These torpedo boats gave rise to another change in the shape of ships, a torpedo boat destroyer, such as *Truxtun*. This new type of ship led to our present-day destroyers. They were designed to combat torpedo boats and, improving on the past, destroyers themselves began carrying torpedoes and tubes.

For a time destroyers were used primarily to deliver torpedo attacks. With the development of the submarine, they became submarine hunters and during the years that followed took on numerous roles.

Construction of our first destroyer, displacing 420 tons, began in 1899. They proved so successful that destroyer-building on a large scale began. From 1892 to 1914, the start of World War I, over 50 destroyers had been built, and 273 were ordered during the war.

By 1895, the heavy elements of the U. S. Fleet



Steam Corvette Enterprise, 1877-1909

SURFACE NAVY

consisted of 15 light steel cruisers, the heavy armored cruiser *New York*—and three battleships. The first two were USS *Texas*, commissioned on 15 Aug 1895, and *Maine*, commissioned on 17 Sep 1895. Both were listed as "second class" battleships.

Texas was the first and smallest of our battlewagons. The third ship, commissioned in 1895, was our first "first class" battleship, USS *Indiana* (BB 1).

Pride of every major navy and the culmination of major changes that had taken place in ship design during the 19th century, battleships carried heavy guns and a corresponding wealth of armor protection. The U.S. had begun building her battlewagons in the late 1880s; each succeeding class had more firepower than the one before.

The Spanish-American War and Dewey's victory at Manila saw the emergence of the U. S. Navy as one of the world's seapowers. This was again demonstrated visually with the cruise of the Great White Fleet in the first decade of the 20th century.

New inventions, improved training, and long-range guns resulted in the development of new dreadnaughts. In 1906, the U. S. launched a large battleship building program. Evolving from this, several new classes of BBs appeared. They ranged from 518-foot, 20,000-tonners with 12-inch guns of *Delaware* class on up to 624-foot, 32,600-ton wagons. Of these, five ships of the *New Mexico* and *Colorado* classes were not completed until after World War I, and many new improvements, based on lessons learned from wartime experiences, were incorporated into their design. Battleships of the *Colorado* class were our first to be equipped with 16-inch guns.

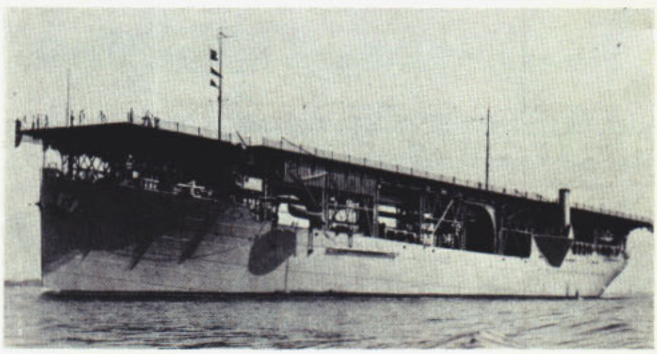
Meanwhile the aviation age had arrived (see the section on aviation in this issue) and the Navy immediately began experimenting with the new flying machine. In November 1910, Eugene Ely made a daring takeoff from a 57-foot platform rigged on the cruiser *Birmingham*. In January 1911 he accomplished another unusual feat. He made the first shipboard landing on a platform mounted on USS *Pennsylvania*.

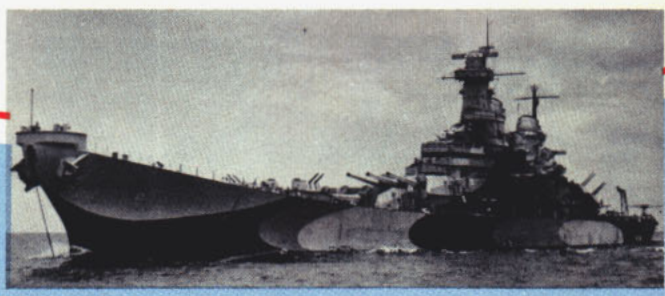
Meanwhile, also, the Navy was switching fuels, from coal to oil. USS *Paulding* (DD 22) was a pioneer in the shift to oil in 1910. USS *Nevada* (BB 36), the keel of which was laid in November 1912, commissioned on 11 Mar 1916, was the first of the battleships to use oil. It did not happen overnight, but the day of the coal passer was on the way out.

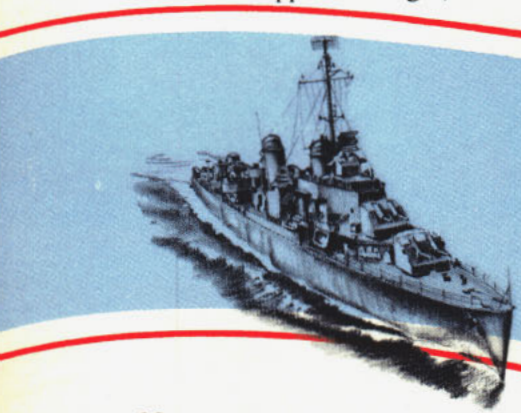
With the entry of the U. S. into World War I, the Navy's shipbuilding efforts were concentrated on destroyers, patrol craft, minelayers and minesweepers. These types of warships were in urgent demand.

Destroyers became a primary symbol of British-American cooperation during WW I. The immediate threat was the German U-boats which were practicing unrestricted warfare and generally terrorizing the seas.

The British and Americans exchanged signals, codes and inventions in combining their destroyer forces to seek out and attack the German subs. Destroyers







WW II Destroyer USS Gurke (DD 783)

served as escorts for troopships and supply convoys for the Allies, helping immeasurably to ensure their safety.

Between the two World Wars, the U. S. built her destroyer fleet to 184 ships. Destroyers also were to become prime factors in America's policy of turning over "overage destroyers" to Britain after the British entered the war against Germany. When the Japanese attacked Pearl Harbor, it was a destroyer—USS *Ward* (DD 139) which was among the first, if not the first, of the American forces to fire against the enemy, sinking a Japanese midget submarine. Destroyers went on to distinguish themselves in fighting enemy submarines both in the Atlantic and Pacific theaters.

Also between the world wars, the U. S. had resumed in other categories a shipbuilding program which had been interrupted by the earlier conflict. Wartime experience in WW I had proved the value of the airplane, and the Navy immediately took steps to build its aircraft carrier fleet. This was accomplished in 1922, when the collier *Langley* was converted. Five years later, two more carriers, *Lexington* and *Saratoga*, were converted from battle cruiser hulls.

With the success of *Langley*, *Lexington* and *Saratoga*, the U. S. built the aircraft carrier *Ranger*. She was the Navy's first ship to be built as an aircraft carrier. New cruisers, like *Louisville*, were completed during the early 30s.

At the time of the Japanese attack on Pearl Harbor, the U. S. Navy had 343 combatant ships in commission and 344 more in the building ways. In early 1942, three battleships of the *South Dakota* class were commissioned. New names continued to appear and thousands of changes in the shapes of ships were made in the early war years. Such odd-shaped newcomers as landing ship docks (like *Belle Grove*), net layers, PT boats, cruisers, destroyers and auxiliaries of every description and for every type of mission were joining the Fleet daily.

During the early stages of WW II, our ship losses were high. From 7 Dec 1941 to 31 Dec 1943, the U. S. Navy lost 359 vessels. In spite of these losses, naval ship strength doubled during 1943 as our shipbuilding efforts reached an all-time high. Our combatant ships at that time numbered more than 850. In 1943 alone, two 45,000-ton battleships, some 40 aircraft carriers, 11 cruisers, 128 destroyers and destroyer types (APDs, etc.), 306 destroyer escorts and 41 submarines were added to the Fleet. This does not include the countless auxiliaries and yard craft.

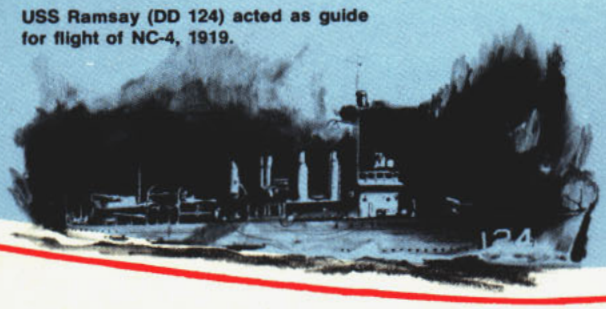
The pattern of widespread oceanic war brought about the building of a Fleet unlike any in history. It consisted of a swift striking force, having the advantages of speed, mobility and surprise, yet possessing the firepower and protective armor to stand and slug it out with enemy forces. Such a Fleet was made up of ships with names synonymous with heroism, such as *Tarawa*, *Missouri*, *Tucson*, *Higbee* and *O'Bannon* (to name a few).

In the five-year period ending in late 1944, 9,000,000 tons of vessels had been added to the U. S. Navy. One of the most novel developments among these many new ships was the large assortment of landing ships that began appearing in the early stages of the war.

Possibly the most versatile of the many new types

Above left: Great White Fleet leaves San Francisco in 1908. Center left: Carrier USS Langley was converted from a collier in 1922. Bottom left: USS Missouri (BB 63) as she looked in 1944. Above: Navy's first three surface nuclear ships (top to bottom) USS Enterprise, Long Beach and Bainbridge. Below: USS Spruance (DD 963), first of new class.

USS Ramsay (DD 124) acted as guide for flight of NC-4, 1919.



SURFACE NAVY

of ships built during World War II were the destroyer escorts, now called frigates.

Attack cargo ships, transports, barracks ships, net tenders, all types of repair ships, radar pickets, minelayers and minesweepers, as well as many other types of ships too numerous to mention, changed the shape of the U. S. Navy almost overnight.

When Japan surrendered, the U. S. Navy had emerged as the strongest navy in the world.

The changing shape of ships has continued with even greater momentum in the past decades, with the New Navy on the threshold of still another new era. This is the era of nuclear propulsion, of jet power, rockets and guided missiles.

Along with the types of ships that have proved themselves in the past there have emerged such categories as guided missile cruisers, tactical command ships and helicopter flattops.

The era of the 50s, 60s and on into the 70s has seen the emergence of the nuclear Navy.

The heart of today's nuclear Fleet is a highly complicated unit known as the nuclear reactor. This is what it offers:

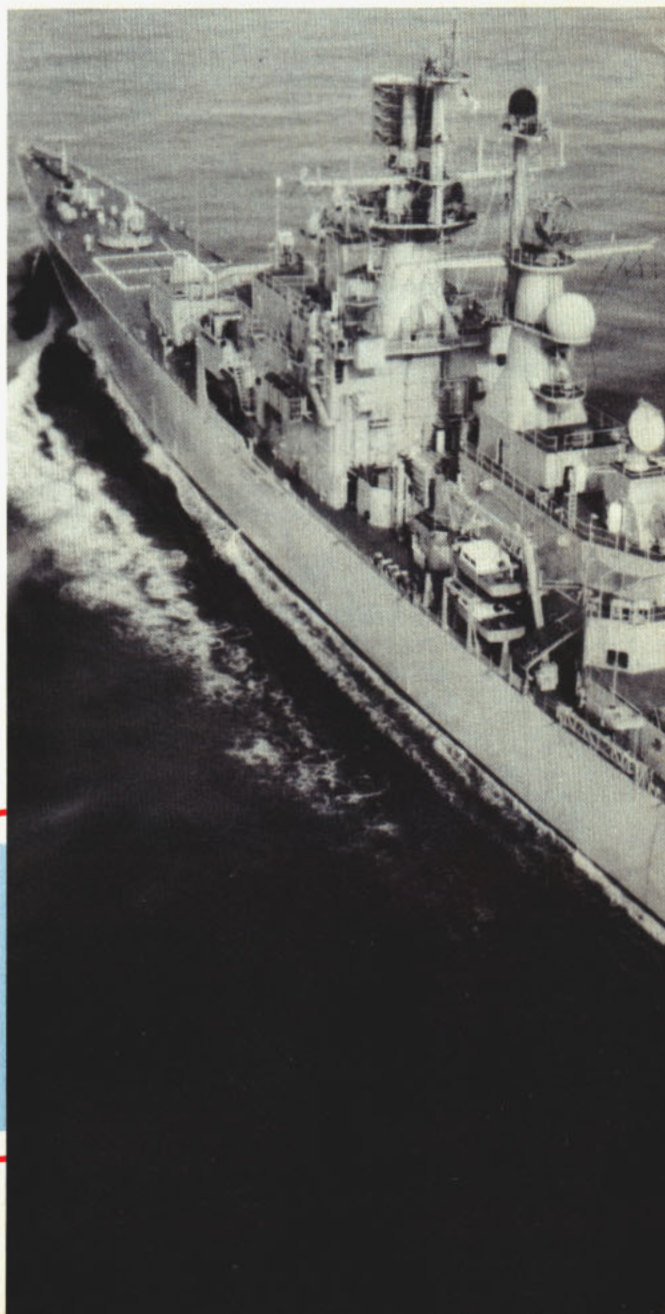
- Nuclear-powered ships with almost unlimited steaming endurance at high speed. This results in increased flexibility, an ability to obtain ammunition, aviation fuel, and other supplies from remote places in a minimum amount of time, and an attack ability in a much greater area.
- Reduced vulnerability. Nuclear ships need not remain exposed as long as non-nuclear vessels during replenishment. They can maneuver to avoid attack.
- Reduced dependence on logistic support. Nuclear ships require fewer mobile support forces.
- Greater attack effectiveness. Nuclear ships can remain in battle areas for a greater length of time and have a greater ability to exploit weather conditions to their advantage.
- Nuclear propulsion does away with huge funnels, thus making more room for such items as big, powerful radar.
- Power is available upon command. It is not necessary to order "more boilers on the line" a half-hour before full power is desired. Heat is produced in the nuclear reactor, in turn producing steam and power with little delay. Reduction from full power to one-third or stop is equally responsive.
- Reduced maintenance. The absence of corrosive stack gases cuts down on the wear and tear—and a lot of at-sea and in-port repairs.

The Navy has seven nuclear surface ships at sea now—four veterans: USS *Long Beach* (CGN 9), launched in 1959 as the world's first nuclear surface ship, USS *Bainbridge* (CGN 25), USS *Truxtun* (CGN 35), and USS *Enterprise* (CVAN 65)—plus three more recently commissioned: USS *California* (CGN 36), USS *South Carolina* (CGN 37) and USS *Nimitz* (CVAN 68).

Now under construction are the first four guided missile cruisers of the USS *Virginia* (CGN 38) class, and two giant aircraft carriers, USS *Dwight D. Eisenhower* (CVAN 69) and USS *Carl Vinson* (CVN 70). For more on the new carriers, see page 91.

The Navy has been advancing in other areas of the surface fleet as well. An example of this is the new class of amphibious assault ships. The LHAs are the

USS Nimitz (CVAN 68), commissioned in 1975



largest and fastest amphibious ships in the Navy inventory and offer the greatest operational versatility in the history of amphibious warfare.

The size of these ships alone is impressive. The first of the class, *Tarawa*, is 820 feet in length with a full displacement of 39,300 tons, making her the largest of U. S. combat ships, excluding carriers. She can carry a large landing force and all their equipment and supplies, landing them either by helo or amphibious craft or both.

The ship is 106 feet wide and the high point of her mast is 221 feet above the keel. What the services call tactical integrity—getting a balanced force to the same point at the same time—is the primary advantage of these general-purpose assault ships.

Then there's the Navy's prime ASW destroyer, the DD 963 *Spruance* class which will shortly be introduced into the Fleet. Five ships of this class have been launched to date. The first is scheduled for delivery in this, the Navy's 200th year, and 29 will follow within the next few years. They are being fitted with our most powerful sonar, coupled with helicopters, our best ASW weapons, and the *Harpoon* surface-to-surface missile system which will be incorporated in this class as soon as the systems are available.

Below: A port quarter stern view of the nuclear-powered guided missile cruiser USS South Carolina (CGN 37).

The *Spruances* will operate in company with the carrier task groups to provide ASW and surface warfare protection, though they can be used very effectively in a wide variety of other missions as well.

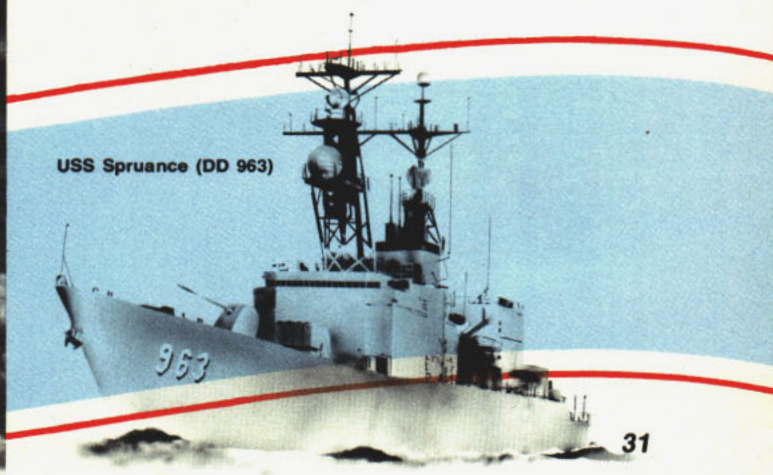
Presaging the Navy of the future when surface ships may reach a speed of up to 100 knots, are the Surface Effect Ships (SES) and the Patrol Combatant Missile (Hydrofoil)—(PHM-1).

The SES skims over the water on a cushion of air. Currently, two 100-ton SESs are being tested and one of them has achieved a world record of greater than 80 knots. Preliminary design of a 2000-ton SES has been completed. Potential missions include ASW, AAW, amphibious assault, surface warfare and tactical support; but the most promising applications of the SES remain to be established. The SES's primary asset is her speed, and this will probably make her primary mission ASW operations. A 3000-ton destroyer type SES could cover three times the area of a present-day destroyer, and deliver an antisubmarine helicopter to a specific spot in minutes. With such speed, this type of SES could outrun any torpedo launched against her.

The Patrol Combatant Missile (Hydrofoil) is yet another promising ship. It can be used offensively against major surface combatants and other surface craft, and is well suited for surveillance and blockading roles. The *Harpoon*-equipped PHM-1 will be powered by a gas turbine driving a water jet propulsion system. The first ship, *Pegasus*, is undergoing testing before entry into the Fleet.

So there it is—a capsule history of the Surface Navy over the last 200 years. Only the highlights have been touched, especially on the ships of the Fleet in 1975. For more on that subject, see the article on page 90.

But, as you can see, the Surface Navy, along with the Air Navy and the Submarine Navy, is modernizing at a fast pace—for an effective, modern Navy must operate above, below and on the surface as a team. The new Surface Navy, in this, its 200th year, is building on its proud traditions as it offers the seagoing sailor a varied and challenging career. It is, in short, an exciting place to be nowadays.



USS Spruance (DD 963)

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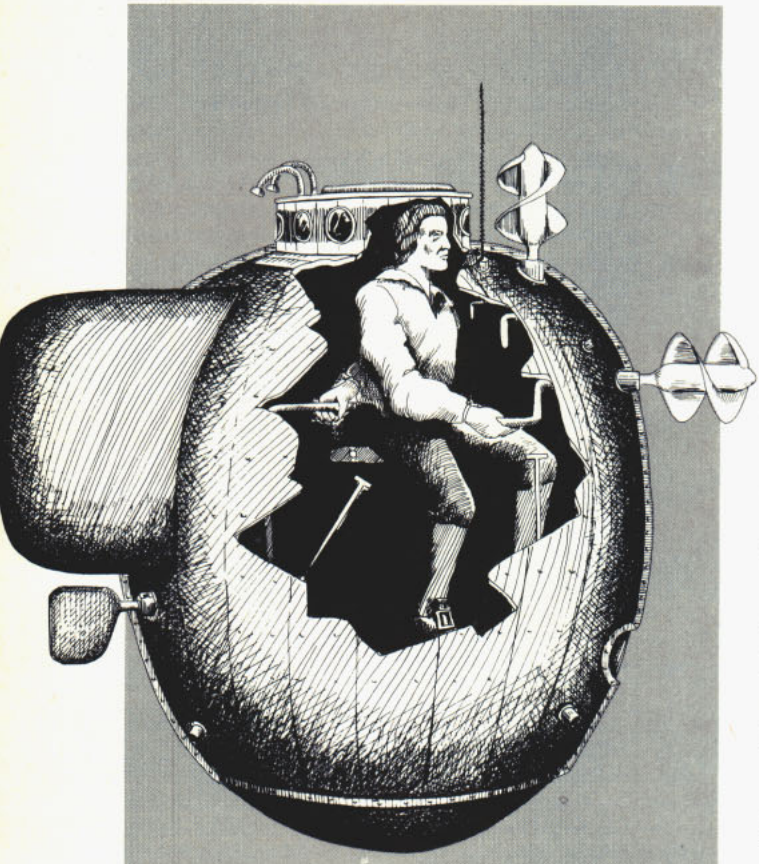
SUBMARINE NAVY



A number of men throughout the ages have proposed the building of a submarine. At the height of the Renaissance, its greatest innovator, Leonardo da Vinci, began designing a vehicle that could propel itself underwater. He was fascinated with the thought that man could move in a vehicle beneath the surface of the ocean as well as on top of it.

Da Vinci worked out a number of the design principles for the modern submarine, and his drawings on the subject were quite advanced before he put his project aside.

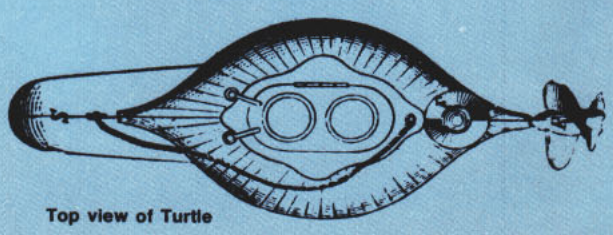
Then there was an Englishman, a naval gunner, William Bourne, who wrote to Queen Elizabeth I that the Spanish Armada could be repelled by a "ship or boate that may goe under the bottome, and so come up againe at your pleasure." John Napier, the Scottish mathematician who invented logarithms, and the monk Mersenus also proposed submarines to be used against enemy shipping.

Drawing on Bourne's ideas, Cornelius Van Drebbel, a Dutch doctor living in England, invented the first working submarine—a rowboat covered with greased leather. The submarine was propelled by man-powered oars protruding through flexible leather seals. Snorkel-type air tubes were held above the surface by floats, thus permitting a submergence time of several hours. Van Drebbel's invention was so successful that, supposedly, King James I ventured into the depths of the Thames River in it.

Like those who followed him, the inventor saw the potential of the submarine as a naval weapon—if only it could be made to operate.

More than a century and a half passed before a young American experimented with a subsurface craft he hoped would help drive the British out of New York harbor, and away from American shores for good. David Bushnell, a Yale medical student, had been

Cutaway of David Bushnell's Turtle, 1775



Top view of Turtle

working on a small submarine for some four years and finally completed it in 1775.

This first submarine for warfare, named *Turtle*, was described by Bushnell as having "some resemblance to two upper tortoiseshells of equal size, joined together. . . ." It was 7.5 feet long, six feet deep, and under ideal conditions had a maximum of three knots. A single operator could stay down for 30 minutes.

Turtle was armed with an oak casing filled with 150 pounds of explosives. This charge could be attached to the bottom of an enemy ship where it was intended to remain until detonated by a simple clockwork mechanism.

After completing the boat, Bushnell took it for several dives to prove its seaworthiness. Finally, by September 1776, he was ready to try it against the British in New York. Manned by Sergeant Ezra Lee, a volunteer from the Connecticut Militia, the *Turtle* was driven by hand, using screw propellers. The plan was to attach a time fuse charge of gunpowder to a ship's hull, using screws. It was aborted when the auger could not penetrate the copper sheathing on the hull of HMS *Eagle*.

Bushnell made a couple more attempts, using *Turtle* against the British (this time in the Delaware River) by attaching mines to her and floating the mines against ships. These attempts failed, and the submarine was finally sunk by the British in New York harbor (the first recorded instance of an antisubmarine attack). George Washington called Bushnell's work "an effort of genius," but the builder himself became discouraged and gave up his work with submarines, retiring to a medical practice in Georgia.

When one man's curiosity wanes, another's may be sparked. Robert Fulton, a mild-mannered American now famous for building what has been called the first practical steamboat, turned his attention toward the submarine in 1798. His boat, the *Nautilus*, used a kite-like sail for surface power and carried flasks of compressed air, enabling the two-man crew to remain submerged for five hours. It had the innovations of both a rudder and conning tower.

Fulton tested his strange contraption in France and the French government was soon interested. Fulton had also been testing the explosion of gunpowder underwater, and in 1801 he guided a torpedo into an old schooner hulk with *Nautilus*, blowing it out of the water. But the French government would never commit itself to Fulton, and neither would the British, so Fulton gave up and returned home to pursue his interest in the steamboat.

Even after the steamboat achieved success, Fulton remained curious about how to maneuver beneath the water. During the War of 1812, he launched a small unmanned submarine armed with explosives against the British warship *Ramilies*; the sub did inflict some damage but did not sink the vessel. Fulton then turned to building a giant craft, 80 feet long, which he hoped would end the war. It would be powered by steam and manned by a crew of 100. It was never finished and was left to rust on the shore of Long Island Sound after Fulton's death in 1815.

Another development in submarine invention came in 1850 with the German inventor William Bauer. Bauer built a submarine at Kiel that accidentally sank in 55 feet of water. Sitting on the bottom, Bauer opened the flood valves to equalize the pressure inside the submarine, theorizing that the escape hatch would open. His crew was terrified, but they were soon convinced that this was the only means of escape. When the water was at chin level, the men were shot to the surface with a bubble of air that blew the hatch open. This simple technique was rediscovered years later, and modern subs have escape compartments operating on a similar principle.

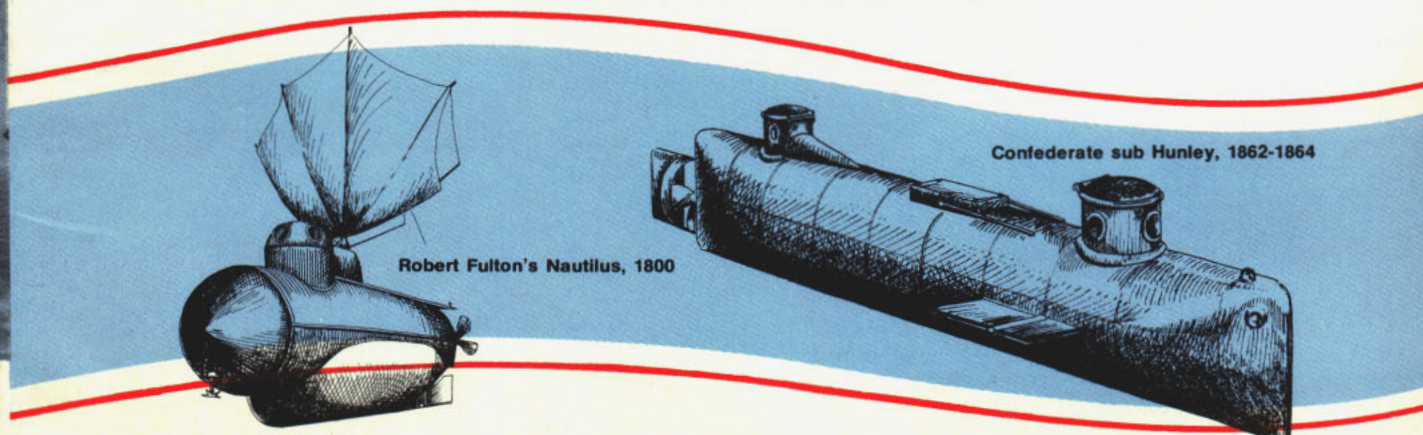
German officials pronounced the submarine as being too dangerous for operation after the Bauer incident. But they recognized that if it could be made to work, the submarine would be a devastating weapon.

Other men continued to experiment with the idea of a submarine. One was a shoemaker named Lodner D. Phillips, who constructed a 40-foot craft on Lake Michigan in 1851. It was only four feet in diameter, and its plans called for a steam engine, but this part of the design never left the drawing board. Phillips actually used his craft as a pleasure boat, taking his wife and children on Sunday outings to explore the bottom of the lake.

Phillips also designed a warfare submarine far in advance of his time. It had a recess for torpedoes and a submarine gun to work through a ball-and-socket joint. There was a rocket to be fired along the surface of the water, carrying with it a torpedo equipped with diving fins. When the rocket struck and exploded, the torpedo was to dive and burst under the bottom of the target ship. That, too, never left the drawing board.

As with the ironclad ship, it was the Confederate Navy that took the next steps forward in the development of the submarine.

CSS *Hunley* had been built with funds provided by Captain H. L. Hunley, a man blessed with imagination but lacking in practicality. The ends of this 25-foot craft



Robert Fulton's Nautilus, 1800

Confederate sub Hunley, 1862-1864

SUBMARINE NAVY

were loaded with ballast tanks which could be filled for descent but had to be hand-pumped for ascent. Power was supplied by a propeller fitted to a camshaft which ran the length of the ship and was turned by eight sitting men.

Although *Hunley* wrote another chapter in the fascinating history of submarines, she was a real jinx to the Confederates. On her first voyage she nosed into the mud and refused to surface, killing her seven crewmembers. She was hauled up and moored at James Island, where a passing steamer swamped her and six more crewmen were lost. She was hauled up once more and manned with another crew, but again was swept over by another steamer; another three men were killed.

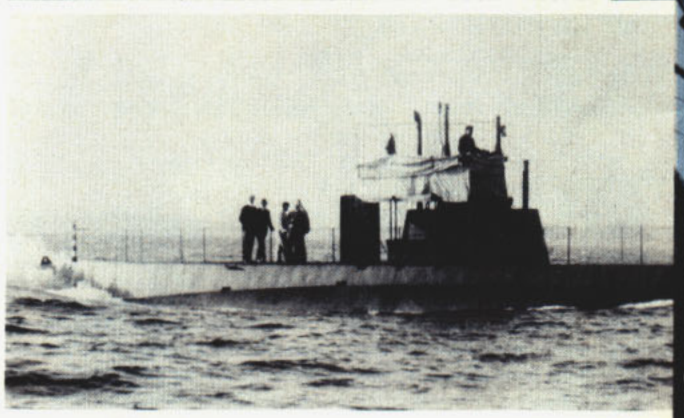
A young Confederate lieutenant, George Dixon, was convinced, however, that the boat could be of great use to the South and he so convinced his seniors. *Hunley* was then moored off Charleston's Sullivan Island, just a few hundred yards from her target, USS *Housatonic*. In the first true submarine attack in naval history, Dixon cast off toward the large warship. The attack was made in calm waters in the dark of night. Although sighted by lookouts on *Housatonic*, there was neither time nor opportunity for the ship to strike back or set sail.

Hunley hit *Housatonic* and drove her shaft deep into the ship's hull. The heavy charge of gunpowder *Hunley* was carrying went off prematurely, and *Hunley* never had a chance to escape. She and all of her crew went down.

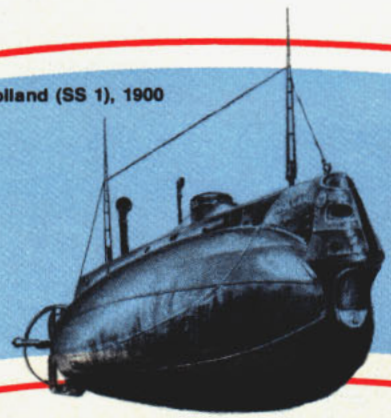
Housatonic had a similar fate; she was holed on the starboard side and went down in just four minutes. Another northern vessel moved to her rescue, however, and only a few of her seamen were lost. In losing his life, LT Dixon had demonstrated that submarines could be useful weapons of war. What they needed was a more effective weapon that could be propelled underwater. The development of the self-propelled torpedo during the next few years provided just that.

Another problem was propulsion. From 1864 to 1872, the U. S. Navy experimented with a hand-cranked submarine named *Intelligent Whale*. The boat failed during most of her first trials, and inventors realized that until a method of propulsion better than manpower could be developed for underwater use, submarines were not going to be worth much.

Surface ships were driven by steam; why not submarines? Well, mainly because it took air, fire and heat, and of necessity those must be in limited supply aboard a submarine. The answer today, of course, is atomic power, but back in the 19th century, there had to be another first. That way was the internal combustion engine. It had its drawbacks, too, but many were overcome by a New Jersey inventor named John Philip Holland and his compatriot, Simon Lake. The two actually favored opposite theories about the submarine. Holland thought that submersion should be made by power-diving, using the force of the propeller and the angle of the bow planes. Lake said boats should descend on an even keel with slight negative buoyancy. Lake was a man more interested in underwater exploration than naval warfare and he also thought that a submarine could be equipped with wheels and driven along the ocean's floor. (He did not pursue that idea.)



Intelligent Whale, 1864



Holland (SS 1), 1900

Holland was more practical; his design included a workable torpedo gun, which Lake's did not. He received a $150,000 contract from the Navy for a subsurface vessel. He failed in his first attempt at building the craft, but the Navy was impressed enough that he was awarded another contract. By 1898, he built USS *Holland*, a cigar-shaped craft, 52 feet long and 10 feet in diameter.

The *Holland* was equipped with a gasoline engine for surface power and whirled generators that charged batteries used for underwater power. She also had an intricate device that was supposed to guide her to a predetermined depth. She was armed with a torpedo tube that fired an 18-inch torpedo and a bow gun recessed into the hull. A New York newspaper commented that "the offensive powers of *Holland* are, considering the size and method of attack, far greater than any other engine of war."

The loss of vision when submerged was corrected by Simon Lake after experimenting with a set of prisms and lenses he bought from a store window display. Before this, *Holland* had to surface so the crew could look out the conning tower and thus she lost her greatest advantage, surprise. Lake and a Johns Hopkins professor worked out the periscope device, and this, with various improvements, was to remain the submarine's basic visual aid until 1958, when underwater television was installed aboard the nuclear-powered *Nautilus* for her polar trip.

USS *Holland*, first submarine to be purchased by the Navy (in 1900) became SS 1. The Navy ordered a number of these new vessels from Holland and continued experimenting throughout the next decade. One of the main problems which still remained was the gasoline engine—it heated up and gave off noxious fumes which often overcame many of the crew.

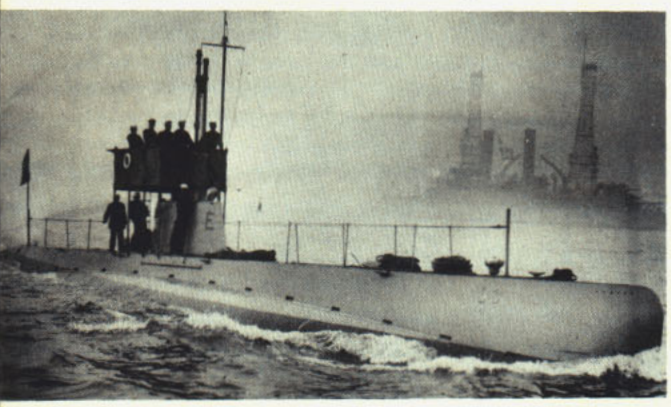
The gasoline engine was replaced by the diesel when that engine was first installed in the first USS *Skipjack* (SS 24) and USS *Sturgeon* (SS 25). This new engine required no complicated ignition or sparking systems, and it produced few noxious fumes and was more economical. The diesel engine and electric battery remained staples for the submarine until nuclear power emerged in the 1950s.

European powers were also interested in submarine development. The French raised 300,000 frances for the development of their submarine, but they ignored the most advanced designs produced by a Frenchman, M. d'Equevilley. The inventor took his design to Germany where it was purchased for the Kaiser's Navy and became the basis for the long line of destructive U-boats.

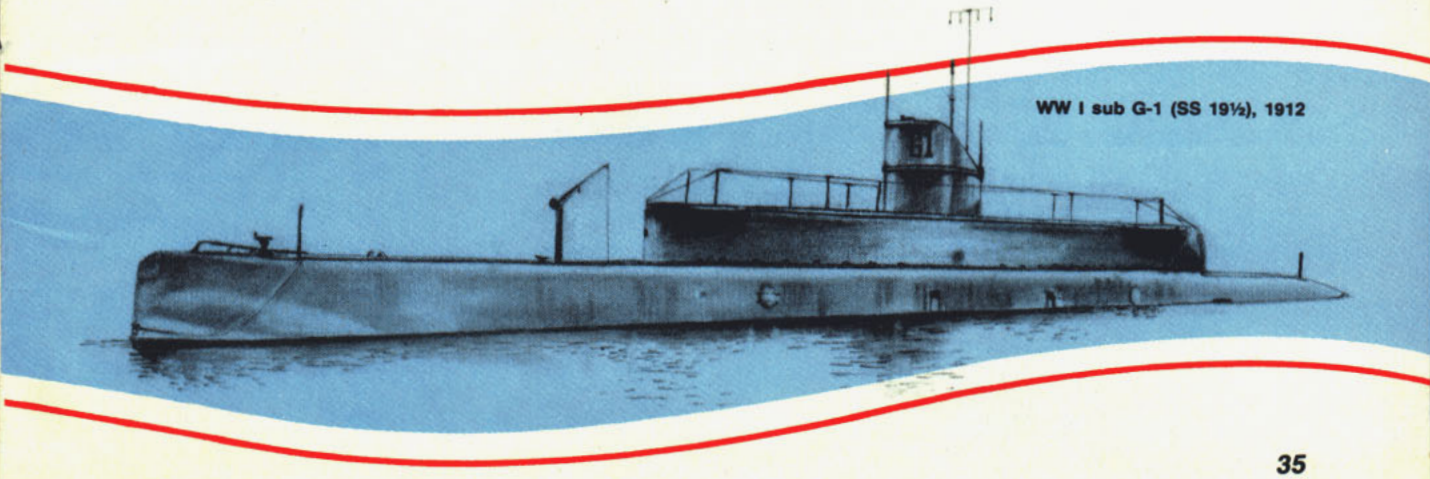
World War I saw the submarine emerge as a major factor in conflict. The Germans suddenly found themselves in possession of a most effective weapon to effect economic strangulation. England had to import food in order to live. Had the rate of sinkings attained by submarines in the spring of 1917 been continued, England would have been in a desperate situation in a matter of weeks. Insofar as any single campaign can be assigned primacy in a world conflict, it was the defeat of the German submarine menace by the combined efforts of the U. S. and British fleets that staved off impending collapse.

When the U. S. entered the war, her newest submarines were the "L" boats. Twenty submarines of the "E," "K," "L," and "O" type reached the war zone. A crash building program was begun.

The O-boats were about 480 tons, 172 feet in length,



Above, left: Navy's first commissioned sub, USS Holland. Above: USS Salmon, commissioned in 1910, was renamed D-3 in 1911. Left: USS Sturgeon (SS 25), one of the first subs to operate with a diesel engine, was commissioned in 1912.



WW I sub G-1 (SS 19½), 1912

SUBMARINE NAVY

with 18' beam. By 1918, the R-boats had joined the fleet (they were slightly larger than the O-boats) and were followed in the twenties by the "S" boats, many of which were used as late as 1946. These latter classes were driven by twin diesel engines with a surface speed of 14 knots and 10 knots submerged. Their range was about 3500 miles.

USS *Argonaut*, when she was launched in 1928, was one of the largest submarines in the world. She displaced 4100 tons submerged and was 381 feet long.

The fleet type submarine, which acquitted herself so ably in World War II, emerged in 1938 as the *Gato* class which was the result of years of experiment and development. She differed from her predecessors in that she was longer and wider and had a cruising range of about 12,000 miles and a surface speed of about 21 knots. The typical fleet-type submarine displaced 1525 tons, was 311 feet long and 27 feet wide. She was powered by four 1600-horsepower diesel engines and carried a complement of seven officers and 70 enlisted men.

When the Japanese attacked Pearl Harbor, there were 111 American submarines in commission, 60 in the Atlantic Fleet and 51 in the Pacific. After the invasion of North Africa, however, it was decided to concentrate U. S. efforts in the Pacific and leave submarine operations in the Atlantic to U. S. allies. Therefore, it was the Pacific that became the hunting grounds for American submarine forces.

The number of American submarines during the war peaked at 247. They consisted mainly of the old O, R, and S Class of submarines with a few of the fleet type. The U. S. lost 52 of these boats during the war along with 3505 submariners.

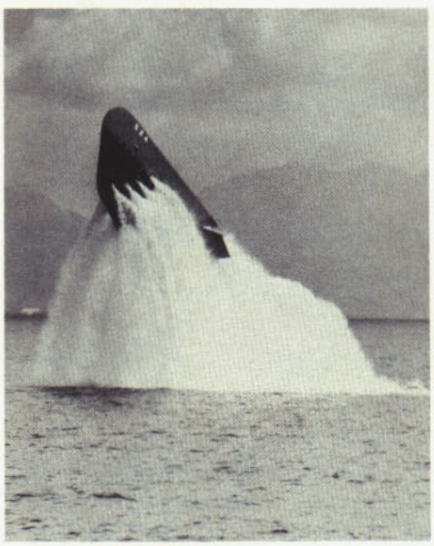
The final submarine score tells one of the real stories of the American victory in World War II. American submarines sank 1750 Japanese merchant ships, and more than 200 combatants; this represented 55 per cent of the total Japanese tonnage sunk in the war. For an island nation such as Japan, these figures represent a fatal impact.

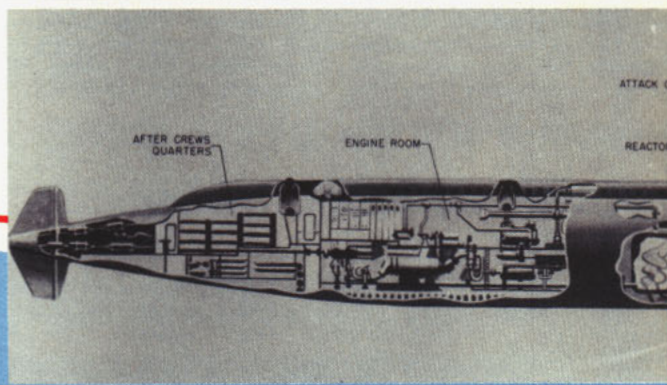
Radar and sonar were innovations which came into full use during World War II. The English used them initially to combat German U-boats but they were also incorporated into the submarine as an attack aid. Sonar has become the most important of the submarine's senses. Hydrophones listen for sounds from other ships, and the echoes of sound waves signaled from the submarine itself.

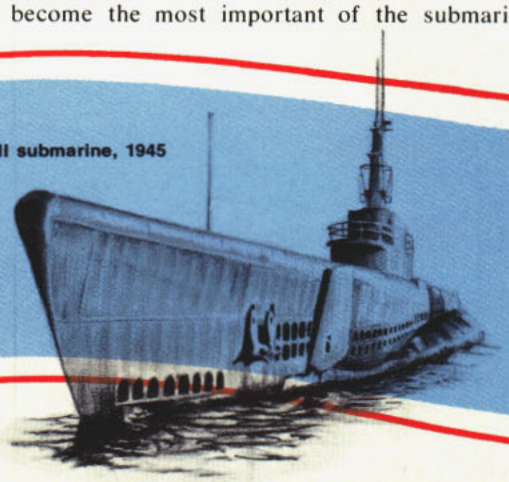
In addition to sinking over five and one-half million tons of Japanese shipping, the U. S. Pacific submarine force was rescuing aviators from Tokyo Bay itself, scouting islands for weather data and intelligence, transporting Marine raiders, supplying guerrilla movements and planting mines in strategic and dangerous waters.

After World War II, the Navy began to integrate the new scientific advances of the war into newer and better submarines. The *Guppy* (Greater Underwater Propulsion Power) program gave the Navy a streamlined craft capable of startling bursts of speed underwater. Submarines were designed for specific purposes and these included submarines for attacks, transports, oilers, missile launchers, minelayers and radar pickets, and hunter-killer submarines to destroy enemy submarines.

During this same time the Navy was speeding development of the most revolutionary advance in the history of submarines—nuclear power. Early in World War II, as part of the Navy's initial research on the atom, proposals were made for developing atomic power for







World War II submarine, 1945

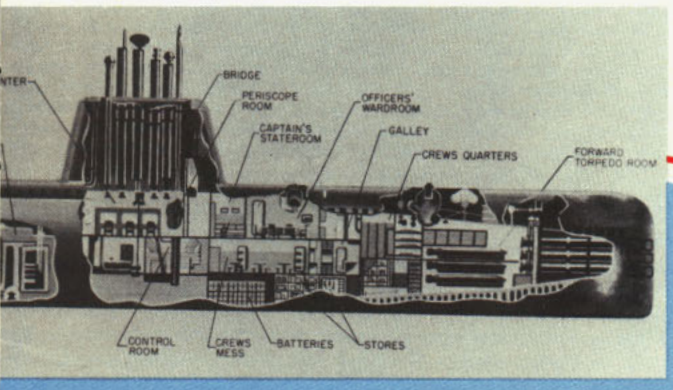
use afloat, but most of that work was diverted to working on the atomic bomb.

Nuclear power was the long-awaited propulsion source for the submarine. It was to turn the submersible surface ship into a true submarine, capable of almost indefinite operation no longer bound to the earth's atmosphere.

In response to an informal request from Captain (now Admiral) H. G. Rickover, the first study of the application of a high-pressure, water-cooled reactor for a submarine was undertaken by personnel of the Daniels Pile Division at Oak Ridge, Tennessee, in September 1947. In January 1948 the Department of Defense requested the Atomic Energy Commission to undertake the design, development, and construction of a nuclear reactor which would propel a naval submarine. Shortly thereafter, the AEC assigned initial research and conceptual design aspects of the Submarine Thermal Reactor (STR) project to its Argonne National Laboratory.

In December 1948, the Commission signed a contract with the Westinghouse Electric Corporation for the development, engineering design, construction, operation, and testing of a prototype nuclear propulsion plant. The outcome of these efforts is USS *Nautilus* (SSN 571).

Above from left to right: USS Pickerel (SS 524), 1949, surfaces from a depth of 150 feet with a 48-degree up angle. USS Sargo (SSN 583), first submarine to surface during winter season at North Pole. Initial sea trials of Nautilus. Below: Cutaway view of Nautilus (SS 571).



Nautilus first put to sea on 17 Jan 1955 and, under the command of Commander Eugene P. Wilkinson, made the historic signal, "Underway on nuclear power."

On her shakedown cruise in May 1955, *Nautilus* steamed submerged from New London, Connecticut, to San Juan, Puerto Rico, traveling over 1300 miles in 84 hours—a distance that was greater by a factor of ten than that previously traveled continuously submerged by a submarine. It was the first time that a combatant submarine had maintained such a high submerged speed (about 16 knots average) for longer than an hour, the longest period spent submerged by a U. S. submarine, and the fastest passage between New London and San Juan by any submarine, surfaced or submerged. Later she made an even faster submerged passage from Key West, Florida, to New London, a distance of 1397 miles, at an average speed of over 20 knots.

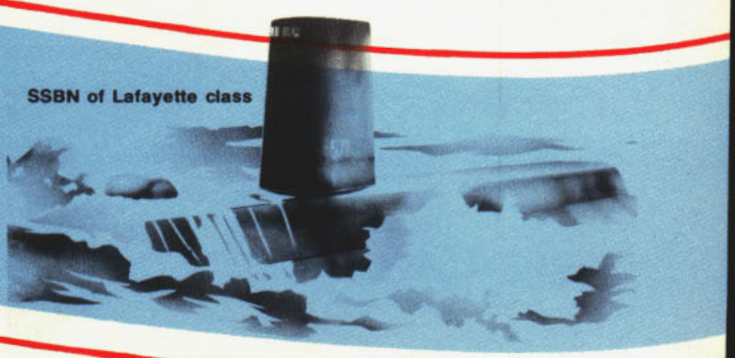
After more than two years of operation and evaluation, the *Nautilus* was refueled in April 1957. On her first core she steamed a total of 62,562 miles, more than half of which was totally submerged. To duplicate this feat, a conventionally-powered submarine the size of the *Nautilus* would have required over 2,000,000 gallons of fuel oil; a train of tank cars over a mile and a half long would be necessary to transport this amount of fuel.

On 12 Aug 1958, the ship completed a history-making trans-Polar voyage from Pearl Harbor, Hawaii, to Portland, England. After diving under the ice near Point Barrow, Alaska, on 1 Aug 1958 she had become the first submarine to reach the Geographic North Pole.

Nuclear submarines which followed the *Nautilus* continued to pioneer new areas of submarine operations, USS *Seawolf*, the Navy's second nuclear powered submarine, operated as an active unit of the Atlantic Fleet, and on 6 Oct 1958, completed a record-breaking 60-day run traveling a distance of 13,761 miles submerged.

USS *Skate*, first attack submarine with a newly designed submarine fleet reactor power plant, commenced sea trials on 27 Oct 1957, and was commissioned a month later. On 24 Feb 1958 she departed New London, Conn., on her shakedown cruise, arriving at Portland, England, eight days and 11 hours later. Her 176-hour submerged transit of the Atlantic Ocean set a new submarine record.

On 11 Aug 1958, *Skate* crossed under the North Pole



SSBN of Lafayette class

SUBMARINE NAVY

while exploring undersea routes beneath the Polar Ice Cap. During this voyage she conducted extensive exploration of underwater routes beneath the Polar Ice Cap.

Another record-making event began on 16 Feb 1960 when USS *Triton* (SSN 586) set out from New London, Connecticut, on a voyage which was to test the cruising range and endurance of the nuclear submarine—a submerged circumnavigation of the world. Following the same route taken by Ferdinand Magellan in 1519, the *Triton* proceeded to St. Peter and St. Paul's Rocks in the Atlantic, crossed the Equator, continued south and rounded Cape Horn, entering the Pacific Ocean. From there she sailed to Magellan Bay in the Philippines, then south through Lombok Strait and rounded the Cape of Good Hope on 17 Apr 1960. She again reached St. Peter and St. Paul's Rocks and proceeded via the Canary Islands and Cadiz, Spain, to the United States. Surfacing off the coast of Delaware on 10 May 1960, she had traveled 36,000 miles completely submerged, in 83 days and 10 hours.

USS *Skipjack* (SSN 585) was another pace-setter. Commissioned in April 1959, *Skipjack* incorporated an improved nuclear propulsion plant, with a shark-shaped hull completely free of protuberances, a sail with diving planes mounted on it and a single screw propeller. This clean design enabled her to sweep all existing submarine speed records, and made her the world's most maneuverable submarine. Most nuclear submarine designs since have been outgrowths of the *Skipjack* design.

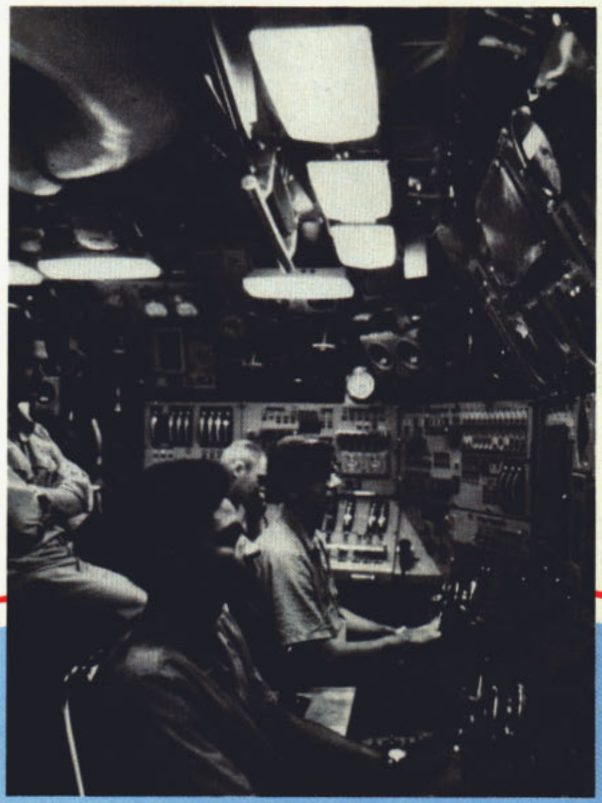
The six attack submarines of the *Skipjack* class were followed by 14 *Permit* class submarines and 37 of the *Sturgeon* class; these new classes incorporated improved sonar, weapons and quieting features. Currently, the United States operates sixty-four nuclear attack submarines and has commenced construction of the new SSN 688 class Nuclear Attack Submarine. This class, characterized by high submerged speeds, is designed to be superior to any other attack submarine in existence. The lead ship is USS *Los Angeles* (SSN 688). Currently 23 submarines of this class are in the contract.

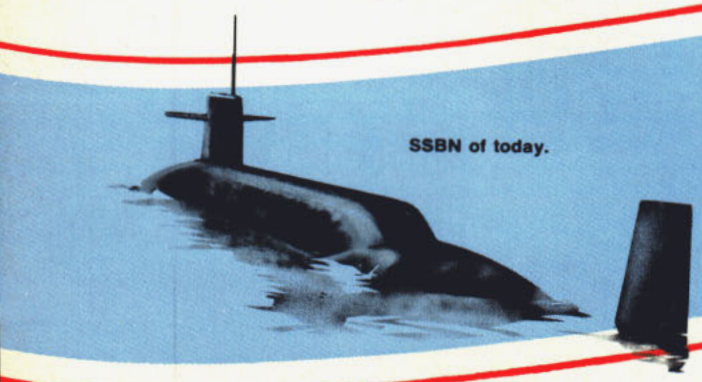
While the *Nautilus* was still undergoing operational testing, the Navy began development of a ballistic missile of intermediate range. Brought from conception to initial operation in five years' time, the *Polaris* Fleet Ballistic Missile (FBM) weapons system was mated with nuclear propulsion to produce a virtually invulnerable missile-firing submarine which today constitutes one of the highest priority elements of the United States' deterrent capability—that is, a deterrent to nuclear conflict.

Each *Polaris* submarine can convey 16 solid-fuel, two-stage ballistic missiles powered by solid fuel rocket motors, guided by a self-contained inertial guidance system, and providing a combined explosive power greater than the total of all the bombs dropped by all aircraft during World War II. Nuclear propulsion enables these submarines to remain on patrol for extended periods, hidden beneath the surface of the sea, ready at all times to launch their missiles.

On station, a *Polaris* submarine maintains complete radio silence, receiving radio messages while submerged, but transmitting none lest it give away its location. Each ship has two complete crews, the Blue and the Gold, of about 130 men each. A major change in the Navy's traditional ship-manning methods, the crews alternate on approximately three month-long deployments, providing maximum on-station time for the

Below: Control room of USS Archerfish (SSN 678). Facing page top right: Periscope, and view from periscope, visual link to the surface while sub is submerged. Left top: Ballistic missile submarine, USS Tecumseh (SSN 628). Right bottom: Launch of USS Philadelphia (SSN 690).





SSBN of today.

submarine, whose endurance is limited only by its personnel.

USS *George Washington* (SSBN 598) was the first ballistic missile submarine to be built. Originally designed to be a *Skipjack*-class fast attack submarine, her partially constructed hull was cut in half and a 130-foot missile section added amidships, due to the urgency of the *Polaris* program. Launched on 9 Jun 1959, she was commissioned on 30 Dec 1959. Six months later, on 20 Jul 1960, she successfully test-fired two 1200 nautical-mile *Polaris* A-1 missiles while submerged off Cape Kennedy, Florida—the first such firing from a submarine. On November 15, 1960, she departed on the initial armed *Polaris* missile patrol, remaining submerged for 66 days, 10 hours.

Four other FBM submarines are included in the *George Washington* Class. Although originally designed to carry the A-1 missile, all five ships have been converted to handle the 2500-nautical-mile A-3 missile.

USS *Ethan Allen* was the first ballistic missile submarine to be designed from the keel up as an FBM submarine. This class is 410 feet long, displaces 6900 tons, and carries A-3 *Polaris* missiles. Since no place on the globe is more than 1700 nautical miles from the sea, the range of the *Polaris* A-3 missile puts virtually every spot on earth within reach of American deterrent capability.

The *Lafayette* Class, third class of FBM submarines, is approximately 425 feet long and displaces approximately 7000 tons. These 31 ships could accommodate the A-1, A-2, or A-3 missile. On 28 Sep 1964 a ship of this class, USS *Daniel Webster*, left Charleston, S. C., to begin her initial deployment carrying the first shipload of the longer range *Polaris* A-3 missile.

In early 1965 came the announcement of the proposal to develop a new missile for the Fleet Ballistic Missile System—*Poseidon*. The growth potential of the ballistic missile submarine launching system has enabled *Poseidon* to fit into the same 16 missile tubes that carry *Polaris*, and like *Polaris* A-3, it is able to reach any spot on earth from its nuclear-powered hiding place. Its increased accuracy, greater payload, and improved ability to penetrate enemy defense make *Poseidon* more effective than *Polaris*.

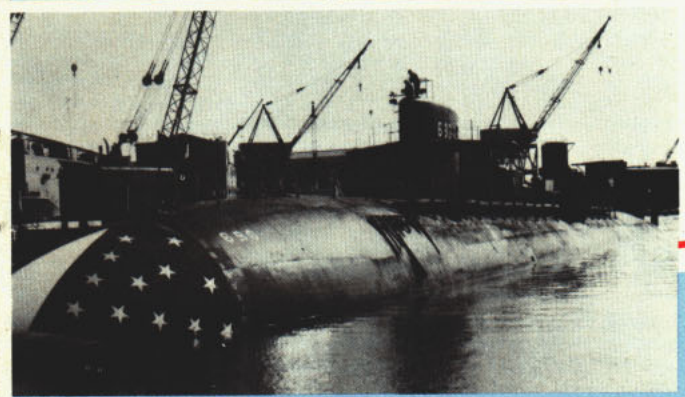
The Navy is now converting 31 *Polaris* submarines to the *Poseidon* missile capability. All conversions are scheduled for completion by 1977.

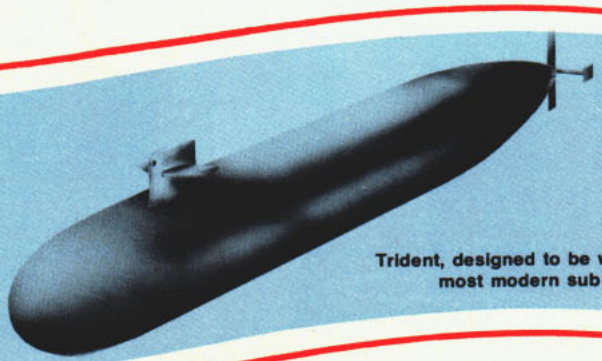
Commenting on the effectiveness of the FBM submarine, Senator Clinton P. Anderson, former Chairman of the Joint Congressional Committee on Atomic Energy, stated that "the nuclear propelled ballistic missile submarine marks the closest approach now foreseeable to an ultimate deterrent."

On July 19, 1974, construction of the new *Trident* undersea nuclear weapons systems commenced. The *Trident* submarine will be the largest ever built incorporating the latest nuclear propulsion and submarine design technology.

Before the first nuclear submarine became a fact, the submarine was at best a hybrid. It was, in simple reality, a small surface ship which could submerge for short periods of time. Admiral Rickover's request to investigate the use of nuclear power in submarines has resulted in a true submersible capable of almost unlimited endurance beneath the ocean's surface.

The Blue and Gold crews of the U. S. Navy's strategic submarine force as well as the crews of our nuclear attack submarines are now on station—in the silent "inner space" below the ocean's surface. As the Navy enters its third century of service to the Nation, these ships of the Silent Service stand guard as sentinels of the free world.





Trident, designed to be world's most modern sub

AIR NAVY

In the span of only a lifetime, man went from the ground to the moon.

In our "nothing surprises me" society, most people hardly notice mammoth jets routinely cruising high above their heads. They think it commonplace and not particularly exciting that man-made satellites orbit Earth, men walk on the moon, rockets probe Jupiter's atmosphere and heavily armed jets stand ready to defend our shores against the unknown enemy. Yet, a mere 75 years ago, few men had ever flown.

Back then, metal birds, aeroplanes, winged machines were impractical monstrosities relegated to the status of expensive toys and pipe dreams—nothing more. Few men thought aviation would ever significantly influence their day-to-day lives. It was thought of much like the bicycle and motorcar—nice to daydream about and occasionally tinker with, but it would never replace the horse.

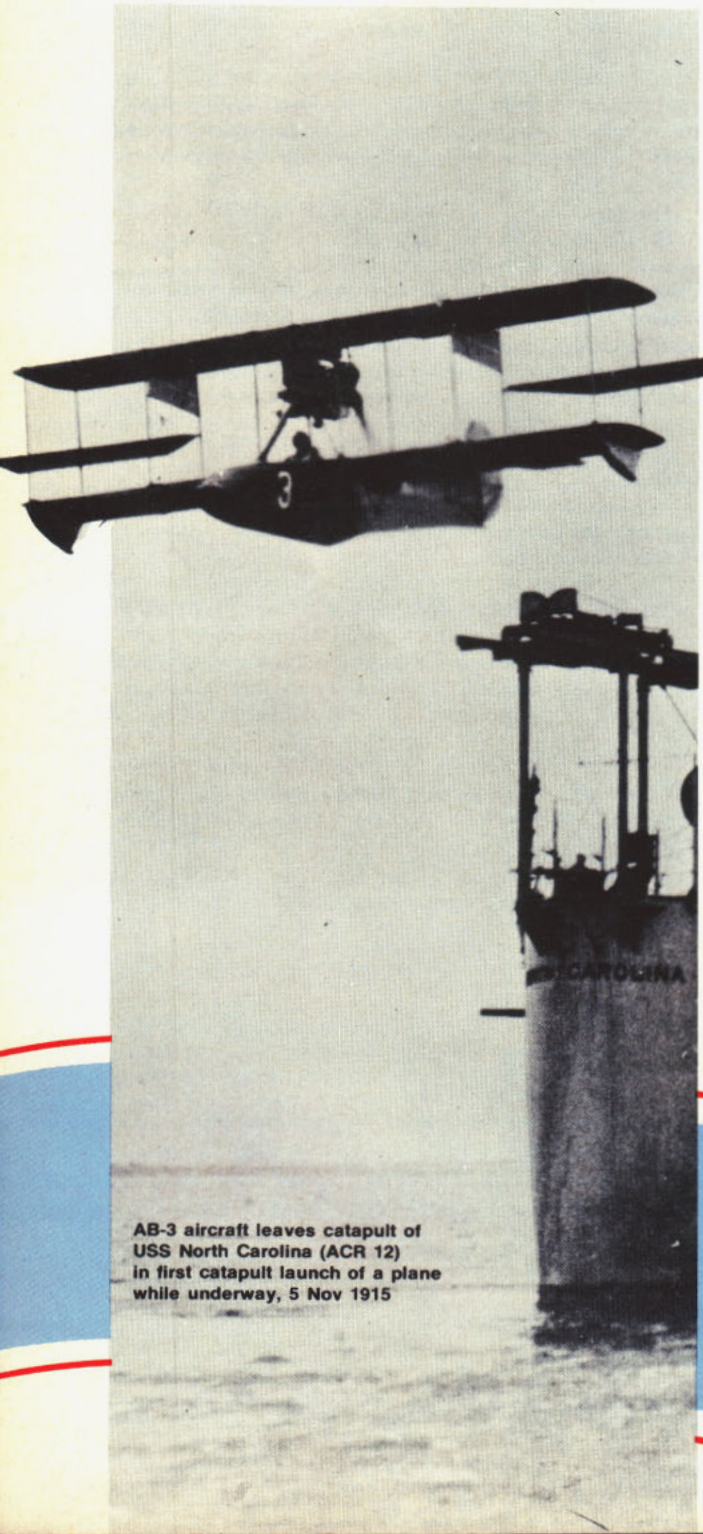
Still inventors and men of vision continued to experiment with gliders and combustible-engine powered aircraft. By the first decade of the 20th Century, men were flying—flying with ever increasing assurance of reaching their destination with each passing flight.

But there were people associated with the Navy back in the 19th Century who had more than a passing interest in the ocean of air above as well as the seas below.

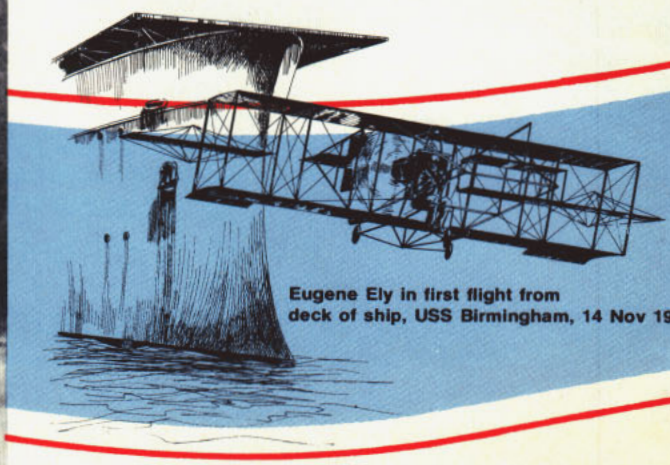
In fact, there was USS *George Washington Parke Custis* of Civil War days which might be labeled as the Navy's first "carrier." Actually, it was a balloon boat from which observation balloons were launched over enemy installations. It was 122 feet long, and its total cost in those days was $150.

As the 19th Century reached its final days, and the unknown Wright brothers were working quietly on their flying craft, the Navy was again looking upward. On 25 Mar 1898, Theodore Roosevelt, the Assistant Secretary of the Navy, recommended to the Secretary that he appoint two officers "of scientific attainments and practical ability" to examine Professor Samuel P. Langley's flying machine and report on its potential for military use.

With the Wright brothers' first flights at Kitty Hawk, N. C., man's first journey into space began. Most people scoffed at the thought of flying as more than a stunt or a sport, but there were others with vision who talked of such possibilities even as crossing the ocean by airplane. One European inventor, a Frenchman, in a treatise published in 1909, discussed the possibility of transoceanic flights. He wrote in part, ". . . flights over the ocean will be made possible by a new type of ship



AB-3 aircraft leaves catapult of USS North Carolina (ACR 12) in first catapult launch of a plane while underway, 5 Nov 1915



Eugene Ely in first flight from deck of ship, USS Birmingham, 14 Nov 1910

. . . (whose) deck will be clear of all obstacles, flat and wide as possible . . . (it will) have the aspect of a landing field . . . its speed shall equal that of a cruiser . . . housing of planes will be arranged below deck and planes will have folding wings . . . and to one side there will be the service personnel workshop."

Some foresaw the potential of aircraft serving as an extension of the might and range of a naval force at sea. They were convinced that the day would dawn when airplanes would no longer be used primarily for circus sideshows and cropdusting but instead would transport troops across oceans and be equipped to strike offensively when necessary.

One such man was Navy Captain Washington Irving Chambers, the U. S. Navy's first officer in charge of aviation.

CAPT Chambers' initial involvement was answering letters from air-minded citizens and observing and reporting aviation developments of particular concern to the Navy. What started as a collateral duty soon was a fulltime job and Chambers became a strong supporter of those who wanted to see the sea service add an air arm.

In April 1911, the Office of Aviation in Washington, D. C., consisted of only CAPT Chambers. In May the captain wrote requisitions for two machines made of wood, canvas, bamboo, rubber and metal—two airplanes, the A-1 and A-2. Earlier in the year, a civilian, Eugene Ely, had successfully taken-off from and later landed a biplane on a platform rigged aboard USS *Pennsylvania* (ACR 4), thus demonstrating the feasibility of naval aerial involvement. Convinced that aircraft could enhance the effectiveness of the sea service—and being able to support its convictions—the Navy received authorization to build its air arm.

Chambers was ordered to the Naval Academy in July to help set up an aviation experimental station at nearby Greenbury Point, the Navy's first aviation base. Shortly thereafter, a handful of officers was also ordered to Annapolis ". . . in connection with the testing of gasoline motors and other experimental work in development of aviation, including instruction at the aviation school."

That same month the Navy accepted delivery on its first airplane, the A-1. Called *Triad* because of its three-fold ability to fly and land on either land or sea, the plane was first flown by Lieutenant T. G. Ellyson, the Navy's first aviator. A-1 was followed by A-2 and naval aviation had gotten off the ground.

By October the sea service was ready to try durability flights. Lieutenants Ellyson and J. H. Towers attempted a flight from Annapolis to Fort Monroe, Va. After flying 112 miles in 122 minutes the pair was forced down somewhat short of their goal by mechanical problems. Although a failure in part, the flight paved the way for successful durability tests in the ensuing months.

Under CAPT Chambers' leadership, the Navy's air arm continued to grow. During the next several years there was considerable technological research aimed at perfecting instrumentation and navigational techniques. Other experiments resulted in the development of wind tunnels, better catapults for carriers, recoilless aircraft guns and rigid physical requirements for pilots.

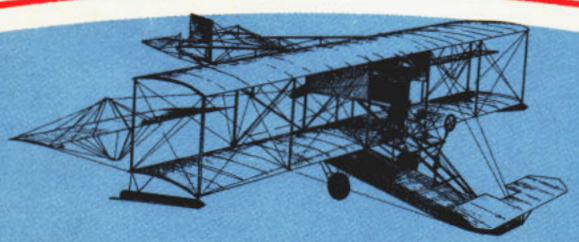
Based on tremendous headway made in a few short years, Secretary of the Navy Josephus Daniels prophesied in 1914 that ". . . the science of aerial navigation has reached that point where aircraft must form a large part of our naval force for offensive and defensive operations." It had become evident that the airplane was no longer merely a plaything of the rich or eccentric, but a vital part of our nation's weaponry.

Meanwhile in Europe, the Central Powers were making gains on the continent. Their planes posed constant threats to free nations and their submarines disrupted free world shipping. As the United States was gradually being drawn into the conflict, naval air power was making some advances, but when the U. S. entered WWI naval aviation was still seriously limited in size. There were only 54 aircraft of various types, one air station and only 287 personnel assigned to aviation. The nation had no armed forces or operations abroad.

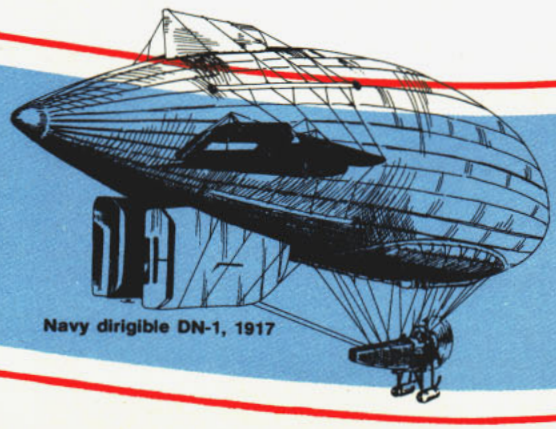
In spite of its minute size, the air arm proved its value as a supporting unit to surface antisubmarine (ASW) forces. Navy pilots served with Allied units in France and England. The airplane created a new breed of hero, the Ace. Nineteen-year-old Lieutenant David Ingalls, later Assistant Secretary of the Navy (Air), flew a *Sopwith Camel* to become the Navy's first Ace.

By the war's end, aircraft patrol and bombing attacks had logged more than 3,000,000 nautical miles. More than 100 tons of explosives had been dropped on German submarine bases and military targets, while planes damaged or sank 12 of 25 enemy subs attacked. When the U. S. had entered the war there were only 38 qualified aviators and student aviators on hand. By 11 Nov 1918, the Navy's aviation force in Europe alone numbered 1147 officers and 18,308 enlisted men.

Great aviational strides were made during WWI and its end didn't slow the pace of progress. On 8 May 1919, three NC(Navy-Curtiss) flying boats taxied into the bay at Far Rockaway, N. Y., and took off for Europe. Plagued by mechanical difficulties, two NCs



Navy's first plane, Curtiss A-1, 1911



Navy dirigible DN-1, 1917

failed to make it. The NC-4, however, piloted by Lieutenant Commander Albert C. Read, became the first airplane to fly the Atlantic. LCDR Read's message from Lisbon to the President read, "We are safely across the pond. The job is finished."

With transoceanic aircraft a reality, the Navy continued researching the feasibility of rigid aircraft use in their air arm. In 1923, USS *Shenandoah* was launched only to break in two in 1925 killing 14 men during a severe squall. At that time some authorities questioned the usefulness of the airship in relation to the safety factor, since the buoyant force, hydrogen, was highly inflammable.

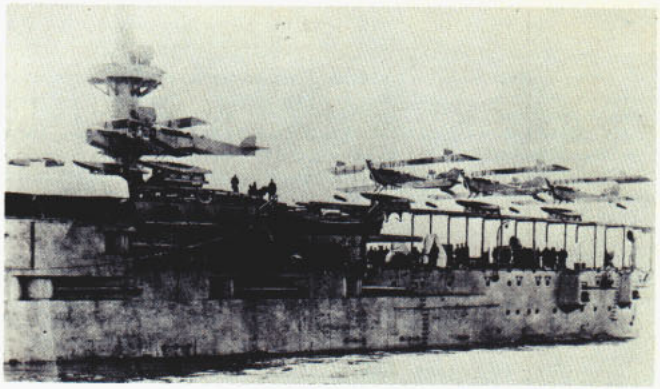
In spite of some opposition, the Navy continued testing rigid aircraft through the next decade. In 1931, USS *Akron* was launched. She was capable of flying at speeds in excess of 80 knots, had a range of 6500 miles and carried five F-9C fighters within her shell. She crashed in 1933 during a thunderstorm which snapped her rudder control lines. Her crew of 73 was killed.

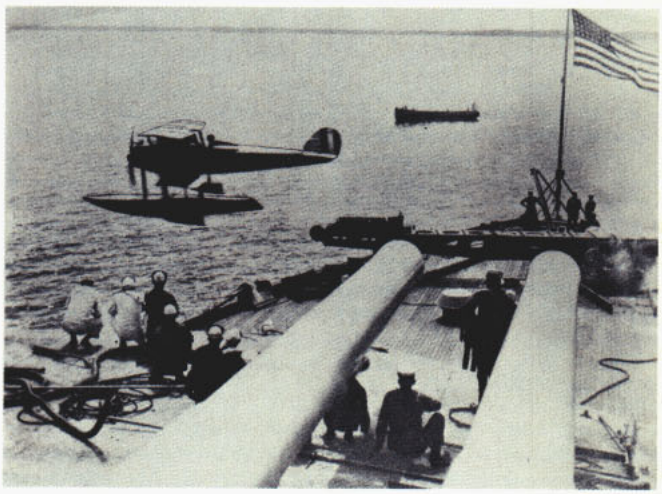
In 1933, USS *Macon* was commissioned. Two years later she too crashed into the sea and the Navy abandoned research and construction of rigid airships.

However, that research proved fruitful in many ways. Navy researchers worked to perfect the flying boat, land planes and specially designed aircraft carriers. Folding airplane wings were developed making easier stowage aboard carriers possible. Improved catapult systems, air-cooled engines, more accurate bombing sights, controllable pitch propellers and hydraulic arresting gear were also developed and tested.

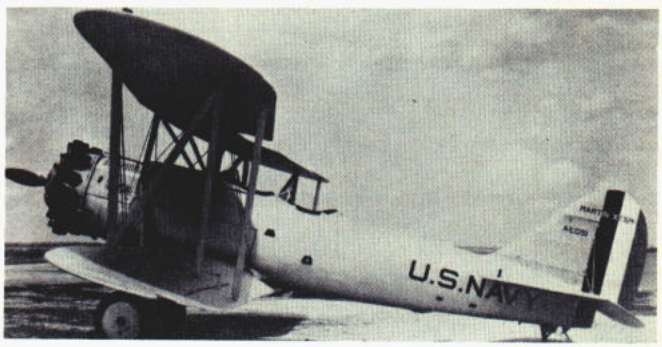
In 1934 USS *Ranger*, first carrier designed as such from keel up, joined the fleet. (Previously, carriers made use of converted cruiser hulls.) Also in the 1930s and pre-war 40s the large carriers *Enterprise*, *Wasp*, *Hornet* and *Yorktown* were commissioned.

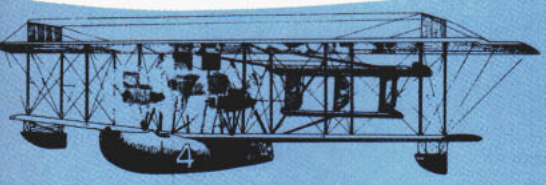
These carriers played an important role in the pre-war years. They were used in exercises testing the possibility of launching air attacks from their decks. Naval aviators, during fleet maneuvers, received excellent training in mock attacks on Pearl Harbor. Flying pre-dawn missions from carriers, flyers were completely successful on two separate occasions, theoretically and systematically destroying the U. S. fleet and aircraft there. Fleet commanders were impressed by the flexibility of the



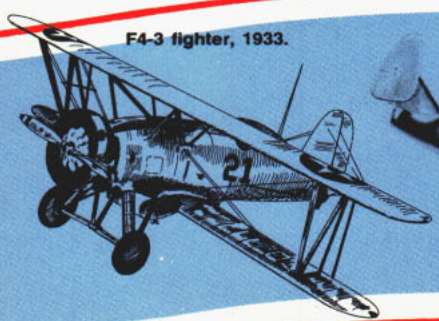


Top: Aircraft on catapult aboard USS North Carolina 1915-1916. Above: VE-7 seaplane leaves turntable catapult of USS Maryland, 1922. Below: Experimental XT5M-Y, dive bomber, 1930. Facing page, top: N-9 Trainer, 1918. Center: F4B-1, 1929. At right: Hellcats aboard carrier, 1943.

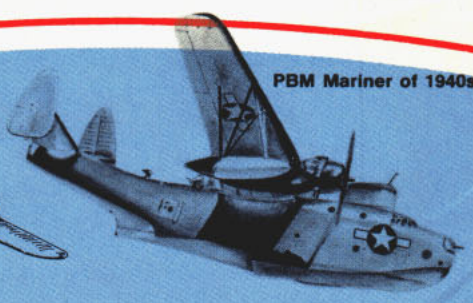




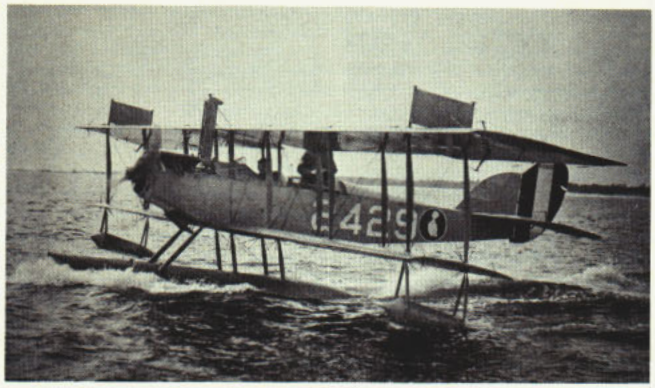
The NC-4 made first trans-Atlantic flight in 1904.

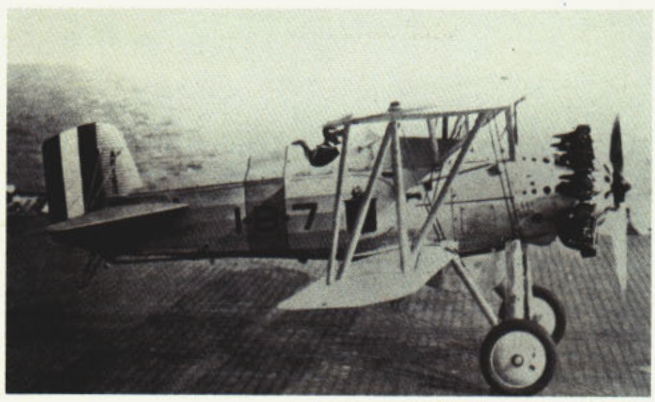


F4-3 fighter, 1933.



PBM Mariner of 1940s





air arm but no one else seemed to pay much attention to the exercises.

Mock attacks gave way to reality near dawn 7 Dec 1941. The Japanese launched a naval air attack on the island base, the first in history conducted solely from aircraft carriers. The attack proved with devastating lucidity that aircraft had become an essential part of naval armament.

Fortunately, no United States carriers were lost at Pearl—*Yorktown*, *Wasp* and *Ranger* were in the Atlantic; *Saratoga* was in San Diego; *Lexington* was about 425 miles south of Midway; and *Enterprise* was 200 miles west of the harbor. The Japanese victory that marked the beginning of the end for the faithful battlewagon set the stage for another victory—a strategic victory fought from carriers—at a place called Coral Sea.

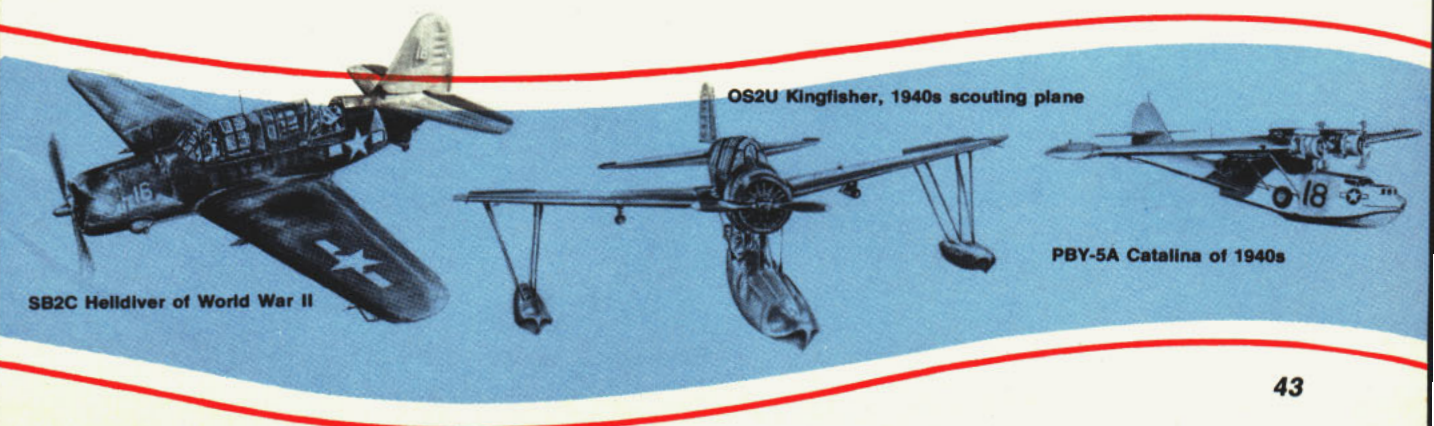
The Imperial Navy had captured island after island in the South Pacific as they advanced toward Australia. It was the Navy's air arm that finally stopped that advance in early May 1942, and set the scene for the turning point of the war in the Pacific. At Coral Sea the two fleets never saw each other—the battle was fought entirely with aircraft launched from carriers.

Lexington and *Yorktown* groups commanded by Admiral F. J. Fletcher launched 93 attack planes against the carriers *Shoho*, *Shokaku* and *Zuikaku*, the latter two both veterans of Pearl Harbor. In a period of five minutes *Shoho* was hit with 10 heavy bombs and 15 torpedoes. *Lexington's* radio crackled with the voice of Lieutenant Commander Dixon of the air group, "Scratch one flattop. Dixon to carrier, scratch one flattop!" Also in the battle, the other two enemy carriers were so badly damaged that their services to the Japanese fleet were lost for weeks.

The U. S. suffered the loss of an oiler, an escort and *Lexington*. Even though there were heavy American losses in terms of tonnage and men, Australia had been saved from invasion.

The turning point of the war came the next month at the Battle of Midway. The Japanese had concentrated on the central Pacific where it was their intention to occupy Midway Island. The four-carrier Japanese task force was met by a U. S. carrier force including carriers *Yorktown*, *Hornet* and *Enterprise*, plus Navy, Marine and Army air units from Midway.

Dive bombers proved to be the nemesis of the enemy carriers. When the battle ended, four carriers, one heavy cruiser and 258 aircraft had been lost by the Japanese. The United States lost 132 aircraft, the destroyer *Hammann*, (DD 412) and aircraft carrier



AIR NAVY

Yorktown (CV 5). In April 1943 another *Yorktown* was commissioned and she continued in the proud tradition established by her predecessor.

Meanwhile in the Atlantic, small escort carriers dubbed "jeeps" were operating with convoys and their aircraft were successfully attacking German submarines as they surfaced to recharge batteries. Limited range of land-based airplanes was no longer a significant factor; distance offered no sanctuary for the U-boat.

Also in use at that time was the airship for escort and observation purposes. Rigid airships had been abandoned in the early '30s but with the introduction of helium the blimp was once again used in the fleet because of its ability to fly high and hover over convoys to spot enemy tonnage.

During that war the fleet of U. S. dirigibles grew from a meager collection of six small airships at the beginning to 15 squadrons consisting of 125 ASW aircraft. Used throughout WWII and again during the Korean Conflict, airships were finally phased out of active use by the Navy in 1962.

Unlike the placid years following WWI, the post war period from 1945 to 1950 was a busy one. The U. S. emerged acutely aware that there could be no major cutbacks in military posture as had been done at the end of WWI—the U. S. had become a nation with many commitments to other countries in terms of trade and protection. The only way this responsibility could be discharged was by the maintenance of a strong and ready Navy.

Naval researchers continued to develop new ships—specialized ships—and new planes capable of providing swift aid to allies in a world of uneasy peace. All naval aircraft were redistributed into patrol, attack and fighter squadrons and featured the most advanced radar and sonar systems.

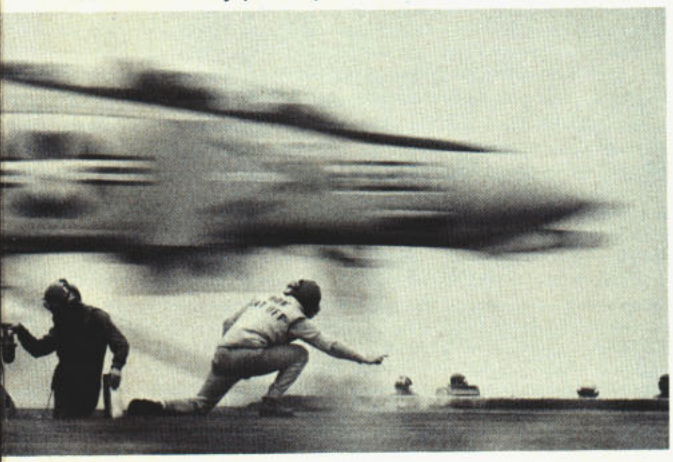
Jet aircraft were perfected. In June 1948 a squadron of FH-1 *Phantoms* qualified for carrier operations aboard USS *Saipan* (CVL-48). Carrier flight decks were redesigned to facilitate launching and recovery of jets.

When North Korea attacked south of the 38th parallel in June 1950, the Navy was called upon for close air support to knock out bridges and block enemy supply routes. Navy jets flew from carriers for the first time

in a war situation. Unlike WWII, the enemy didn't have the capability of striking our carriers, so pilots launched their *Corsairs* and *Banshees* on the first sustained ground support missions in history.

Also in Korea the helicopter came of age. First studied and developed in 1942 when the Navy procured four *Sikorskys*, the ugly duckling choppers spotted for artillery, flew emergency supply runs and took part in direct combat duties. Later the helo was used as a cargo transport between ships during underway replenishment, search and rescue missions and ASW exercises. Korea was the catalyst and testing ground for that aircraft and many other innovations in current use.

Facing page top: SB-2Cs are shown on mission during World War II. Center: CH-46D Sea Knight helicopter, 1974. Bottom: Fish-eye lens view shows flight quarters aboard USS Saratoga (CVA 60) in 1969. Above: SH-2D Seasprite helicopter hovers over guided missile cruiser USS Wainwright (CG 28). Below: The contours of this F-4B Phantom are reduced to a blur as it takes off from USS John F. Kennedy (CVA 67).



The 1950s were a time of change. By the end of the decade most operational aircraft in the sea service's attack and fighter arsenal were jets. More and more angled-deck carriers were authorized and new deck edge elevators allowed simultaneous takeoffs and landings. The hurricane bow and the familiar designations CVA (attack carrier) and CVS (ASW support carrier) became commonplace. The F-4 was also developed and currently is the fleet's leading fighter plane even though it is being slowly phased out by the new F-14.

During the Vietnam era five new attack carriers joined the fleet, including the world's first nuclear-powered carrier *Enterprise* (CVAN 65). In the process of revamping, many of the old warriors were retired.

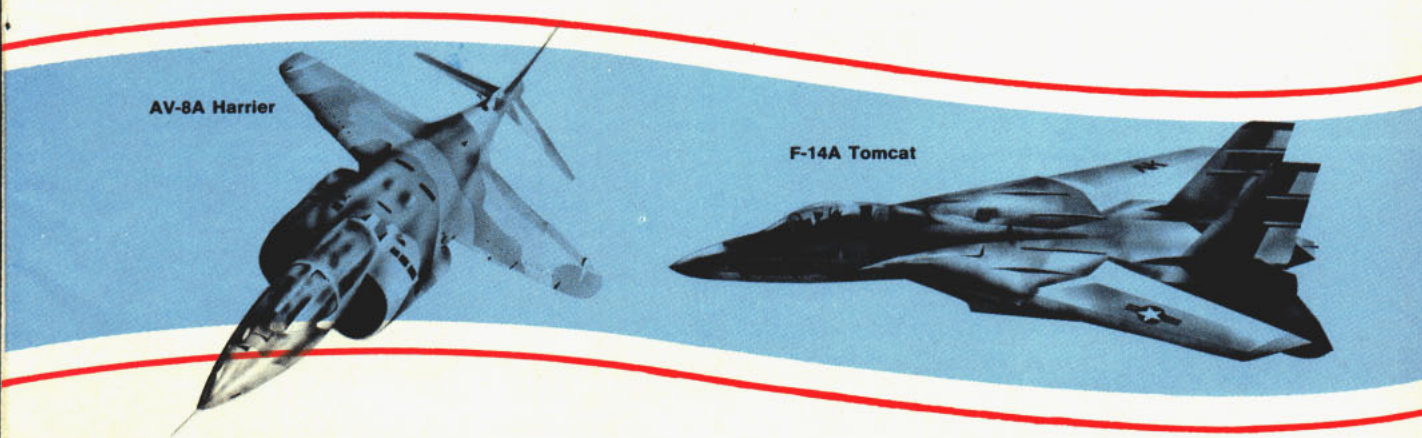
Vietnam was a different kind of war, a war in which the Navy's role was ever changing. The Navy used both new and old aircraft—OV-10 *Broncos*, propeller-driven *Skyraiders*, attack planes like A-4 *Skyhawks* and A-7 *Corsairs*, fighter planes like F-8 *Crusader*, and various support aircraft for ASW, early warning and advance communication links.

Even while the Navy was operating in the Southeast Asian conflict, there was still time to continue the space probes that had started in 1961 when Alan Shepard became the first American in space. The sea service was actively involved in all *Mercury*, *Apollo* and *Skylab* missions including the first walk on the moon in 1969. Before America's first 10 years of manned space exploration had ended, five of the six men to walk on the surface of the moon had been trained as naval aviators.

In Vietnam a peace was finally achieved. In the 60 odd years since a wooden, bamboo, canvas flying-machine became the Navy's first aircraft, a whole new world has come into being—a world with new crises, new confrontations and yet, new hopes for lasting peace. Until peace is realized, mobile and flexible use of naval air power will continue to guarantee America's free use of the seas and the freedom of her people.

In this Bicentennial year, we cannot reflect on 200 years of naval aviation history, yet we can be extremely proud of her accomplishments in the years since her official birthday, 8 May 1911, and the vision of others in the years before.

—JO2 Dan Wheeler




STRATO-LAB
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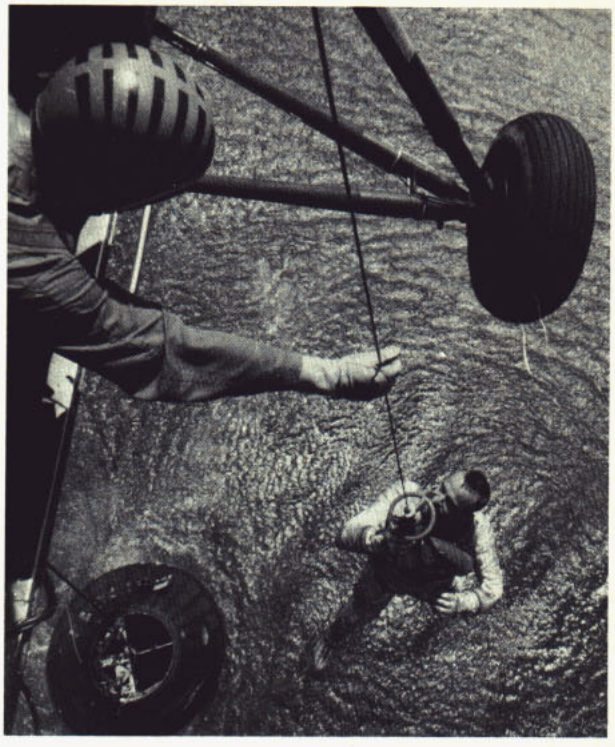
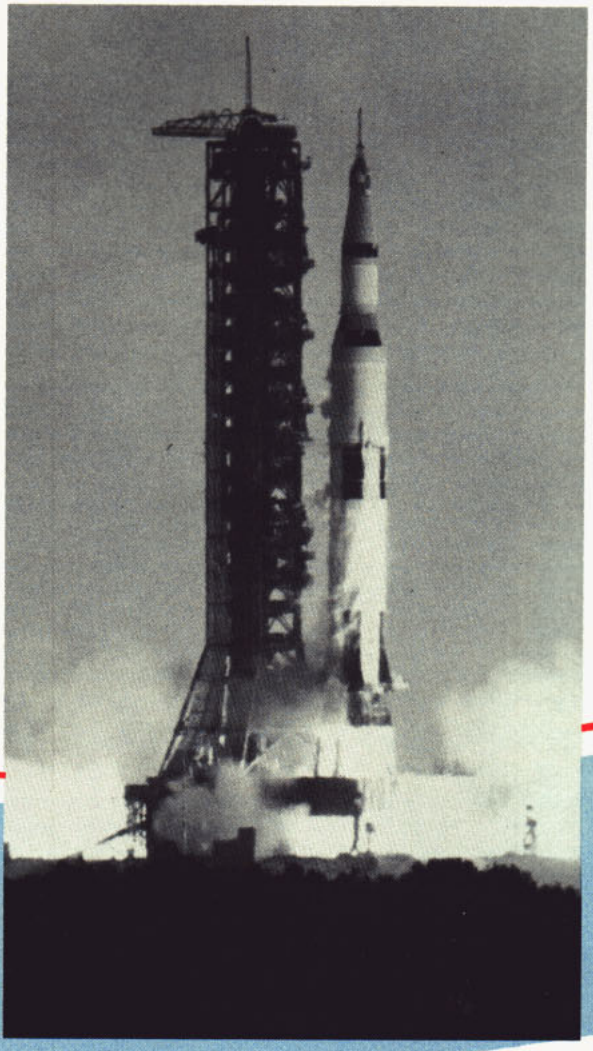
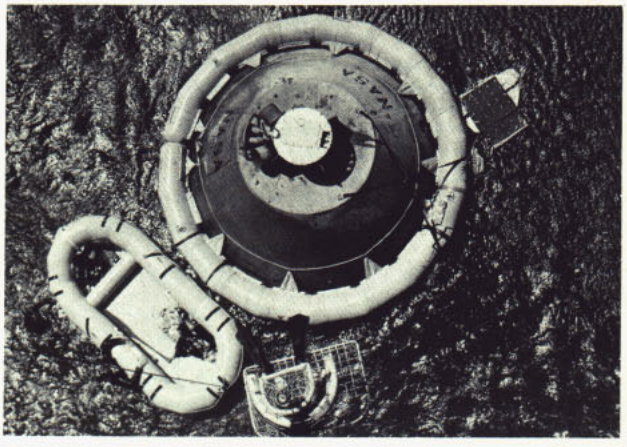
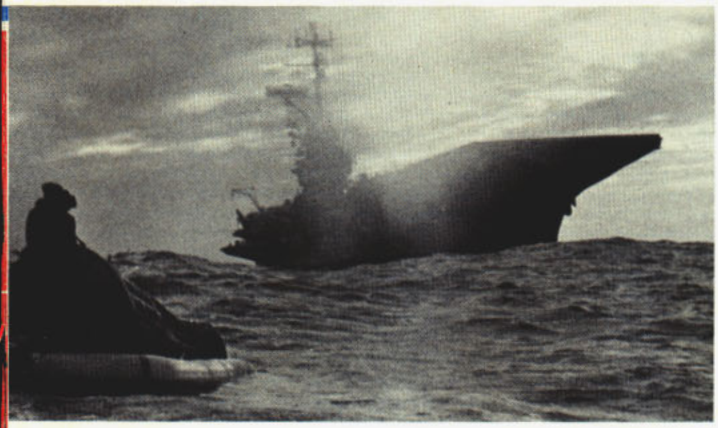








Facing page, top left: Two naval observers set unofficial altitude record of 76,000 feet in this spherical aluminum gondola in 1956. Bottom: Apollo/Saturn space vehicle lifts off, on 16 Jul 1969, for nation's first manned lunar landing. Astronaut Neil Armstrong, who was the first man to walk on the moon, received his initial training as an aviator in the U. S. Navy. Left: Astronaut Alan B. Shepard, Jr., now a rear admiral, is recovered after first successful American flight into space on 5 May 1961. Center left: UDT swimmers practice Apollo recovery. Bottom left: Apollo 12 astronauts and swimmers practice recovery before second lunar landing. Above: U. S. Navy pararescue men stand on flotation collar used to keep Gemini 12 spacecraft afloat, 1966. Right: ASW Squadron 4 recovery helicopter hoists Astronaut Young aboard after Apollo 10 mission. Below: First All-Navy crew to make successful moon landing, Captains Conrad,Bean and Gordon, in spacecraft checkout before flight in November 1969.

200 Years of Piping the Boatswain's Call

The next time you hear a boatswain's pipe signaling an impending call for all hands to quarters for muster, just think that this "music" has been heard by sailors of our Navy for the last 200 years. It may not be beautiful music—but take note that you'll be listening to the most ancient and distinctive nautical sound effect of them all. In fact, the oarsmen on ancient Greek and Roman galleys are said to have timed their strokes either to a pipe or flute. And during the days of the Crusades, a pipe was employed (in the English Navy) as a signal for the crossbowmen to come up on deck for an attack.

The present form of the boatswain's instrument (properly termed a "call") was established some time during the 16th Century. After defeating Scotland's Andrew Barton, England's Lord Howard took a pipe from the fallen body of his foe, and when he became Lord High Admiral, he officially adopted it. In time it came to be used for passing of orders as well as salutes to distinguished visitors—as it is today.

In the days of sail there were certain very definite and practical uses for the pipes, some of which have since passed into history. Men high on the royal and t'gallant yards, for example, could hear its piercing call rising from the deck above the howl of the winds. In those windship days, merchant as well as naval vessels carried piping boatswain's mates, but the pipe has long since ceased to be a feature of anything but a man-of-war.

Let's clarify a couple of terms before we go any further. We said earlier that the instrument itself is, properly, a "call." However, the various "words" which are passed by the call are also known as calls. So, to avoid confusion, and at the risk of offending purists, the instrument will be called hereafter by its popular misnomer—boatswain's pipe.

Here, culled from the files of ALL HANDS, are some interesting items about the boatswain's pipe—including some pointers on how to play a call yourself.

Chances are if you've served aboard a Navy ship for any length of time—say 24 hours or so—you've probably already heard a medley of sounds destined to become among the most familiar of your Navy career. As a matter of fact, there have no doubt been occasions when you've harbored a barely suppressed desire to tell "that guy up on the quarterdeck what he could do with his licorice stick."

If you're like most of us, while you've got a pretty good idea of the "why for" and the "when," you're probably not too clear on the "how's it done."

Read on, if you will. A more thorough knowledge of the procedures involved in sounding a boatswain's pipe is bound to increase your "musical appreciation" when next you hear those dulcet tones. And who knows—you might be inspired to master the art yourself. You wouldn't be the first. Plenty of Navymen—mostly deck or ordnance ratings, to be sure, such as gunner's mates, torpedoman's mates and quartermasters, but more than one yeoman, radioman and what have you—have done just that, and take pride in their ability to handle the pipe as well as any boatswain's mate around.

Let's start off with a definite premise—that there's much more involved in piping a call properly than simply picking up a pipe and applying lung power at the correct end.

To begin with, all of the distinct and different sounds are achieved through, and affected by, several methods of cupping the pipe in the hand. More on this later.

Then there's the pipe itself—a more complicated affair than you might imagine. The ship's First Lieutenant is provided with an original issue of pipes, which usually don't last very long. Boatswain's mates, it seems, have a habit when being transferred of packing off with their pipes still attached to their persons. Most of them, however, eventually prefer to buy their own particular model, oftentimes with an ornamental design worked around it.

G.I. or tailor-made, though, a pipe won't sound worth listening to until it's tuned. Pipes are stamped out when manufactured, and both the hole in the top of the bowl and the aperture in the reed next to it (the pee) are nearly always misshapen. The pee must be cut off clean at an angle, then the hole filed down until the blast of air from the pee is exactly split by the hole's outer edge. (A bosun's mate who is an expert on the subject says that the hole usually requires some filing.) A nail file is ideal for this operation, you'll find. It has a fine grain, and is thin enough to file down the bowl without also cutting the pee.

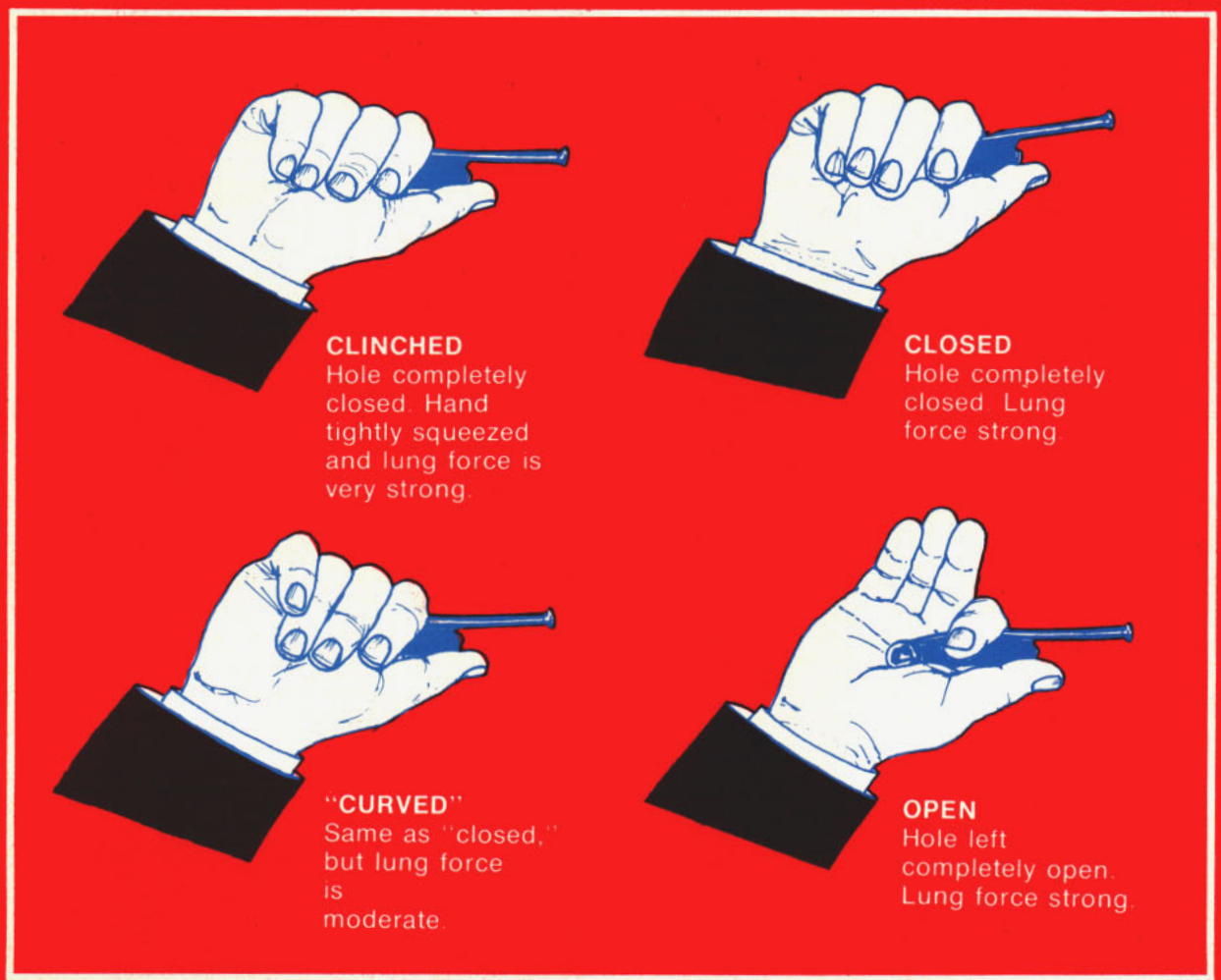
Once this considerable filing down of the bowl is accomplished, a straw shoved through the reed should split on the far edge of the hole. When this occurs, the pipe is about right. Occasionally, however, there may be a gap between the bottom of the pee and the bowl. This will cause a hissing sound of escaping air which will interfere with the clearness of the call. A drop of solder in the gap will remedy that condition.

We mentioned before that there was more to sounding the boatswain's pipe than might at first glance seem apparent. The various calls, for example, have been reduced to paper, somewhat in the fashion of musical scores. Now these "scores" are fairly simple and easy to figure out just by looking at them, as you can see by a glance at the accompanying illustrations. But—remember these different hand positions we referred to a while back?

It would be a complete waste of time, for instance, to attempt to sound a sustained note with the pipe held in either the curved or closed position. Those are used exclusively as starting or stopping positions, or as intermediate steps in rising from the open to the clinched position or vice versa. Then too, just about the toughest part for a beginner, we're told, is learning to sound the high, shrill scream which issues forth when the pipe is properly held in the clinched position. To achieve this, you must squeeze hard, and blow hard.

An added thought—you might be wise to stage your first practice session down in the bilges somewhere or ashore on leave or liberty, lest the OOD or non-music-loving shipmates take a notion to fling you bodily out of the compartment.

At first you probably won't produce much but a noise resembling the sound of escaping steam, but don't let that discourage you. Before long you'll be "piping up" as well as the saltiest BMC. At least you'll think so.



The Bosun's Pipe and Calls Aboard Ship

READING THE SCORE

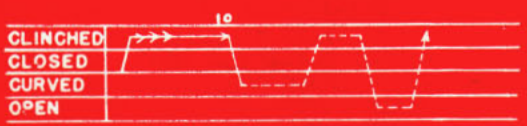
FOUR POSITIONS OF THE HANDS are indicated on the four spaces of the musical staff.

STRAIGHT LINE indicates a smooth note. This is made by simply raising or lowering the air pressure, as is done with an ordinary whistle.

DOTTED LINE indicates a rattled note, like that of a policeman's whistle. You get this by rattling your tongue against the roof of your mouth.

PASSING THE WORD—This call is the prelude to every word passed aboard ship. Its purpose is to get the attention of all hands to the announcement about to be made.

PIPE DOWN—The call "pipe down" consists of "passing the word" and a long, 10-second "veer," ending in a short, sharp peep in the clinched position. It is piped as "secure" from any all-hands function. It is also piped immediately after the bugle call "tattoo," just before word is passed to turn in. (For "Veer" call see next column.)



HOIST AWAY—"Hoist away" is piped after "set taut," to start a power hoist or a "walk away" with boat falls or tackles.

HAUL—"Haul" is the pipe equivalent of "ho! heave! ho! heave!" by voice, when the gang is heaving together on a line instead of walking away with it. The low note means "get another purchase," and the high note means "heave!"

ALL HANDS—"All hands" is piped as a general call to any event in which all hands are to participate—to battle stations, for example. It is sounded after the bugle call, "reveille," before word is passed to heave out and trice up. It is also the first part of the call which pipes the crew to chow.

VEER—This is the call sounded by the boatswain's mate of the watch to fall in side boys for tending the side. One veer calls two boys; two veers, four; three veers, six; and four veers, eight.

"Veer" also means "ease (or slack) away," or "walk back." It is sounded continuously during slacking, and the man slacking or lowering away controls his speed in proportion to the rapidity of the rise and fall of the sound.

CALL MATES—Before the days of PA systems aboard ship, every word passed was by word of mouth of the boatswain's mates, fore and aft. The word was given to the boatswain or boatswain's mate of the watch, who sounded "call mates" to get the boatswain's mates together. As they drew near from different parts of the ship, they answered repeatedly with the same call. When they got the word they dispersed fore and aft to sing it out at every hatch. The call is two short, shrill peeps in the clinched position, repeated once. You won't find much use for "Call mates" nowadays.

BROKEN LINE indicates an undulating (wavy) note. Made by arching the tongue (as in sounding the syllables "TOE HEE, TOE HEE"), causing the sound to undulate smoothly, continuously and at equal intervals.

FIGURES ON TOP OF THE SCORE indicate the duration of notes and intervals (rests) in seconds.

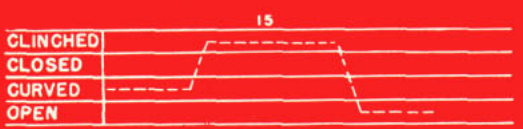
ARROWHEADS indicate full breath impulses or blowing hard. You'll notice they are nearly always placed on notes sounded in the clinched position where you need a real blast to sound at all.

INTERVALS, OR RESTS, are marked with a vertical line (|) with the number of seconds above it.

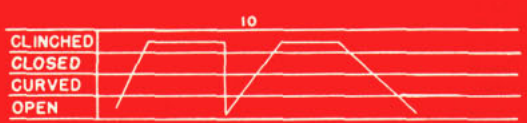
STAND BY—The meaning of "stand by" is obvious. Piped after "all hands," it means "all hands stand by" for some evolution or maneuver. This is also the call for "set taut," meaning to take the slack out of falls or tackles before "hoist away."

BELAY—A short "belay" means "avast heaving." A long "belay" means "avast heaving and make her fast."

HEAVE AROUND—This call, piped twice, means "heave around" on the capstan or winch. Piped once, it means "mess gear." It is also part of the pipe for "mess call."



BOAT CALL—"Boat call" is piped to call away a boat, and also to pipe a division to quarters. The call is lengthened in proportion to the seniority of the boat called. In other words, you hold it longer for the gig than you do for a motor whaleboat. After you pipe the call, sing out, "AWAY the gig (barge, No. so-and-so motor lunch, etc.) AWAY!"

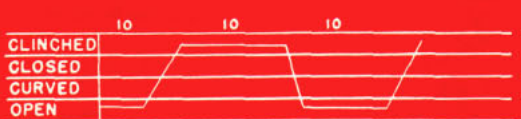


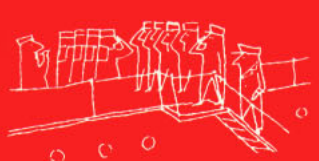
PIPING THE SIDE—This is the aristocrat of all the calls on the boatswain's pipe. It really consists of two of the calls shown on the score. The pipe "alongside" is sounded so as to finish just as the visitor's boat makes the gangway. During this pipe the side boys and boatswain's mate stand at attention but do not salute.

The pipe "over the side" starts just as the visitor's head appears at quarterdeck level. Side boys and boatswain's mate salute on the first note, and drop from salute on the last one. Right-handed boatswain's mates, have argued since time immemorial over whether it is proper to salute left-handed in this situation. Some of them have ruined their dispositions trying to learn how to sound their pipes in their left hands. It may be said here that a boatswain's mate MAY salute with his left hand when piping the side.

Saluting procedure is reversed when a visitor is leaving. "Over the side" is piped as the visitor passes the boatswain's mate on his way to the gangway, and side boys and boatswain's mate salute on the first note. They drop from salute on the last note, and remain at attention while "alongside" is sounded. This last call begins as the visitor's boat curves away.

Get a good lungful of air before you start a side pipe, because etiquette requires that it be as long drawn out as possible. The more side boys the visitor rates, the longer the notes of his side pipes should be sustained.





MESS CALL—The pipe "mess call" is the longest of the lot; it should cover not less than a minute. It consists of "all hands," a long "heave around," and a long "pipe down," in that order.

Two Centuries of Change and Progress

EVOLUTION of N

The Navy uniform, developing over a period of 200 years, is a living tradition, and like all living traditions it has experienced a continuing series of changes. Each one of the changes has undergone the tests of time and, sometimes, of controversy.

Many people think of the uniform of the song, "bell-bottom trousers, coat of Navy blue," as the unchanging uniform of two centuries, but as can be seen from the pictures on these pages the uniform has gone through many changes over the years, each one adapting itself to changing needs or the trends of the times. The changes have not always come easily, and that is

ENLISTED MAN OF 1797

ENLISTED MAN OF 1812

GUN CREWMAN OF REVOLUTIONARY WAR

OFFICER AND ENLISTED OF 1812

AVY UNIFORMS

good, because past customs and traditions, if they are worth anything, have been built on sound foundations.

But tradition survives as part of a way of life, and it must adapt itself to the changing ways of society. So it has been with the Navy uniform. The flared bell-bottoms first came into being because they could be more easily rolled up when swabbing the decks, and more easily removed if the ship went down in a storm or in combat.

Most items of the uniform came into being for reasons such as this, while others had their origins in earlier customs that had become obsolete but were retained for decorative reasons.

Let's take a look at the uniform down through the years.

When the Navy was just getting underway 200 years ago, there was no prescribed uniform for ships' crews. They wore whatever clothing they had when they enlisted, or a uniform the skipper had decided would be appropriate and kept aboard in his "slop chest." More often than not, the early seaman's uniform consisted of bell-bottom trousers, a frock (or jumper), short jacket, vest and narrow-brimmed hat (straw in summer, tarred canvas or leather in winter).

Chronologies say that the Navy adopted its first uniform on 5 Sep 1776, but it did not go so far as to spell out the items of wear by the enlisted members of the crew.

One of the earliest recorded descriptions of enlisted men's clothing comes from the personal papers of Commodore Stephen Decatur. While in the frigates *United States* and *Macedonia*, in the first decades of the 1800s, his sailors wore "glazed canvas hats with stiff brims, decked with streamers of ribbon, blue jackets buttoned loosely over waistcoats and blue trousers with bell-bottoms."

In 1817, Secretary, of the Navy Benjamin W. Crowninshield issued the first rules covering enlisted men's clothing to be covered in Regulations of the Navy. These specified that all Navymen in summer would wear a white duck jacket, trousers and vest; in winter—a blue jacket, trousers, red vest, yellow buttons and black hat.

The "Regulations for the Uniform and Dress of the Navy of the United States," first Uniform Regulations, were approved in February 1841. These specified: "The outside clothing of petty officers, seamen, and ordinary seamen, landsmen and boys, for muster, shall consist of blue woolen frocks, with white linen or duck collars and cuffs, or blue cloth jacket and trousers, blue vests when vests are worn, black hat, black handkerchief and shoes, when weather is cold; when the weather is warm, it shall consist of white frock and trousers, and black or white hats, as the commander may direct, having regard to the convenience and comfort of the crew, black handkerchiefs and shoes. The collars and breasts of the frocks to be lined or faced with blue cotton cloth, stitched with white thread or cotton."

These regulations generally describe enlisted men's uniforms since the beginning of the U. S. Navy. What changes were made affected rating insignia, color combinations, decorations and material; the basic idea of bell-bottoms and jumpers persisted—until just recently.

OFFICER AND ENLISTED OF 1815

EVOLUTION of NAVY UNIFORMS

Since 1841, some description of enlisted men's uniforms has been carried in all uniform instructions. In spite of this, a great deal of individuality appeared until the end of the Civil War. Each sailor then had to make his own uniforms and, naturally, each wanted something a little different than his shipmate.

In 1852 new uniform instructions stated that "Thick blue cloth caps, without visors, may be worn by the crew at sea, except on holidays or at muster." This was the forerunner of the famous flat hat.

Seven years later, in 1859, the white duck cuffs and collars were removed from the blue frock, making the enlisted winter uniform all blue. The winter uniform was bell-bottom trousers (some with buttoned front flap, others with button fly and slash pockets), jumper, jacket, black shoes, neckerchief and flat hat. The summer uniform was white bell-bottom trousers, long-sleeve white jumper with blue collar and cuffs, white flat hat with black band, black shoes and neckerchief.

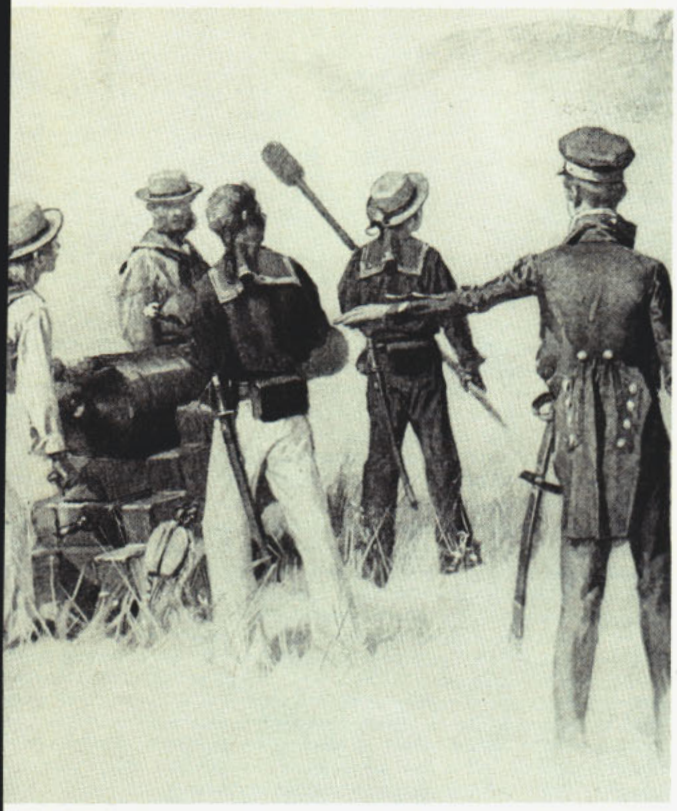
After the Civil War, some of the individuality of the home-mades was lost when, in 1866, Uniform Regs were issued. Two stars were added to the jumper collar and white piping was added to the sleeves and collar to indicate rank. Petty officers, seamen and first class firemen had three piping stripes; ordinary seamen and second class firemen had two stripes; landsmen, coal-heavers and boys had one stripe.

These regs (1866) also specified that masters-at-arms, yeomen, surgeon's stewards and paymaster's stewards—all petty officers—wear "blue jackets with rolling collars, double-breasted; two rows of medium-size navy buttons on the breast, six in each row. Slashed sleeves

BOATSWAIN'S MATE OF 1836

GUN CREW OF 1863

OFFICER AND ENLISTED SERVICE DRESS OF 1862



OFFICER AND ENLISTED, ABOUT 1841

ACTING ENSIGN OF 1866

or cuffs, with three small navy buttons. Plain blue caps with visors." They were allowed to wear white cotton or linen shirts (in place of duck frocks with turned-over collars) and uniform vests, with six small navy buttons. The regs also gave them straight trousers for the first time. The MAA wore a star and anchor on the cuffs of his double-breasted coat. This was the first step in giving the yet-to-be-established chief petty officer rate a distinct uniform. In 1874 this coat for principal petty officers was changed to a single-breasted, sack coat similar to the type then worn by officers.

Collar piping was eliminated in 1869 and replaced by stitching of "white thread—two rows, one-eighth of an inch apart, the first row close to the edge." The stars and cuff piping were retained. In 1876 the piping was again changed to three rows of three-sixteenths-inch-wide tape on the jumper collar. It was purely decorative—the sleeve piping indicated a man's rate.

The 1869 regs are also notable because they prescribed the first enlisted working uniform. Until this time, sailors wore their oldest dress uniform to work in, now they were permitted to wear overalls and a jumper of white cotton duck. This was probably because of the dirty work created when the Navy converted to steam and coal.

Distinctive first, second and third class petty officer rates were established in 1885, and differentation came in the 1886 Regs. First class POs wore a dark blue or white duck, double-breasted sack coat similar to officers . Other enlisted men wore jumpers with the blue one tucked into the trousers and the white one hanging loose. The collar and cuffs of the white jumper were covered with thin Navy-blue flannel. Both jumpers had piping and stars on the collar and piping on the

USS HARTFORD'S RACE BOAT CREW, ABOUT 1866

cuffs. Three rows on the cuff now indicated second and third class petty officers and seamen first class; two stripes second class seamen; and a single stripe seaman third class.

The pea coat, first mentioned in the Regs. of 1841, became a regular part of the enlisted uniform in 1886. Aside from the sack coats of petty officers, it was the first overcoat to be made a part of the uniform since the short seaman's jacket prescribed in the 1841 regulations.

By 1886 a new type of white hat had also been introduced. It had a spherical crown with a narrow, turned-up brim. By the end of World War I, this hat changed into the familiar "dixie cup" white hat. The 1886 Regs also included a description of enlisted men's shoes.

Eleven years later, in 1897, enlisted men's shoes were standardized as follows when SecNav John D. Long issued this directive: "Shoes—for all enlisted men; of black calfskin; both high and low; heels broad and low; soles broad and thick; strongly curved on outside and straight inside; thin leather lining; the high shoes to have full tongue stitched watertight to the flaps; shoe strings to be of strong leather." Until this time, sailors wore whatever shoes they had; in earlier days they might have gone barefoot.

The uniform worn in 1886, and the 1897 shoes, were essentially what the U. S. sailor wore when he went off to fight WW I.

From WW I until shortly after the end of WW II, few changes were made to enlisted uniforms. The blue

ENLISTED MAN OF 1886

ENLISTED MAN IN WHITES, 1886

ENLISTED MAN OF 1886

NAVAL ACA

STARBOARD WATCH ABOARD USS BOSTON, 1888

jumper was now worn outside of the trousers, some changes were made to rating badges (all rates were switched to the left arm) and cuff piping as a rate indicator was discontinued with the establishment, in 1948, of the seaman stripes on the left arm *vs.* the right shoulder stripe. Cuff piping's only function became decorative. The neckerchief grew a bit longer, too. One major change was that the white jumper was completely white, rather than having blue collar and cuffs. The blue wool was causing problems in manufacture, comfort, laundering, shrinkage, lint and fading.

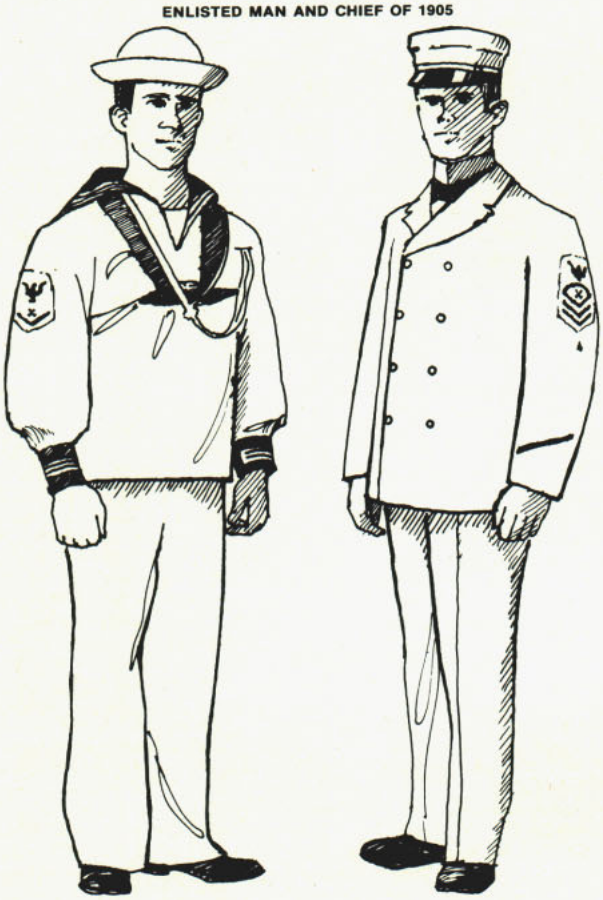
Toward the end of World War II, a lot of people talked about the need to modernize the enlisted man's uniform. Many recommendations were made in favor of the officer-type uniform and, as a result, the Permanent Naval Uniform Board developed one. But the time was not yet right for a one-uniform Navy. There was much resistance to the idea just as there were many proponents of the change. The uniform fell flat.

In 1948, and again in the late 1950s, the old 13-button pants came under fire and were to be replaced by bell-bottomed trousers with a zipper fly and slash pockets. That idea never got into full swing either. It was *not enough* of an improvement and so it was *too much* of a change. Such a howl arose from the Fleet that the old 13-buttons were "better fitting and more Navy looking" that the zipper was abandoned. But the demand for *some* change continued.

In the early 1950s, a proposed cuffless blue jumper was given a short test; a new type neckerchief, similar

AY MIDSHIPMEN OF 1893

ENLISTED MAN AND CHIEF OF 1905



to the existing one but prerolled, was tried; and the old pre-WW II white jumper with blue collar and cuffs, improved so it could be laundered without shrinking, was again put back on the drawing board but died there. None of these changes caught on. Navymen stubbornly hung onto their beloved bell-bottoms.

All was not rejected, however. The short-sleeve white shirt was accepted in 1959, and a new style double-breasted raincoat for E-6s and below was brought in.

More changes were on the way. In 1963, the blue flat hat went out and tests were again begun on a suit-type enlisted uniform when a poll showed that 70 per cent of Navymen below CPO wanted a change. There were many different opinions among that 72 per cent as to what they wanted, some said a CPO-type uniform, others wanted only a "wider choice of material for the present uniform." A thousand PO1s and PO2s in both sea and shore commands were given a uniform for testing which was almost identical to the new one now coming in. The only difference was the cap device—a miniature fouled anchor, yet easily distinguishable from the CPO's. Tests also included white and khaki uniforms in addition to the blue one.

As might have been predicted, the new uniform stirred up a beehive of controversy on all sides. For one thing, a sizable number of uniforms were involved. For another, we were not yet sufficiently far into the era of the new fabrics, such as wash-and-wear, polyesters, etc. In the end, the idea was shelved.

But the new uniform question never really ended. The push for change continued and the suit-type uniform was always in the running. In mid-1969 another new uniform was tried, again a suit-type, but with a single-breasted, three-button jacket. The hat was a CPO type, but with a blue cloth-covered bill, a silver rating device (chevrons and "crow") and the words "U. S. NAVY" in gold across the front of the black hatband.

Tests continued, with various modifications being made. In December 1970 a poll was taken among 4000 Navymen of all ranks and rates. Those queried were scientifically selected so their views would represent the majority of Navymen. Results showed that 80 per cent of all enlisted men E-6 and below preferred a

ENLISTED MAN AND CHIEF, ABOUT 1905

CHIEF MACHINIST'S MATE (AVIATION) OF WW I

OFFICER AND ENLISTED OF 1918

CHIEF PETTY OFFICER AND BOATSWAIN'S MATE FIRST CLASS, ABOUT 1905

coat-and-tie style. Since 92 per cent of the officers and chiefs who were queried had a favorable opinion of their dress blues, the Navy decided to use it as the basic uniform for all men to symbolize one organization striving for common goals. At the same time the blue uniform was changed, the white CPO-style trousers were also authorized.

After questions such as what type of buttons, rating badges, cap devices and the like were cleared up, the uniform was sent to the Fleet for testing. It finally reached its finished form and recruiters were authorized to wear it in November 1972. PO1s followed in January 1973 and the rest of the enlisted men in July 1973.

The transition period had begun, but the uniform controversy was still not over—and in a society where controversy is a way of life it can be expected to continue. There are some who still insist that "it ain't like the old Navy,"—which it ain't. Or is it? After all, it's the uniform that has been worn by a sizable component of the sea service, officers and chiefs, with only modest changes for more than half a century. Understandably, the nostalgia for the old bell-bottoms and jumper uniform will continue to exist with many. Surveys indicate, however, that the majority of sailors like the new uniform and agree with what one PO2 wrote ALL HANDS in 1959, during that period's suit-type uniform uproar: "I wonder how long it's been since [the chief] has had to wear the miserable uniform issued to enlisted men below E-7. Surely, it hasn't been so long that he has forgotten what it was like.

WAVES OF 1945

"Doesn't he remember how absurdly uncomfortable it was (and I cannot be convinced that it *is* comfortable) and how maddening it was to find a place for such common items as cigarettes, lighter, comb, etc.?"

He asked the chief (mythical, though collective) how he felt about the times he's been in a restaurant and had to reach to get his cigarettes from his *sock*, "of all places;" and the time he's had a cab waiting while he ran into a drugstore to buy something and had to dig a quarter "out of that watch pocket" while the cab meter ticked away; and the times he had dinner at a friend's house and "as he bent over to sit down found that 'cute' neckerchief dunked into the gravy."

And so it goes. After 200 years the enlisted Navyman is getting a completely new dress uniform. But it wasn't something that somebody dreamed up overnight. As you have seen, the discussion of a coat-and-trousers type uniform goes back some three decades, and probably was a subject for taffrail talk long before that. In the photo files of ALL HANDS are pictures of enlisted men wearing test uniforms 15 years ago that look mighty like the uniform that went into effect Navywide as of 1 Jul 1975. As we said, the Navy uniform is a living and changing tradition.

—JO1 Tom Jansing

Uniforms of Today's Navy: From left below: A sailor in the blue working uniform with modified buttoned-down-front shirt chats with shipmate wearing the new summer blue uniform for enlisted personnel. Center below: The basic uniform for all in today's Navy, from seaman to admiral. Far right: Sonar technician 1st class takes over job as boatswain's mate of the watch, wearing a bosun's pipe over his new uniform.

WAVE RECRUITS OF 1952

USS HORNET GUN CREWS OF 1945

DRESS BLUE UNIFORM OF 1950

Uniform Traditions

For the Navy history buff, here are some notes on the origins and traditions that grew up around the early enlisted uniform.

• The jumper collar: Sailors of old wore their hair braided in a pigtail which was kept stiff with grease or tar. To protect their clothing they wore a piece of cloth tied around their neck. Eventually, this piece of cloth was sewn to the jumper as a collar.

• Piping and stars: Piping was first introduced as decoration on the uniform and later used as a way of indicating enlisted rates. The stars on the jumper collar were purely decorative. Before piping and stars became regulation, jumper collars were often ornamented according to personal taste. Fanciful designs appeared in early days. When white tape and stars were used, the style was admired and copied by others, later becoming regulation. Some believe the three stripes were adopted to commemorate Admiral Lord Nelson's three great sea victories—Copenhagen, the Nile and Trafalgar—but there is no proof to substantiate this belief.

• Neckerchief: Some say that sailors' black neckerchiefs were worn in mourning for Admiral Lord Nelson, but there is nothing to substantiate this story. Actually, it dates back to earlier times. After the collar became attached to the jumper, sailors needed something else to protect the collar from their hair grease and tar. A large handkerchief was used because it was easier to clean than the whole jumper. Some sailors were a large, black handkerchief tied around their necks to catch perspiration. When rules of smartness and appearance were introduced, seamen's hair was cut shorter and the pigtail was no longer possible. The black neckerchief then became a decoration to be worn under the collar and secured with a square knot in front.

• Bell-bottom trousers: No one knows for sure why sailors first wore this style pants, but there are at least three logical reasons: (1) They are easily removed if one goes overboard; (2) they cover one's boots easily to keep rain and spray from running into them; (3) they are easy to roll up above the knee while scrubbing decks. Also, as we all learned in boot camp, they hold a lot of air if the legs are tied off at the ends, and can be used as an emergency flotation device.

• Trouser flap with 13 buttons: Buttoned flaps were probably adopted because they could be opened quickly with one yank to get the pants off if one went overboard. Most take the number of buttons to represent the 13 original colonies, but this has never been proven to be true.

When bell-bottomed trousers were authorized in 1817, they had only seven buttons in front. When the broadfall front was enlarged in 1894, six more buttons were added, making a total of 13. It has been asserted the additions were made for symmetry of design.

• The trouser string tie: An old, purely utilitarian device to allow the beltless pants to be adjusted for fit.

USS Constitution

A Living Tradition

A veteran warship with an illustrious history, USS *Constitution* presents a noteworthy example of a living tradition for spectators reviewing America's heritage during the 1975-1976 Bicentennial celebration.

Although still undergoing a major face-lifting scheduled for completion in 1976, "Old Ironsides" reopened for general visiting on 14 Mar 1975. The ship was closed to on-board visiting in April 1973 when she entered historic Drydock One at Boston Navy Yard to begin a $4.4 million overhaul.

Drydock One, or the John Quincy Adams Drydock, was one of the first two drydocks ever built in the United States. In 1833, USS *Constitution* had been the first ship to enter the drydock for rebuilding. On 24 Apr 1974, she became the last vessel to leave the drydock before Boston Navy Yard finally closed its gates.

During this latest drydock period, *Constitution* had much of her underwater hull planking replaced with white seasoned oak. Following her refloating, she was moored at Pier One in Boston where rehabilitation is being completed in stages.

On 1 May 1974, the second phase of *Constitution's*

Above: Billethead (carving used in place of figurehead) on bow of Constitution in War of 1812. Right: Modern Navy's Sea Chanters, famed members of the Navy band (in uniform of 1820) visit "Old Ironsides."

overhaul began. At this time, Portsmouth (N.H.) Navy Yard assumed responsibility for completion of the work in 1976. The time involved here allows for seasoning of the wood and Bicentennial visiting.

In the course of her meritorious career, "Old Ironsides" has blockaded ports and been blockaded herself but always emerged as the victor. In three wars, this ship provided the basis on which the young American Navy would become "a seapower of which to be wary."

It all began in 1794 when *Constitution* and five other frigates were authorized by the youthful U. S. Congress. America had actually been without a Navy ship for a period of nine years. During this time, the young nation's economy depended upon, and was nurtured by, seaborne commerce with peoples around the world. Those American merchants who traded in the Mediterranean found it harder and harder to conduct business because of attacks by Barbary (North African) pirates who knew there was no U. S. Navy to stop them.

Finally, on 27 Mar 1794, Congress passed a bill to build six frigates to protect American Mediterranean commerce from the Barbary pirates. *Constitution* was one of the ships authorized. With her keel laid down that same year, *Constitution* was designed by Joshua Humphreys and Josiah Fox to be powerful enough to defeat any enemy about the same size, and fast enough to outsail a stronger opponent.

Built by Colonel George Claghorn at Edmond Hartt's Shipyard in Boston, *Constitution's* live oak, red cedar, white oak, pitch pine and locust came from states ranging from Maine to South Carolina and Georgia. The live oak came from the sea islands off Georgia; her masts from Unity, Maine; and the pine for her decks from South Carolina. Some of the canvas came from Rhode Island; New Jersey provided the keel and cannonballs. Sails, gun carriages and the anchors came from Massachusetts. Boston's Paul Revere furnished the spikes and copper sheathing.

"Old Ironsides" is truly a national ship, springing from the strongest and best of our natural resources. Today, however, only about eight per cent of the original ship exists; all the rest has been restored from time to time. Nevertheless, it is the live oak which has virtually kept her together and made restoration possible.

On 21 Oct 1797, *Constitution* slid down the ways, just three years after the laying of her keel. The total cost of $302,718 represented, among other things, an investment in heavier guns than those carried by most frigates. While other ships carried 18-pounders, *Constitution* carried 24-pound guns. In addition, she usually carried 46 to 55 guns, although originally designed to carry only 44. During her battle with HMS *Guerriere*, for example, *Constitution* had thirty 24-pounders on her gun deck, twenty-four 32-pound carronades on her spar deck and a single 18-pounder bow chaser, for a total of 55 guns.

In 1798, French interference with American commerce had reached an alarming degree. While war was not declared, all treaties between the two governments

were abrogated and American cruisers were commissioned to patrol the coast and West Indies and capture French vessels. In July that year, *Constitution*, under Captain Samuel Nicholson, sailed in search of French armed vessels. She remained on active duty throughout the quasi-war with France, and after ratification of the treaty ending combat, was one of 13 frigates authorized to be retained as a permanent unit of the Navy.

For centuries, the four Barbary States of Morocco, Algiers, Tunis and Tripoli had levied tribute on even the most powerful European nations. If payment was refused, the ships were captured and the crews dragged off to slavery.

Since 1785, when Algerian corsairs had seized American merchant ships, holding them for ransom, the United States had suffered outrageous indignities and insults at the hands of Barbary pirates. More than a million dollars in gifts and money had been paid to the Dey of Algiers, in addition to an annual tribute of $22,000. Enraged that the Dey was receiving more tribute and attention, the Bashaw of Tripoli cut down the flagstaff at the American consulate on 10 May 1801, thus declaring war.

Fresh from an overhaul, USS *Constitution* sailed from Boston 14 Aug 1803 as Commodore Edward Preble's flagship in the Mediterranean. Arriving at Gibraltar on 12 Sep 1803, Preble directed his fleet of war vessels with great tactical skill. Misfortune, however, overtook the Americans. The 36-gun frigate USS *Philadelphia* struck a reef while chasing a Tripolitan cruiser and while she lay helplessly aground, enemy gunboats captured her and took the American crew as prisoners. Several days later, the pirates refloated *Philadelphia*, giving them a more formidable vessel than any they had possessed thus far.

Constitution's cabin soon became the meeting place where plans were laid for one of the most daring expeditions in naval history. Using the Tripolitan ketch *Mastico* (renamed *Intrepid*) captured by *Constitution* and *Enterprise*, Lieutenant Stephen Decatur and about 74 officers and enlisted men steered into Tripoli Harbor under cover of night. Fully armed and manned, the boat came alongside *Philadelphia*, moored within range of all the fort's batteries and surrounded by Tripolitan cruisers, galleys and gunboats. One wrong move and the Americans would be lost.

With the exception of several Americans disguised as Maltese sailors, the men remained concealed as the little ketch drifted toward *Philadelphia*. The pilot informed the sentinel that they had lost their anchors and wished to make fast to the cables of *Philadelphia* for the night. The ruse succeeded until one of the pirates peering from *Philadelphia's* rail caught sight of the men.

Before the pirates could gather themselves, the Americans, with cutlasses in hand, swarmed over *Philadelphia* in a hand-to-hand struggle. In less than 15 minutes, the ship was captured and the burning of the frigate started, for there was no chance of escaping with it. The destruction work was quickly done and the Americans regained their boat. Their escape seems a miracle, for the whole harbor was awake and the burning ship illuminated the bay, but not one American was killed.

Equally thrilling and dramatic are other tales of heroism and daring, as when during August and early September 1804 Preble's squadron again and again bombarded the Tripolitan fortifications and gunboats. *Constitution* repeatedly fired upon the batteries and the town while the smaller boats attacked the corsairs. Enemy fire caused some damage to *Constitution's* rigging and sails and her mainmast was struck once. The wounded were treated aboard *Constitution* and the prisoners were also confined there.

On 16 Sep 1804, Commodore Barron superseded Preble in command of the squadron. Preble turned over command of *Constitution* to Captain Stephen Decatur on 28 Oct 1804 and took up quarters ashore. Decatur remained until 10 November, when he and Captain John Rodgers, in *Congress*, exchanged commands. The blockade continued, although *Constitution* was sent to Lisbon to refit and recruit new crewmen. She returned to the blockade the following March as Commodore Rodgers' flagship. In her cabin, on 3 Jun 1805, the peace

Left: Men of Constitution cheer commencement of action in battle with British frigate Guerriere. Right: Constitution battles British ships Levant and Cyane. Facing page: Constitution, in full dress, celebrates Washington's birthday at Malta, in 1837.

treaty was drawn up by which tribute to Tripoli ceased and the American captives were released. The Bey of Tunis had been threatening trouble and Commodore Rodgers anchored there on 31 Jul 1805 and dictated a treaty ending tribute with that country as well.

When the United States again went to war in 1812, *Constitution* was to achieve her greatest renown as she stood invincible against the English Navy. Great Britain's hostile attitude toward our neutral commerce had reached the point that our national honor was at stake. Her persistent impressment of American sailors into her navy was an outrage. More than 6000 American citizens had been forced into the British service.

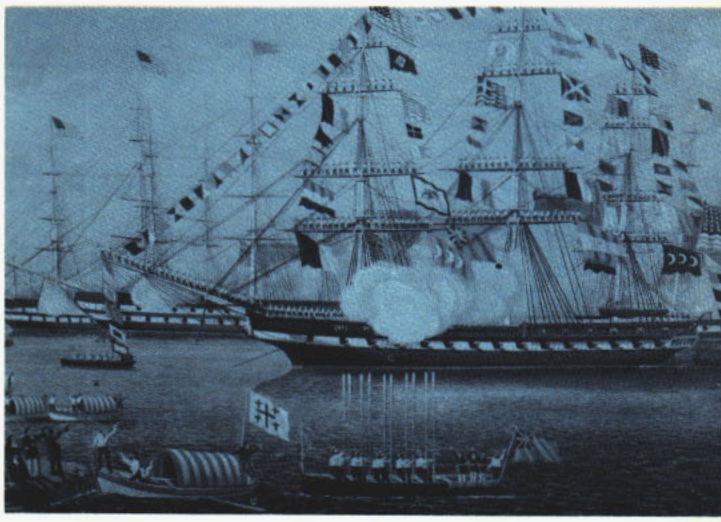
On 18 Jun 1812, war was declared. *Constitution* had recently completed overhaul in the Navy Yard at Washington, D. C., and departed there on 21 June to anchor off Annapolis, Md. Great Britain reigned supreme on the sea. Our small array of 17 war vessels against a thousand and more of the English Navy seemed almost ludicrous. English naval officers had been contemptuous of our ships, referring to them as the American "fir-built frigates," and implying that their designs were clumsy and too heavy for rapid maneuvering.

Constitution, commanded by Captain Isaac Hull, sailed from Cape Henry on 12 Jul 1812 to join Commodore Rodgers' squadron in New York. On the afternoon of 16 July, five sails were sighted off the coast of New Jersey. Captain Hull supposed them to be the American squadron. Early the next morning, he discovered that he had given chase to an English squadron. To make matters worse, there was little or no breeze.

The British hoisted their colors and gave chase. They ran into some breeze and gained at first. Some of the frigates started firing and *Constitution* returned the fire. As the situation was fast becoming desperate, Captain Hull decided to make use of a kedge anchor. Hawsers and large ropes, all that could be found, were fastened together to form a mile-long line to which a kedge anchor was fastened. The anchor was lowered into *Constitution's* cutter, carried out to the length of the line, then dropped. The frigate was then manhandled up to the anchor, which was then quickly taken up and carried out once more. Steady gains were made before the British imitated and they could not cut down on *Constitution's* lead. After two days of maneuvering, during which all hands remained constantly on deck, Captain Hull outdistanced the enemy and the ship headed for Boston.

On 2 August, *Constitution* put to sea, heading for the coast of Nova Scotia. On 11 August she captured and burned the British brig *Lady Warren* in the Gulf of Saint Lawrence. The British merchantman *Adeona* suffered the same fate on 12 August. The American brig *Adeline* was liberated from a prize crew on 16 August and the British burned another small merchant ship to avoid capture.

On 19 August, southeast of the Gulf of St. Lawrence, a sail was sighted. *Constitution* made for her with all

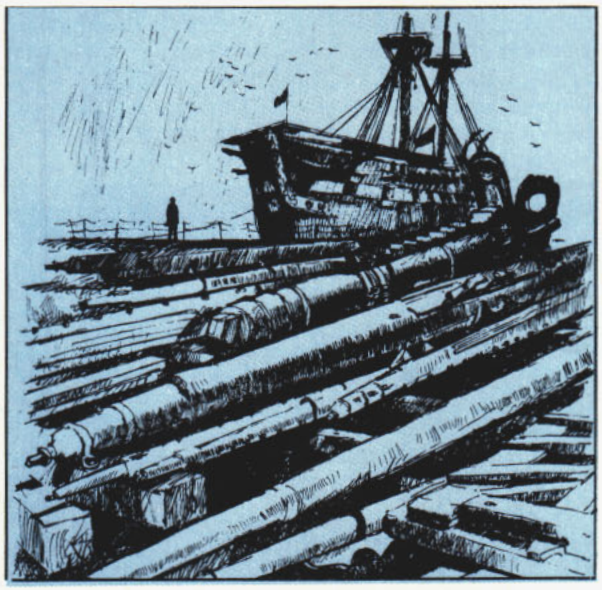


canvas set. It proved to be HMS *Guerriere*, a British 38-gun frigate. This time, however, *Guerriere* carried 49 guns. When *Constitution* was still far astern, the Britisher began firing. Only a few shots were fired in return as *Constitution* bore down upon the enemy. Impatiently the men stood at their quarters, the gunners awaiting the order to fire. Not until the ships were fairly abreast did Captain Hull give the word, "Now, boys, pour it into them!" A whole broadside struck *Guerriere* and then another. In 25 minutes her mizzenmast went over. *Constitution* passed ahead and crossed the enemy's bow and sent a raking broadside crashing down the entire length of the enemy's decks which tore away much of her rigging.

The story is told that shots from *Guerriere* made no impression upon the outside planking of *Constitution*, but fell into the sea, whereupon one of the sailors shouted, "Huzza! Her sides are made of iron!" Thus did *Constitution* gain the renowned title of "Old Ironsides." The flag on the fore-topgallant masthead of *Constitution* had been shot away and an Irish lad, Daniel Hogan, climbed up amid a shower of bullets and lashed it to the mast.

Guerriere's bowsprit fouled in the lee mizzen rigging

of *Constitution* and both sides tried to board, but the sea was rolling too heavily. *Guerriere* fired pointblank into the cabin of *Constitution* and set it on fire, but the flames were quickly extinguished. As the ships separated, *Guerriere's* foremast and mainmast went by the board and she was left a helpless hulk. Captain Dacres struck his flag in surrender and she was in such a crippled condition the Americans had to transfer the prisoners and burn her. The British had 15 men killed and 63 wounded while the Americans had seven killed and seven wounded in this battle which lasted nearly 40 minutes, one of the shortest in history.



It was a dramatic victory for America and for *Constitution*. In slightly more than half an hour, the United States "rose to the rank of a first-class power," and the country was fired with fresh confidence and courage. More importantly, the union of states was greatly strengthened.

Less than five months later, on 29 December, *Constitution*, then commanded by Commodore William Bainbridge, won a similar victory over the 38-gun frigate *Java* about 30 miles off Brazil. Firing started with broadsides from both ships. *Constitution*, with her wheel shot away at the beginning, had to do some clever maneuvering to avoid being raked, but the American gunnery proved superior. In two hours *Java* was completely dismasted and helpless. Captain Lambert, her commanding officer, was mortally wounded and his successor surrendered. *Java*, hopelessly wrecked and with a probable 48 dead and 102 wounded, met the same fate as *Guerriere*. *Constitution* suffered 12 killed and 22 wounded, including a wounded captain.

At the end of February, *Constitution* reached Boston where there was great rejoicing over her victory. The ship then underwent an extensive overhaul. When again ready to fight (in 1814), except for a short cruise under Captain Charles Stewart, "Old Ironsides" was shut in the Boston harbor for eight and a half months by the strenuous British blockade. Taking advantage of bad weather and poor visibility on 18 Dec 1814, Captain Stewart slipped past the enemy. This began the ship's final war cruise.

On 20 Feb 1815, *Constitution* had her last great fight. She spotted two Britishers off the island of Madeira. The frigate *Cyane* and the sloop *Levant* were smaller and lighter, but their combined batteries were heavier than *Constitution's*. Captain Stewart's very skillful maneuvering kept the enemies to leeward, while he repeatedly raked them but avoided being raked once himself. Four hours later, both had surrendered. Homeward bound with her two prizes, "Old Ironsides" made one of her famous escapes. Chased by a British squadron, she narrowly escaped ending her days as an English ship, but her good luck and good seamanship saved her and her prize *Cyane*, although *Levant* was retaken by the British.

Having learned that the war was over, Captain Stewart sailed for home and anchored *Constitution* at New York on 16 May 1815. Her war service had ended and she had played a truly glorious part in proving the worth of seapower as a primary key to national survival.

Constitution was soon ordered to Boston, where she was laid up for nearly six years. She was recommissioned in 1821, whereupon she went on two cruises to the Mediterranean. She returned home to Boston on 3 Jul 1828 and shortly thereafter was decommissioned to undergo survey for cost of repairs. She was reported unseaworthy and condemned to be broken up. A poem

by Oliver Wendell Holmes, Sr., entitled "Old Ironsides," aroused such popular feeling that money was appropriated for rebuilding her in 1833. The reconstruction was completed in June 1834.

From 1835 to 1855, *Constitution* made numerous voyages, the most important being her cruise around the world in 1844-1846, under Captain John Percival, when she covered 52,279 miles in 495 days at sea.

During the Civil War, the sailing frigate gave way to the progress of shipbuilding and the steam-propelled ironclad monitor, the crude beginning of the modern battleship. From 1861 to 1865, "Old Ironsides" was used by the Naval Academy as a training ship. In 1871, she was rebuilt at Philadelphia and in 1878 went on her last trip abroad, carrying goods sent by citizens of the United States to the Universal Exposition at Paris. Her long active service at sea closed 14 Dec 1881.

From Portsmouth, N. H., where she was used as a receiving ship beginning in 1884, *Constitution* was brought to Boston, her birthplace, for the celebration of her centennial in 1897. Again threatened with destruction in 1905 because her timbers were gradually rotting away, public sentiment came to her rescue and she was partially restored. The ravages of time continued, however and, in 1925, plans were made for a complete renovation of the proud old warrior.

At the former Boston Navy Yard, "Old Ironsides" was rebuilt from truck to keel. Funds for the restoration were generously subscribed by the people of America, a large part of which were raised by schoolchildren, and the balance necessary was appropriated by Congress.

After a tour of the important seaports of the United States that started at Boston, 2 Jul 1931, covering more than 22,000 miles, "Old Ironsides" returned to the Boston Navy Yard on 7 May 1934.

Since 1941, USS *Constitution* has been continuously in full commission, the longest unbroken such period in her history, and is currently serving as flagship of Commandant, First Naval District.

For decades, this vessel, as well as Boston Navy Yard, has attracted millions of visitors. In a move to preserve these two sources of pride, patriotism and inspiration for Americans, Congress has approved a proposal to set aside a portion of the former shipyard for exhibiting "Old Ironsides" and the history of the Boston Navy Yard.

Administered by the National Park Service, the 30 acres will serve as a historic setting for not only the record of the oldest commissioned Navy ship, but also development of the Navy and naval technologies. The site will encompass many of the earliest buildings constructed during the period 1800 to 1860, a formative time for both the Navy and the shipyard.

To be included in the National Historic Site is a naval museum with a gift shop. Sponsored by the USS Constitution Museum Foundation, Inc., a nonprofit organization, this museum will preserve many documents, paintings and other artifacts of "Old Ironsides" and her period in history.

USS *Constitution* is not only America's heritage, but also America is 'Old Ironsides' heritage.

Facing page top: A recent sketch by artist Ensign John Roach, USNR, of Constitution during restoration. Bottom: Masts and rigging of Constitution. Above: Photograph taken of painting from which "Old Ironsides" stamped envelope was conceived. Below: Constitution during a yearly turnaround cruise.

People

THE NAVY FAMILY

In the earliest days of the sea service, the important role of the Navy wife as a part of the Navy team went unrecognized or forgotten. Today however, her contributions to the Navy have become not only officially recognized, but her opinions have been sought out—she is a significant part of the sea service "family." Today the Navy wife can become involved in a number of activities which are vital to the morale, effectiveness and well-being of the entire Navy family. In return, she is rewarded not only by the knowledge of doing an important job, but also by many tangible benefits.

One important way the Navy wife gets involved is through membership in a local chapter of the Navy Wives Club of America (NWCA). In addition to companionship and social activities, the local wives clubs aid Navy chaplains and assist in YMCA programs for servicemen, in the national blood donor program and in Navy Relief Society projects. The NWCA sponsors special college and vocational school scholarships for children of enlisted personnel. The ladies are also very experienced in coping with problems of family separation, moving and adapting to a new community. NWCA members are always eager to share their tips and ideas with younger, less knowledgeable Navy wives.

Getting settled into a new duty-station area is often difficult. To ease this hardship the Navy established personal service centers. Navy wives often volunteer their time to give newcomers the information and assistance they need to get settled in their new community by helping them find suitable housing, distributing hospitality kits, assisting until household goods arrive, answering questions and helping in many other ways.

Closely associated with the work of the personal service centers is the Navy's sponsor program. A

Facing page top left: Betsy Ross was not a member of the Navy family but a patriotic friend, according to legend. In this painting she's depicted presenting the new American flag to John Paul Jones. this legend has not been proved or disproved. At left Mrs. Higginson, wife of a Navy admiral, was the first president of the Navy Relief Society. The following photographs represent various scenes typical of a Navy family.

sponsor, which is often a team consisting of the Navyman who is completing his tour of duty and his Navy wife, provides assistance to another Navy family newly assigned to the area by providing special services before the family arrives. This includes sending them area guides, maps, the locations of helpful offices and other important information. Often it is the wives' special knowledge of housing, shopping centers, schools, parks and the like which can be of particular value to the new family. Upon arrival the new family is comforted by the knowledge that they have already a friend in the strange area and personal help until they learn their own way around.

Since inception of the Overseas Family Residence Program (OFRP) in 1973, families of married personnel have been more encouraged to reside overseas to avoid long separations. If settling into a new area in the States is sometimes difficult, it may seem more so overseas. An important part of the program designed to ease the hardships of moving overseas is the Dependents' Assistance Team (DAT). Like the personal services centers and sponsorship programs Stateside, DAT helps the new arrivals adjust, get settled and, hopefully, enjoy their stay in a foreign land. Like the Stateside programs, DAT depends heavily on Navy wives of men already stationed in the country to help out.

Supplementing the work of the DAT is the Intercultural Relations Office (IRO), created to help American military personnel and their dependents understand the mores and customs of the foreign land where they're stationed. Once again, it is the Navy wife who donates her time and knowledge to make the program a success.

Many Navy wives also donate much of their time working with the Navy Relief Society. Sole purpose of the Society is to assist other members of the Navy family when there is an emergency need beyond their personal capability to meet. By volunteering their time at auxilaries and branches of the society, Navy wives help keep operating costs down. This allows the Society to put more money into the hands of needy Navy families and allows the program to work for the greater benefit of all.

Still another way in which Navy wives contribute to the well-being of the whole Navy family is through active participation in the Navy Wifeline Association. The Association, in which all Navy wives are automatically members, has as one of its main purposes serving the Navy family through information and communication of helpful facts and hints about Navy service and benefits. This is accomplished through material such as their quarterly publication "Wifeline—the magazine for Navy dependents" and books such as the *Blue Jacket's Mate*, *Recipes for the Navy Bride*, *Tag-Along to Europe* and others. Without the written contributions and active participation of Navy wives, this valuable assistance to Navy families would be impossible.

In return for her unselfish giving to make the Navy better for us all, the Navy wife receives not only a great deal of self-satisfaction, but also the benefits of being a Navy family member. These are her commissary and exchange privileges, medical benefits, use of recreation facilities, legal assistance, travel and other well known benefits. In today's Navy the wife is a very important part of the team.

People

NAVY WOMEN

The history of women in the Navy dates back officially to 1908 when the Navy Nurse Corps was established.

The story of Navy nurses will be told at length in a forthcoming issue on the "History of the Corps." To summarize briefly the report on nurses:

Back in 1811, a Navy surgeon first recommended that women be employed in hospitals to care for the Navy's sick and wounded. The idea was not acted upon at that time, but in the Civil War women nurses (nuns of a Roman Catholic religious order), although not part of the Navy, came aboard the hospital ship USS *Red Rover* to serve in the Medical Department. In the war of 1898, the first trained nurses in the Navy, though not an official unit, were employed at the Norfolk Naval Hospital to care for the injured. A decade later (in 1908), the Nurse Corps was officially born.

It was in World War I that woman's role in the Navy came into its own. In addition to the Navy nurses some 12,000 women served on active duty as "yeomanettes."

As previously reported in ALL HANDS, Josephus Daniels, then Secretary of the Navy, told the story of how this came about. There was a particular need for yeomen and personnel in related jobs to handle the burgeoning demand from headquarters and naval shore stations as the nation readied itself for World War I. "Is there any law that says a yeoman must be a man?" Daniels asked his legal advisors. The answer was that there was not, but that only men had heretofore been enlisted.

"Then enroll women in the Naval Reserve as yeomen," the secretary said. In such jobs, he added, they would offer the best "assistance that the country can provide."

Establishment of Yeoman (F), better known as the Yeomanette, was accomplished under provisions of an Act of 29 Aug 1916, the Act which set up the Naval Reserve Force. The Navy Department sent the following letter to all commandants of naval districts on the subject of enrollment of women in the Naval Coast Defense Reserve. "After a careful reading of . . . the Act . . . nothing can be found which would prohibit the enrollment in the Naval Reserve Force and in the class mentioned of women. On the contrary, it is believed that their enrollment was contemplated."

Immediately after the U. S. entered World War I, women were taken in on a large scale "in order to release enlisted men for active service at sea." As a result, a total of 11,275 Yeomen (F) were in service by the time the armistice was signed and most of the immense volume of clerical work at the Navy Department, in addition to many highly important special duties, was being handled by them.

Along with the purely clerical and administrative duties performed by the Yeomen (F), others served as translators, draftsmen, fingerprint experts, camouflage designers and recruiters. Five Yoemen (F), enlisted by the Bureau of Medicine and Surgery, served with Navy hospital units in France. One served in connection with the operations of the Office of Naval Intelligence in Puerto Rico.

Yeomen (F) were stationed in Guam, the Panama Canal Zone and Hawaii, in addition to the United States and France. About 300 "Marinettes," as the feminine enlisted personnel of the Marine Corps were designated, were on duty during the war. Most of them were stationed at Marine Corps Headquarters at the Navy Department, although a number were assigned with Marine Corps recruiting units.

All Yeomen (F) were released from active duty by 31 Jul 1919, and to them Secretary Daniels sent the following message: "It is with deep gratitude for the splendid service rendered by the Yeomen (F) during our national emergency that I convey to them the sincere appreciation of the Navy Department for their patriotic cooperation."

As enlistments had been made for four years, the Yeomen (F) were continued on the rolls of the Navy in inactive status and received the retainer pay of $12

Above: Yeomanette during World War I. Left: Yeomanettes assigned to 13ND in 1917. Right: Yeomanettes pose with Marine counterparts, Marinettes. Man with straw hat is Assistant SecNav Franklin Roosevelt standing next to Secretary of the Navy Josephus Daniels.

a year until the expiration of enlistment, when they were discharged from the naval service.

A large number of women who had been on duty in the Navy Department and at Navy yards and stations were given temporary appointments to similar positions under the Civil Service. There were also provisions for military preference for former Yeomen (F) in Civil Service positions and they were allowed an increase of five per cent on Civil Service ratings for permanent jobs. They were also included in all subsequent benefits affecting World War I veterans.

Unfortunately, it took another war before women were once again allowed to serve in the Navy. Twenty-one years after the Yeomenette era, women were needed to fill an acute shortage of personnel caused by rapid expansion of the Navy for World War II. On 30 Jul 1942, Congress authorized establishment of the Women's Reserve, with an estimated goal of 10,000 enlisted women and 1000 officers.

There were certain Congressional limitations on this new organization though. Women could not serve at sea or outside the continental United States, could not exercise military command over men and could not go beyond lieutenant commander on the promotion ladder. On 4 Aug 1942, Mildred Helen McAfee, president-on-leave of Wellesley College, was sworn in as lieutenant commander, U. S. Naval Reserve, to become Director of Women's Reserve.

A group of specially selected women was commissioned as lieutenants and lieutenants (junior grade) for administrative duty. On 28 Aug 1942, less than a month after enactment of necessary legislation, the U. S. Naval Reserve Midshipman's School, Northampton, Mass., was commissioned for training an advance group of approximately 100 women officers. This group was composed largely of officers for assignment to recruiting duty, procurement of additional women for the naval service and to the staffs of training schools soon to be opened.

This impetus in the training program came in early October, when 900 probationary officers and apprentice seamen arrived at Northampton for official opening of that center.

A boot camp for WAVES was established at Hunter College in New York City—it was promptly dubbed USS *Hunter*. Basic training lasted from six to eight weeks,

and every other week some 1680 Wave seamen had to be housed, fed and uniformed (the housing was provided in 17 apartment buildings near the college taken over by the Navy).

At about the same time, three other schools were commissioned in the Middle West to train enlisted women as yeomen, storekeepers and radiomen. In July 1943, the Navy Japanese Language School in Boulder, Colo., opened to women.

In the ensuing months, Navy women came to work the same hours as Navy men, standing both day and night watches. Their liberty arrangements were the same and they enjoyed the privileges of the U. S. O. and other recreation facilities available to men. They stayed in uniform at all times except in the barracks or when engaged in active sports, and were called upon to meet the same standards of neatness and good behavior as required of all men in uniform.

In short, they were fitted into the Navy as an integral part of the service. They slipped into the same spot in the chain of command as the men they replaced and performed the same duties. This system gave Navy women—or WAVES, as they were popularly called—the same status, responsibilities and restrictions as men.

Use of the word "WAVES" had begun when the reserve classification for women officers was selected as W-V(S), meaning Woman-Volunteer (Specialist). BuPers regulations said these were Women Accepted for Volunteer Emergency Service; the initial letters of that phrase, capitalized, formed "WAVES." But the formal name was Women's Reserve, United States Naval Reserve; the commissions granted to officers at the time read: ". . . I do appoint him ensign in the Naval Reserve of the United States Navy."

The initials WR and the term "Women's Reserve" were official and some women preferred these terms to the equally official, but less formal term of WAVES.

As the Women's Reserve observed its second anniversary on 30 Jul 1944, it could look back upon a brief but glowing record of expansion and achievement. During its two years of existence, its members had freed enough officers and men to crew a fleet of 10 battleships, 10 aircraft carriers, 28 cruisers and 50 destroyers.

With passage of legislation which removed certain previous restrictions on rank, Women's Reserve Director Mildred H. McAfee had been elevated to the rank of captain. (The Women's Reserve Director held this rank as long as she was in that job.) This legislation also made it possible to promote WAVE junior officers by the same system applied to men. In addition, enlisted WAVES were granted opportunities to strike for higher ratings, resulting in several hundred reaching first class petty officer and at least four making chief petty officer. (It was not until 1967, however, that rank restrictions for women were removed and promotion zones for women were established.)

In World War II WAVES were considered directly eligible for 34 different ratings and were peforming nearly every conceivable type of duty at 500 naval shore establishments.

The time was now 1945 and "Well Done!" came the word from Fleet Admiral King, the Navy and the nation as the WAVES marked their third anniversary. In three war years, the "women in blue" had demonstrated their

People

NAVY WOMEN

skills, courage and devotion to victory, all the way from the Atlantic Coast to Pearl Harbor.

On its third anniversary, the Women's Reserve numbered 86,000—8000 officers and 70,000 enlisted on duty at 900 shore activities, plus another 8000 in training or awaiting call to duty.

In a public birthday message to the WAVES, Secretary Forrestal pointed out that "Today, the WAVES have released enough men for duty afloat to man completely a major naval task force." Women in the Navy had released 50,500 men for shipboard or overseas duty; had taken on 27,000 additional jobs; and now made up 18 per cent of all naval personnel on shore duty, performing almost every type of shore job.

Eighty World War II WAVE officers had become the first women officers entitled to serve as members of military air crews in any U. S. military organization. They wore the gold wings of the naval air navigator and would serve in crews flying to such points as Hawaii and the Aleutians. All told, naval aviation used almost a third of all women in the Navy. Many repaired planes, packed parachutes and collected weather information. At least four control towers in the United States were manned entirely by WAVES. Still others were Link trainer instructors, giving lessons to 4000 men each day. The list was endless.

As the Navy had grown, the jobs for women had grown. Mail service for the fleet and extracontinental activities were now handled 80 percent by WAVES. "Radio Washington," nerve center of the wide-flung Navy communication system, was manned 75 per cent by WAVES and at BuPers, 70 per cent of the complement was WAVES.

Other enterprises now largely in feminine hands were those of getting supplies out to the fleet and the advanced bases, paying Navy personnel and accounting for expenditures. In addition, the first WAVE officers had gone overseas, following Congressional passage of necessary legislation in September 1944.

In concluding his tribute to the WAVES on their third anniversary, Secretary of the Navy Forrestal said, "I congratulate the members of the Women's Reserve. You have every right to be proud. Your conduct, discharge of military responsibilities and skillful work are in the highest traditions of the naval service. Keep up the good work."

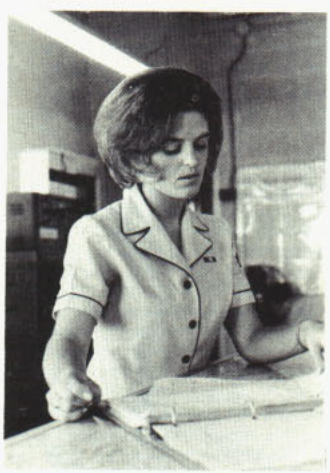
After World War II, the total of women on active duty decreased greatly, and by September 1946, most Navy women had been discharged or released to inactive duty. Captain Mildred H. McAfee was relieved by Captain Jean T. Palmer on 2 Feb 1946 who was then succeeded by Captain Joy Bright Hancock on 26 Jul 1946.

During the war, the WAVES had proved their worth and the Navy was reluctant to give up its programs for women. A number of Navy women were retained in service, but by the fourth anniversary of the program, only 9800 remained on active duty.

On 27 Mar 1946, the Navy asked Congress to authorize the enlistment and appointment of women into the regular Navy and Naval Reserve. More than a year later, WAVE legislation was approved by the Senate, but before final action on the bill had been taken by the House, Congress adjourned.

When Congress reconvened, the Navy again requested legislation for the integration of women into the permanent structure of the regular Navy. The Women's Armed Services Integration Act, Public Law 625, was passed by the Senate and the House and signed by the President. It became law on 12 Jun 1948, marking another step forward.

This was perhaps the most significant milestone to date in the history of the WAVES. Women were now given full partnership on the Navy team; the Women's Reserve was abolished and, for the first time, women became a part of the Regular Navy. The 1948 act provided that the number of enlisted women would not exceed two per cent of the authorized active enlisted



Top left: Jet mechanic (ADJ) suits up with a little help from a crew member. Top right: Another first shows Navy women in the pilot's seat. Bottom right: This Navy woman was among those assigned as line handlers and coxswains of tour boat to USS Arizona Memorial. Bottom left: Paperwork may not be as exciting as some other jobs women are now doing but it is just as important. Right: Women are trained alongside men at Naval Officer Candidate School, Newport, R. I.

strength of the regular Navy, and that the number of commissioned and warrant WAVES would not exceed 10 per cent of the authorized number of enlisted women.

The Navy's first move in implementing the new legislation got underway the day after the President signed the bill. Word came out of Washington that, effective immediately, Reserve women could enlist in the regular Navy. On 7 Jul 1948, the first enlisted women were sworn in.

In May 1949, the Navy announced that it intended to assign WAVES to billets overseas. The modern WAVES, however, were no strangers to overseas duty, since enlisted women had been serving as flight orderlies on board military transport planes which flew to Germany, Bermuda and the Caribbean area from the East Coast, and to Hawaii and Alaska from the West.

At the same time the Regular Navy opened to women, the Reserves established a program for WAVES. The new laws abolished the Women's Reserve and authorized the transfer of all members to appropriate components of the permanent Naval Reserve.

The eighth year of women in the Navy brought wider areas of assignment. Enlisted WAVES were assigned to overseas billets in London, officers were assigned to duty in Guam, Egypt, Alaska and Germany and on 10 Feb 1950, the first WAVES to pull duty in Hawaii since 1946 departed the United States for Pearl Harbor.

Additionally, the tradition that "women don't serve at sea" was broken when WAVE medical officers were ordered to duty aboard hospital ships.

During their 11th year, a program was established giving outstanding enlisted women the opportunity to receive commissions in the regular Navy. Also, on 1 Jun 1953, Captain Louise K. Wilde relieved Captain Hancock as director.

By the end of the 11th year, enlisted WAVES were serving on board hospital ships and transports which moved dependents between the United States and overseas installations. (Title 10, Section 6015, of the U. S. Code provides that women of the Navy will not serve on vessels of the Navy other than hospital ships and transports.)

In 1954, Navy women celebrated their gold hashmark anniversary. Many enlisted women had been on active duty long enough to rate the gold service stripes which signify 12 years of good conduct. Also that year, the first class of women reported to Newport, R. I. under a new Officer Candidate School (OCS) training program which replaced the system of direct commissions. The peacetime strength of the WAVES was fixed at 500 officer and 5000 enlisted.

Since that time, Navy women have continued achieving milestones which their predecessors surely would have thought impossible. Their progress in the sixties, and even more so in the seventies, has seen them move into more fields and serve in jobs both at home and overseas. In 1972, some 11 decades after the Navy authorized its first rear admiral (David G. Farragut), a woman was selected for that grade, RADM Alene Duerk (NC), USN. In 1973, the first senior line woman naval officer to assume a command billet in a combat zone was serving in Vietnam.

Today, a large percentage of enlisted women are participating in the medical/dental fields, the various aviation career specialties, and the administrative/clerical field. In addition, women are also working in some of the Navy's most technical ratings such as Data Systems Technician (DS) and Electronics Technician (ET). To cite some examples, such ratings as Lithographer, Illustrator Draftsman, Musician, Aviation Antisubmarine Warfare Technician (AX), and Aviation Fire Control Technician (AQ) were added to the list for which women were eligible. Enlisted women now have the opportunity to serve in a wide range of ratings.

In 1974, the Navy commissioned its first woman pilots (in a test program), and a group of women officers and enlisted women were serving in a pilot program as members of the crew in the hospital ship USS *Sanctuary* (AH 17). The CO deemed the pilot program, within its set limits, a success and stated the women aboard *Sanctuary* performed their duties well. With the decommissioning of *Sanctuary* the assignment of women to shipboard duty came to an end and they are restricted as before, from serving on naval vessels other than transports and hospital ships. However, much valuable information has been gained from these test programs.

Elsewhere, women have entered new fields as members of the Navy team. In an interview in December 1974, the Chief of Naval Operations, Admiral James L. Holloway III said, "Both the overall numbers and the percentage of women in the Navy are increasing significantly."

The figures have shown that in the two-year period ending this June, the number of enlisted women has doubled to approximately 17,000 and the number of women in the line and staff is expected to increase 20 per cent by the end of this year.

Said Admiral Holloway, "As you can see, we are continuing to emphasize the importance of women in all facets of Navy life."

People—Of

MANY HERITAGES

The sea does not concern itself with the color of a person's skin, nor his race. Since earliest days, men of many races have sailed and explored the oceans. Historical records indicate that the navigator of Columbus' ship *Nina* on that first voyage to the New World in 1492 was a Black by the name of Pedro Alonzo Nino. Since that time—probably before as well—Blacks have engaged in voyages and expeditions along with other races the world over. For example, a Black African called Abubakar is said to have dispatched an expedition from western Africa out into the Atlantic to discover new land in the late 1400s.

Searching through the pages of history in the period of the American Revolution uncovers only a few items here and there concerning the makeup of those early crews, and even the extent and accomplishments of hundreds of voyages go unrecorded. Underscoring the dearth of records, logs and diaries concerning the early ventures upon the high seas, is the fact that men were too busy—and in some cases insufficiently schooled for the task of properly recording their accomplishments. The life of the early mariner had an air of immediacy; survival itself was a factor in the daily routine of early captains and their crews.

And when records were kept, more thought was given to account-keeping as it centered on cargoes, ports and charges due and paid, than to listing in any detail the composition of various crews or even the clothes they wore. However, the fragmentary records existing covering the American Revolution indicate that the number of Blacks who served the cause of the colonies, in the Continental and State navies and aboard privateers, numbered about 1500.

During the Revolution, most of the 13 colonies promised freedom, land and money to Blacks who would join their naval militias to take up the slack caused by desertions. They manned boats, worked sails, serviced the guns and even piloted coastal vessels. The overriding factor in their service was the promise that after three years of service they would be set free. Three Blacks who served with distinction were James Forten, Mack Starlin and Caesar Terront.

Forten was a 14-year-old powder boy and veteran of several sea battles when he was captured and made a prisoner of war in the English ship *Amphyon*. Offered liberty and a life of ease in England by the ship's captain, Forten turned down the offer saying, "I am a prisoner for the liberties of my country and I shall never prove traitor to her interests." Sent to the notorious British prison ship *Old Jersey* in New York harbor's Wallabout Bay, he remained a captive for 14 months. Following the war, he eventually became a wealthy sailmaker in Philadelphia.

Captain Mack Starlin was the only black naval captain in Virginia's history. He made night raids on British vessels in Hampton Roads. Starlin—from a slave colony—was reclaimed after the war and ended his days in slavery. Others won their freedom.

Caesar Terront, for example, a pilot aboard a Virginian vessel captured by the brig *Fanny*, was cited for

gallantry in action. His freedom was later purchased by the Virginia Legislature.

With the establishment of the "new" Navy in 1798, there came a contemporary policy of discontinuing the enlistment of Blacks, disrupting a nonracial enlistment policy in effect in earlier years. One, however, a William Brown, managed to enlist aboard *Constellation* where he served as a gunpowder loader. Another, George Diggs, became a quartermaster in the schooner *Experiment*.

In the War of 1812 and the latter years of the 1800s, the Navy had no definite policies of separation and segregation based upon race. Blacks, both slaves and freedmen, served in many ratings and were often commended in ships' records and other historical documents as being "excellent seamen" and "among the best of the Navy's personnel."

During the War of 1812, the nation's second conflict with Great Britain, one in every six sailors in the Navy was Black. When Oliver Hazard Perry won the key battle of Lake Erie, he praised the Black members of his crew saying, ". . . they seemed absolutely insensible to danger."

Perry's crews endured much—including the lack of fresh water aboard ship and other discomforts. But the crews endured the hardships together. White and Black seamen messed together and shared the same quarters, indicative of the absence of prejudice among the enlisted crewmembers. Commodore Isaac Chauncey, discussing the members of his crew, remarked, "I have nearly 50 Negroes aboard this ship, and many of them are among my best men."

Essentially, the Civil War was a struggle against secession and its core was states' rights. It was also a struggle against slavery. As in previous wars, the Blacks served in the Armed Forces. In September 1861, the Navy Department authorized their enlistment, if their services proved useful, "under the same forms of regulations applying to other enlistments." Throughout the long, hard struggle, Blacks rendered valuable and faithful service—runaway and freedman alike. They served where needed, in such jobs as gunners, coal passers, stewards, firemen and loaders. A Black pilot, Robert Smalls, along with 15 slaves, escaped the South in the gunboat *Planter* while her Confederate officers were ashore. *Planter* made her way North and Smalls and his crew served the Union until *Planter* was decommissioned in 1865. Later, Smalls served in Congress as a representative from South Carolina.

Many Blacks served as gunners and in landing parties during that conflict, rendering effective service and were cited for bravery under fire.

Pointing up the role of Blacks in the Civil War, one out of four sailors in the Union Navy was Black. Black casualties numbered about one-fourth of the Navy's total of victims.

By the time of the War with Spain, Blacks regularly served in the crews of Navy ships. For example, when the battleship *Maine* sank as a result of an explosion in Havana harbor, of the 250 crewmembers lost, 22 were Blacks. This was the event which sparked that conflict.

Here is a sample of the heroism demonstrated by Blacks in the Spanish-American War. Fireman 2nd Class Robert Penn was on duty near the boiler room of USS *Iowa* when his ship was ripped by the explosion of a ruptured boiler. To prevent another possible explosion, the hot coals from the boiler had to be removed

Opposite page top: Oliver Hazard Perry praised his crewmembers for the courage they exhibited during key battles on the Great Lakes. Opposite page bottom and left: Black officers are found performing all types of duties in all ranks in today's Navy. Below: London proves an interesting duty station for this chief taking in some of the sights of the city.

MANY HERITAGES

immediately. Penn placed a board across two buckets in order to keep his feet out of the scalding water covering the deck and, at the risk of great personal injury, carried the coals out of the danger area. For this act he was awarded the Medal of Honor.

In the first decade of the 20th century, a Black, Matthew A. Henson, accompanied Commander (later admiral) Robert E. Peary on his adventures in the Far North. He was Peary's chief assistant and trusted companion for 23 years. Wherever one went, the other was also. Together they shared the glory of being the first men to reach the North Pole—that was on 6 Apr 1909. The Peary-Henson drama stands as an example of two men working toward achievement of common goals.

It was during World War I that the Navy began to show partiality in the treatment of Navymen from minority groups. Thousands of Black Americans volunteered for naval service during that time, but for the most part, they were assigned noncombatant duties. In fact, they were only allowed to enlist as stewards or mess attendants, or to fill jobs on supply vessels, although there were a few holdovers from earlier days.

During World War II, Blacks in the Navy were still assigned duties primarily as stewards and mess attendants, with a few exceptions. This did not prevent many of them, Dorie Miller for one, from distinguishing themselves at battle stations under fire.

Mess Attendant 1st Class Dorie Miller served aboard the battleship USS *West Virginia* during the Japanese attack on Pearl Harbor. He took over an antiaircraft gun from a dying shipmate and shot down at least two enemy bombers (some sources say four). He was awarded the Navy Cross but lost his life later in the war.

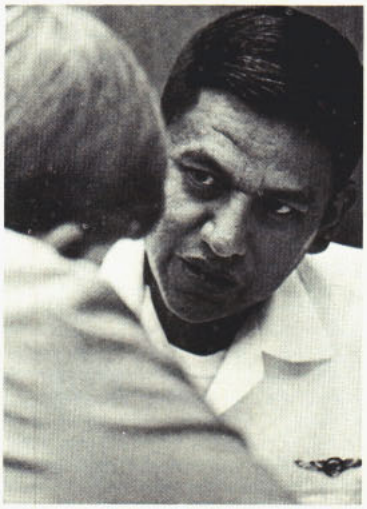
In 1942, the Navy began its efforts to reverse the trend and restore equal opportunity to all Navymen. Volunteers from minority groups were accepted for all ratings. At first these volunteers were grouped into segregated units. In fact, two antisubmarine vessels—the destroyer escort USS *Mason* (DE 529) and the submarine chaser PC 1264—were manned by mostly Negro

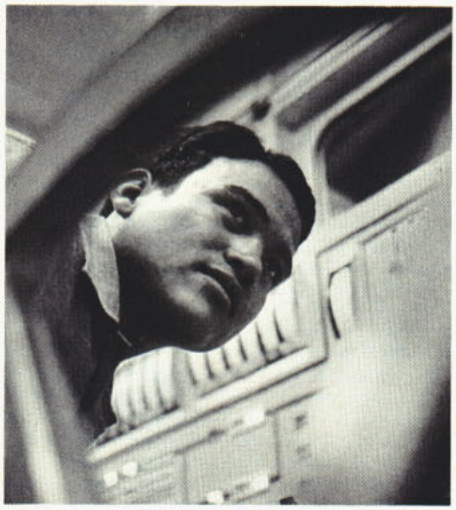
EQUAL OPPORTUNITY. . . A GROWING TRADITION

Tecumseh, an Indian whose name SSBN 628 now bears; Mariano Guadalupe Vallejo, a Mexican-American for whom another nuclear submarine is named; Dorie Miller, a Black who won the Navy Cross and whom the frigate FF 1091 honors with his name; Telesforo Trinidad, a Filipino who earned the Medal of Honor while serving with the U. S. Navy—these are but a few examples of members of minority groups receiving recognition by the Navy for their contributions, either to the Navy or the community. Minority members have served their country, often with sacrifice, from its beginning, but have not always gotten the recognition, treatment and praise they deserve. The Navy has, however, made significant progress in this area.

Today's Navy is working to see that the human dignity of every individual is preserved, and that minority members are assured equal treatment, opportunity, recognition and reward for their part in the team's effort. Some specific actions which have been taken to meet this commitment are:

- The Navy Recruiting Command is working to attract more minority members to the Navy through recruiting programs and has billets for minority officers to serve at recruiting stations.
- The Navy has a Human Goals plan which concerns itself with Navy people as individuals and as members of an effective team. The Human Goals plan is the responsibility of commanding officers, ashore and afloat, and an important aspect of it is in the area of





crews and established distinguished wartime records.

In 1944, the first Negro naval officers in the history of the United States received their commissions. The first group included 12 ensigns and a warrant officer.

There were approximately 165,000 Blacks serving in the Navy by 1944. When the war was over they returned to a society which was still largely segregated.

But in the years since that conflict, within the Navy, the quality of life for minority groups has steadily improved and today opportunities for advancement and job satisfaction are probably greater than ever before.

In 1971, to ensure equal opportunity for all so that the human dignity of every individual will be preserved, the Navy set up a series of goals and objectives, called the Navy Charter. This called for an effort to attain and retain the highest quality officer and enlisted volunteers from the minority community and to create and maintain a program of equal opportunity and treatment for all.

The charter desired to identify and eliminate all bias in an effort to make the Navy a model of equal opportunity. Goal II reads: "To provide real opportunity for all personnel of the Department of the Navy to rise to the highest level of responsibility that their talent and diligence will take them."

The Navy endeavors to provide every Navy man and woman with the training and experience necessary to learn a trade or vocational skill. Black Americans are now serving in every pay grade—from seaman to admiral—and in all ratings and all kinds of jobs.

Very early in this decade the Navy emphasized the fact that there is only one Navy and it is neither white, nor black, nor shade of other color. It is an organization of men and women wearing essentially the same uniform and dedicated to the same goal, defense of this nation and furthering the ideals of freedom upon which the United States was founded. The Navy and National Bicentennial years offer a golden opportunity to weld the people of the land together and rededicate all to the common goals of freedom, justice and equality, making everyone proud to be an American.

It's well to take a backward look at where we've been and understand how it all came about. But the Navy uses the past only as a building block upon which to construct the future—a future which holds hope and opportunity for all.

race relations/equal opportunity.

- A number of NROTC units have been authorized for predominantly black colleges and universities. NROTCs have also been opened to women. New programs were initiated to broaden opportunities for minority groups to earn a commission and increasing numbers of minority personnel have been enrolled in specific officer programs such as OCS, NROTC, the U. S. Navy Academy and NESEP (the Navy Enlisted Scientific Education Program.)
- All minority members are now eligible for entry into the wide range of ratings.
- Officer fitness reports include a provision for comment on the equal opportunity aspects of leadership displayed by the individual being evaluated.
- An Equal Opportunity Division has been established in BuPers to direct efforts of personnel policy toward minority groups. Included in that division is a branch tasked with the coordination and monitoring of equal opportunity programs as they affect women.
- Teams have been established and are available to visit local commands to assist in improving race relations in the command.
- All Navy members in the past two years were called upon to attend an "Understanding Personal Worth and Racial Dignity" (UPWARD) seminar race relations program. As one aspect of the program, Navy members from commands around the world enrolled in an Equal Opportunity Program Specialists (EOPS) Training Course. As a result, trained race relations specialists are available at the local level to provide consultant assistance to commands for taking positive action to eliminate racism and create equal opportunity throughout the Navy.

Minority groups have an important role as members of the Navy family, and play an integral part in its growth as "One Navy, united in purpose, striving for common goals."

The pictures below are representative of the Navy's policy of equal opportunity for all: American Indian, Mexican American, Black American, Filipino American, Guamanian American, Chinese American.

People

NAVAL RESERVE

Left: A citizen-sailor in the rigging of an American sailing ship in the early days of our nation. Men like this established the time-honored tradition of joining, in time of war, to serve the nation, which led ultimately to an organized Naval Reserve. Above: Samuel Chester Reid, privateersman of the War of 1812, has been described as a forebear of the modern Reservist. Below: Members of the crew aboard USS Oregon in 1898. Naval Militia units of various states, which were the predecessors of the Naval Reserve, furnished 4200 men taken into the Navy at the outbreak of the Spanish-American War. Bottom: Yale Unit, Port Washington, 1917, pioneered the modern Naval Air Reserve. Right: the Navy's only air ace of World War I, LT David Ingalls, USNR.

They are sometimes called "part-time sailors" or "weekend warriors"—in time of war, some of them have carried the label "90-day wonders." They are members of the Naval Reserve, who have performed a very significant assignment for the Navy and the nation down through the years.

In World War II, a total of almost three and one-half million Naval Reservists served on active duty, representing over 80 percent of the U. S. Naval personnel force.

Officially, the modern Naval Reserve dates back only some six decades, but the tradition of a Reserve militia to serve the nation goes back to the colonial days, before the nation itself was born—out of the determination of the 13 original united colonies.

When the Revolutionary War started, the Continental Navy was not yet in existence. But the concept of Reserve forces in the form of local militia was already an important factor in defense of the nation and the individual colonies. In fact it was a group of citizen-sailors, armed with guns, axes, swords and pitchforks, which captured a British warship, the armed schooner HMS *Margaretta*, in one of the first naval engagements of the American Revolution (see page 2).

This was a maritime nation with thousands of men who followed the sea. There were also several thousand American-owned ships, many of them already armed for protection against pirates.

Many of these ships were taken over by the various state navies or the Continental Navy, but far the greater number were commissioned by the state or the Continental Congress to operate as privateers—privately owned ships, manned by civilian crews, which were

authorized to cruise against British shipping.

Thus started the tradition of a force of civilians-in-peace-time turned sailors in support of their country during conflict. These were the early "naval reservists." They sailed in some 2000 ships engaged as privateers and their crews have been estimated at a total of 70,000 during the Revolutionary War years.

Typical of the early forbears were privateersmen Samuel Chester Reid and Jonathan Haraden. Haraden was in command of a 16-gun privateer, *General Pickering*. On one occasion, meeting a British privateer of 22 guns, Haraden boldly hailed the ship, identifying his own vessel as an American frigate. His ruse worked—the British surrendered without a shot. Shortly thereafter he met three armed British merchant ships off the coast of New Jersey. Two of them carried 14 guns, and the third carried 12. He captured them all. It is estimated that during his career he and his crew took as prizes British merchantmen carrying a total of 1000 guns.

The cargoes the privateers captured were an important source of arms and supplies for the continental forces, and the effectiveness of the privateers was soon reflected in soaring insurance rates on British shipping. Lloyds of London increased their already high premiums by 25 per cent.

As the Revolutionary War drew to a close, the Continental Navy and state navies dwindled, but the idea of a State Naval Militia, that is, the concept of naval forces in reserve, lingered on. Thomas Jefferson, as President, suggested the establishment of a naval militia in 1805, but Congress refused the necessary appropriations. Consequently, when war again broke out, there was no naval reserve of any sort.

In the War of 1812, many American seafaring men again went to war as civilians in the crews of privateers and, once again, the privateers caused serious problems for Great Britain. (One of the acts generally regarded as having precipitated that war, incidentally, involved sailors—or a shortage of sailors. In June of 1807, the British man-of-war *Leopard* attacked the U. S. naval vessel *Chesapeake* and boarded her, removing four alleged Royal Navy "deserters." Three of the four were later returned to the U. S.)

Again, when the Civil War began, there was no militia or Reserve to fall back on. Admiral David D. Porter, commenting later on the early years of the Civil War, said, "There was no Naval Militia to draw from and Union ships lay unmanned while Confederate ships were sweeping Northern commerce from the Oceans."

The Navy Department did, however, establish something like a Reserve force by an Act of 24 July 1861, which authorized the hiring of ships and crews for the "temporary increase of the Navy." The act provided for the temporary appointment of acting lieutenants, paymasters, assistant surgeons, masters and master's mates to serve during the "insurrection," as officers on "such vessels as may be deemed necessary for the temporary increase of the Navy." A total of about 7500 volunteer officers served during that war, most of them coming from the merchant service.

The Civil War saw the Navy expand from 90 ships to 670, the numbers of officers increased more than five-fold to 6700, and enlisted men grew from a force of 7500 to more than 50,000. Still, when that war ended, the Navy saw little need for a Naval Militia or Naval Reserve in the peacetime years. However, in 1873, a group of former naval officers got together to advance a plan for a Reserve Corps composed of ex-naval officers from the Civil War who could be called to active duty in the event of war. Their proposals were never acted upon, but gradually an interest in a Naval Reserve was developing.

The modern Naval Reserve movement marks its beginning from 1887. The reasons seemed to be that by that time the United States had come to the end of its continental expansion. It had become an industrial power, stimulating the export of manufactured products and import of raw materials. The crusade for a modern steam Navy was bearing fruit and the Merchant Marine was expanding.

A report by the Secretary of the Navy in 1887 pointed up the fact that the Navy, after studying the different systems of organization for coast defense and Naval Reserve in foreign countries, was prepared to formulate a plan for the United States. On 17 Feb 1887, a bill was submitted to Congress "to create a Naval Reserve of auxiliary cruisers, officers and men from the mercantile marine of the United States." It did not become law but the Navy Department in 1887 prepared a plan of organization for a naval militia force.

Finally, on 17 May 1888, the governor of Massachusetts approved an act establishing a naval battalion as part of the state militia. New York, Pennsylvania, and Rhode Island followed in 1889, and before long other seacoast and Great Lakes states also saw the need for such units. By 1897, 16 states had a naval militia in one form or another.

During the summer of 1891, the Navy Department issued an invitation to naval militia of the states to cruise with the White Squadron, the "Squadron of Evolution." Thus began the practice of militia cruises with the Regular Fleet.

At the same time that invitation was extended, there also came the first federal financial aid to the movement, when Congress passed a Naval Appropriation

People

NAVAL RESERVES

Act including $25,000 earmarked for arming and equipping naval militia. The Office of Naval Militia was set up in the Navy Department to administer the program and ships, material and equipment were lent to the units.

By 1894, the movement had reached the point where the Secretary of the Navy was given authority to lend each state having a naval militia one of the Navy's older ships, as well as equipment, to "promote drills and instructions."

The following year came signs that the movement had really arrived—the Naval Militia officers held their first convention.

By the time Theodore Roosevelt took over as Assistant Secretary of the Navy, the United States Naval Militia had over four thousand officers and enlisted men (the Regular Navy was not a great deal larger).

In 1898, the year of the Spanish-American War, the militiamen proved themselves an important body of trained personnel. Governors of the various states granted officers and enlisted men leaves of absence so they could serve with the Regular Navy.

On 23 Mar 1898, the Navy Department had taken steps to make use of the naval militia by organizing a "Mosquito fleet" to safeguard coasts and harbors. Late in March, the Navy Department recommissioned Civil War monitors at League Island Navy Yard. The Naval Militia sent details to man the ships. Eight monitors were commissioned and completely manned by Reservists except for the commanding officer. Later, two more monitors were recommissioned on the same basis.

After war was declared, Congress authorized the Auxiliary Navy Force, and sent militiamen to receiving ships on the Atlantic Coast and Key West, and thence to Cuban waters, where they helped man Regular ships.

Within six hours after it received notification, the First Naval Battalion of New York reported for duty—fully armed and equipped—on the auxiliary cruiser USS *Yankee*. Twenty hours after it was called, the Massachusetts unit arrived on board the auxiliary cruiser USS *Prairie* at New York.

The militia units were able to furnish 4200 of the 10,400 additional men taken into the Navy at the war's outbreak. By the time the Spanish-American War was over, 19 states were maintaining militia organizations, with a total strength of 492 officers and 6300 enlisted men.

The years following the Spanish-American War saw a growing number of active associations of "naval militiamen." There were 17 state associations and one in the District of Columbia in 1906, and more in the

next few years. A Medical Reserve Corps was established in 1912 and a Dental Reserve Corps the following year. There were also many attempts to secure Naval Reserve legislation, but it took time to work out the details. The first major step was not taken until the Naval Militia Act of February 1914, which required all naval militia states to organize their units to conform to a plan prescribed by the Navy Department. Then, on 3 Mar 1915, Congress passed the legislation which first established a Federal Naval Reserve—to be composed of enlisted men who had seen service in the Regular Navy. The response was limited, and on 29 Aug 1916, with World War I already underway in Europe, Congress passed an act establishing a new Naval Reserve Force and federalizing the Naval Militia.

During the First World War, about 30,000 Reserve officers and 300,000 enlisted Reservists served on active duty. Among them were 12,000 women Reservists who worked as "yeomanettes" in Navy and Marine Corps offices and a group of flying enthusiasts from Yale University who had bought their own planes, learned to fly at their own expense and volunteered their services to the Navy before the United States had entered the war. This First Yale Unit pioneered the modern Naval Air Reserve.

The Naval Reserve also produced our Navy's only air ace of World War I—LT David Ingalls; the first naval aviator to be credited with the destruction of a German submarine—LT H. T. Stanley; and the first Navy pilot to shoot down an enemy aircraft—ENS Stephen Potter.

Following the war, the Naval Reserve began to move closer to its present form of organization during the late 1920s and the 1930s.

By 1938, the drilling Naval Reserve numbered about 11,380 officers and enlisted men. About 19,500 others had signed up for the Volunteer Reserve, which was not required to drill, and the Merchant Marine Reserve had about 6000 officers and enlisted members.

The year 1939 saw the beginning of the war in Europe between the Allies and the Axis powers. That same year saw the beginning of Naval Reserve mobilization on a voluntary basis. On 27 May 1941, after the President's declaration of an unlimited national emergency, the entire Naval Reserve was mobilized.

World War II saw the U. S. Navy grow into the largest in history. Four out of five persons in that naval force were Reservists. The achievements of those years of conflict, in which they performed such a vital role, are told in the reports appearing on pages 29, 36 and 43.

In the three decades which have passed since 1945, the Naval Reserve has continued to serve with distinction in times of crisis. During the Korean conflict, over 130,000 Reservists from air and surface units answered the call to arms, and better than one out of four of the Navymen on active duty were Reserves. In one typical month of air operations in Korea, three-fourths of the 8000 combat sorties flown were by Naval Reserve aviators. Again, during the Berlin Crisis of 1961, 40 Naval Reserve ships were called to active duty along with their crews, and 18 Air Reserve squadrons were activated.

During the Vietnam conflict, almost one out of seven Navymen on active duty in 1967 were Naval Reservists. Six Naval Air Reserve squadrons and two Reserve Seabee battalions were mobilized in 1968 to serve for a year on active duty.

Today, in the era of the All-Volunteer Navy, the Naval Reserve plays an important role as a backup for the regular forces in time of emergency, as in the past. The Naval Reserve organization, on a continuing basis, is streamlining its training to increase its capability to augment the Fleet if the need should arise. There are some 485,000 men and women—officer and enlisted—in the Reserve component of the Navy. More than 337 Naval Reserve training centers and facilities are in operation throughout the United States, together with 30 Naval Air Reserve stations, training units and detachments.

Its membership includes more than 103,000 Reservists in a drill pay status, along with several thousand others drilling in a nonpay status. These personnel are available for mobilization with assignment to specific billets within 24 hours.

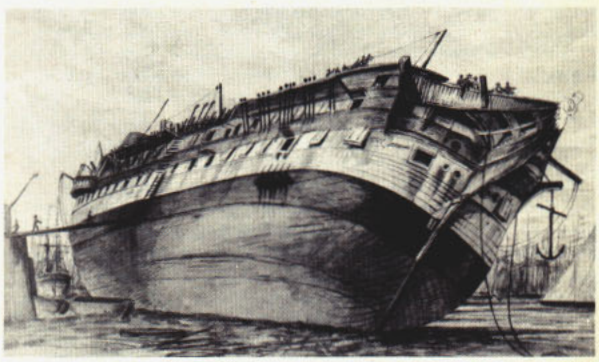
As in the past, the Reserve of today and tomorrow will be Ready.

FLEET RESERVE AND THE RETIRED NAVY FAMILY—*In another century, the man who spent his life in service to his country came ashore with little more than his memories, and nothing to show for his years of service. In today's Navy, the man who moves on into the Fleet Reserve or retirement has benefits that accrue to both himself and his dependents. At the same time Fleet Reservists and retirees are regarded as an important asset as well as members of the Navy family—a vast pool of expertise, knowledge and goodwill for the sea service, standing ready to be called upon in case of emergency. Many of them act as unofficial, but nevertheless valued "recruiters," encouraging their children and young friends to join the sea service to "see for themselves." Look for more coverage on this part of the Navy family in the future.*

Far left: Thousands of Reserves helped man these ships in World War II. Top left: Reservists served on the small PT boats of World War II. These boats were a constant hindrance to the Japanese and earned the nickname "Green Dragon." Left: Naval Air Reservists prepare an A-4 Skyhawk for flight, Det Cubi Point, Philippines.

People

NAVY CIVILIANS



One William Faris, a dentist, diarist and a silversmith as well, came up from Annapolis, Md., one day and ". . . went and took a View of the Frigat." That was in Baltimore in the year 1797. The "Frigat" which Faris went to have a look at was USS *Constellation*, about to become the command of Captain Thomas Truxtun.

She was being built on the banks of the Patapsco River, across from Harness Creek, by David Stodder from plans and molds supplied by Joshua Humphreys of Philadelphia. The ship's figurehead and other carved work—along with that, too, of the frigate *United States*—was the handiwork of another citizen of the City of Brotherly Love, William Rush.

These then are the names of a few of the civilians to work for the Navy since the days of the Revolution. Humphreys himself had worked for the Navy in the War of Independence. Following these men through the years would be countless others, most of them now nameless and faceless, since history generally records only the names of the notable. But no matter, it is a proven fact that civilians through the years have contributed immeasurably to the success of the U. S. Navy in peace and war. It's only normal to think of the Navy in terms of men like John Paul Jones, David Farragut and Admirals George Dewey and Chester Nimitz, but one may well wonder how successful these naval heroes would have been without men who helped create or contributed to the Navy, such as John Adams (he compiled the first Navy Regs and was constantly active in promoting naval interests), Benjamin Stoddert (the first Secretary of the Navy), Robert Fulton (American inventor of a practical steamship), Gideon Welles (Civil War SecNav), and the thousands who followed them.

Before men can go down to the sea in ships to do

battle, those ships have to be constructed, tried and made ready for sea. The men who fight do so only after the scientists, researchers, craftsmen and builders come up with the tools of war with which to meet the enemy.

A navy is in large part the product of the industrial ingenuity of the nation it serves. And it resolves much more than the economic question of tax dollars and putting those dollars to use in the name of public defense. Money without craftsmen, without shipwrights, engineers and researchers, can achieve nothing.

Historically, the United States has relied on its civilian workers—in Government and industry—in times of impending trouble to produce the ships and arms needed to supply its armed forces. Shipyards since the birth of the nation have been able to adjust easily and switch from construction of merchantmen to building warships in a mere matter of weeks; these same shipyards have produced magnificent fighting ships which were the envy of every power down through the years.

Conversely, the civilian world could put to good use these same instruments of battle when peace was declared. For example, as early as 1787, the frigate *Alliance* of Revolutionary War fame was one of the first ships to enter the China trade as a merchantman. And it is apparent that the great strides aviation made in the 1950s were a direct result of the use of air power in World War II, which compressed into a few years the experience it might otherwise have taken a quarter of a century to achieve. Spawned as a product of war, atomic power has made vital inroads in peacetime for the benefit of mankind.

How does the Navy's military-civilian combination work? The Department of the Navy consists of: (1) the Operating Forces of ships, aircraft and Marine combat units—which make up the seagoing component, and (2) the supporting Shore Establishment, whose sole mission is to support the Fleet. The Operating Forces are practically 100 per cent military manned, to carry out the Navy's mission in support of national defense.

In the Shore Establishment, top management (under the Secretary of the Navy) is military. Other positions in the Shore Establishment are military for purposes of sea-shore rotation, for training, to ensure combat readiness, to provide a required military background, and to man positions at remote locations where civilians are not readily available. The rest of the Shore Establishment is made up of the civilian members of the Navy team. In addition, some manpower requirements are met under private contract.

The civilian arm of the Navy team has a low profile, essentially because the operating forces are the most visible. Behind the scenes are the thousands of civilians who provide the continuity in both support and supply. The ship's captain orders the helm hard over and rings up "emergency full" with no time to give thought to the shafts or the props. Back in Washington, a civilian engineer and his staff constantly pore over blueprints and specs, trying to make a new controllable-pitch propeller work 100 per cent of the time so that when "emergency full" is rung up on a ship's bridge, the skipper is going to get exactly what he asks for every time.

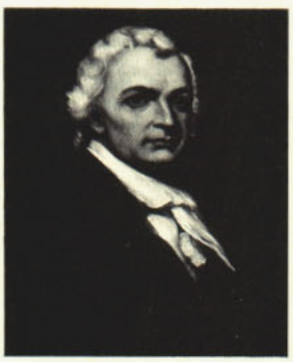
In Annapolis, Md., near the Naval Academy, another team of civilians—mathematicians—constantly work over equations and formulas which will reveal beforehand when or if a hull, gun or missile launcher will experience metal fatigue under certain sets of conditions. Down the hall, another mathematician constantly studies tables and figures in a near-lifetime of effort to reduce shipboard noise levels.

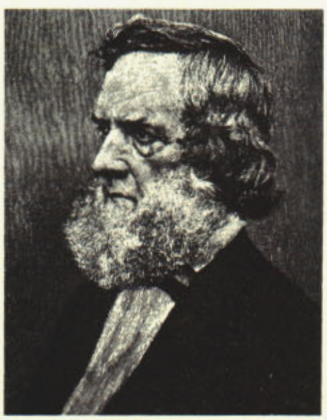
The Navy has come a long way from those first civilian shipwrights who built the six original frigates at the turn of the 19th century. For example, some 60,000 civilian shipyard workers do the majority of our ship repair and overhaul work.

Today's Navy's military-civilian team consists of approximately 900,000 men and women of whom roughly about one-third are civilians. Their job is to support the two-thirds that make up the Operating Forces.

- Approximately one-half of the Navy's civilian workers have served at one time or another on active duty in the armed forces. They know, therefore, what it means to stand watch and to be on call even during off hours.
- The Office of Naval Research, the Naval Ordnance Laboratory, the Naval Research Laboratory, the Naval

Far left top, facing page: Construction of frigate Philadelphia. Far left bottom: An interior of a ship is being completed. Left top: A vessel is overhauled at Brooklyn Navy Yard in 1856. Left bottom: Civilian staff of Experimental Model basin in 1898. The model basin is now the David W. Taylor Naval Ship Research and Development Center., Carderock, Md. This page, top left: Benjamin Stoddert, first Secretary of the Navy. Top right: George Bancroft, SecNav in 1848, established the Naval academy. Bottom left: Gideon Welles, SecNav during Civil War. Bottom right: John P. Holland, inventor of first Navy-commissioned sub.





People

NAVY CIVILIANS

Electronics Laboratory and similarly oriented scientific and technical shore installations are overwhelmingly staffed by civilians as are several major commands. (The Naval Material Command is about 95 per cent civilian.) While their primary mission is to keep the Navy abreast of modern technology, their work frequently is given applications which improve everyday living and has an impact on the whole world community.

● With civilians serving as a large percentage of the work force, our Naval Air Rework Facilities overhaul and update our aircraft; our various types of ordnance and weapons stations do work on guns, ammunition, and other weapons systems components; and our Public Works Centers perform maintenance on real property and associated equipment. A similar situation exists in our supply warehouses, stock control points, computer complexes and other nonindustrial activities.

● Many who chart the seas are civilians. There are civilian education specialists on the Navy team, and even civilians engaged in Navy recruiting. You will also find them in telecommunications, meteorology, oceanography, and medicine.

● A small number of civilian employees even go to sea for short periods in Navy ships. They are assigned to evaluate systems with which the ship is equipped, or to serve as members of indoctrination teams on new equipment or technology. The crew that man the USNS ships of the Military Sealift Command are "civil marine personnel" who receive their paychecks from the Government.

Some members of the civilian work force have jobs that take them into areas well outside the confines of an office or the laboratory or the shipyard.

● Civilians played a leading part in the Sealab experiments and one civilian aquanaut lost his life during preliminary operations of Sealab III.

● Lest it be forgotten—the first man on the moon was a civilian employee of the government, Neil A. Armstrong. Employed by NASA, he received his initial training on active duty as a naval aviator.

A lot of action took place in the Navy's 200 years and there are thousands upon thousands of civilians—again mostly nameless and faceless—who had a hand in shaping this nation's naval traditions. Here is a random listing of some of those interesting civilians to whom the U. S. Navy of today owes a debt of gratitude. A few of them, as you will see, weren't even American and again the fact is stressed that these men *had a hand in shaping* the Navy's course through the years:

● John Adams, John Langdon, and Silas Deane—three members of the Second Continental Congress who made up the Naval Committee which actually launched the infant American Navy. The committee proposed that the colonies equip ". . . a swift sailing vessel to carry ten guns, for intercepting such transports as may be laden with warlike stores for the enemy." Rev. Dr. John Zubly from Georgia is credited with the understatement of that century (and probably the understatement for all time) when he spoke against the proposal, saying, "The people of England will take it we design to break off or separate."

● Pierre Beaumarchais—French merchant, writer and dramatist ("Barber of Seville") who, under the name of "Roderique Hortalez and Company" was the European exporter of "figs" and "dates" and other interesting supplies which were picked up all during the Revolution by American naval ships in the West Indies. In one particular instance—the Americans used most of his "figs" and "dates" (guns, bayonets and cannonballs) to win the Battle of Saratoga.

● Robert Morris—A Philadelphia merchant and a signer of the Declaration of Independence who, even though he long held out for the colonies not to separate from England, committed his personal fortune to the Revolution. Under the Articles of Confederation he was also the Agent of Marine—in effect, the head of what could be termed the Navy Department.

● David Bushnell—The Connecticut inventor who was ahead of his time with his craft which he called the Turtle. Actually it was the world's first attempt at a combat submarine. Bushnell made three "attacks"—one in New York Bay and the others in the Hudson River. They didn't succeed but by then Bushnell had another idea (powder kegs with contact triggers) which he floated out into the Delaware River. The

laws of nature constantly seemed to work against this Yankee schoolteacher; in this case, the temperature fell and ice prevented the expected fireworks from taking place.

• Benjamin Stoddert—An ex-Revolutionary War cavalry captain and a shipping merchant of Georgetown, Md., who became the first Secretary of the Navy under President John Adams. He was the one responsible for building, manning, and deploying the "new" Navy's six original frigates in the late 1790s.

• Charles Goldsborough—First example of "continuity" when it comes to civilian employees of the Navy. He started in a clerical position in the Navy Department, became "chief clerk" on 1 Apr 1802 and carried out not only administrative duties but was both a friend and adviser to members of the Navy "family." It was Goldsborough—for example—who kept Edward Preble from resigning his commission when he thought himself medically unfit for command at sea (that was *before* Preble went over to fight the pirates of Tripoli).

• John Ericsson—Swedish inventor of locomotives, engines, and propeller screws (one was fitted to the ill-fated USS *Princeton*), who built the first armored turret ship, USS *Monitor*. The U. S. thought enough of him to return his body to his native land for burial.

• Thomas Gilmer—Secretary of the Navy who was killed when USS *Princeton's* experimental 12-inch gun blew up in 1845. The accident also killed the Secretary of State, Abel Upshur, and several Congressmen.

• George Bancroft—The man who succeeded Gilmer and pushed for establishment of the U. S. Naval Academy at Annapolis. The Academy was opened on 10 Oct 1845.

• Gideon Welles—Secretary of the Navy during the Civil War, who implemented the massive blockade of the southern ports and helped plan the river gunboat assaults of that war.

• H. L. Hunley—He worked for the Confederacy in the Civil War and designed and built a submarine called *H. L. Hunley*. It wasn't the only submarine of the period—the Federals had one built by a French engineer named DeVilleroi which was called *Alligator*—but Hunley's craft was an eye-opener. She was also dangerous to sail in, sinking three times and taking almost all the members of her three crews to their deaths. Still she managed to "torpedo" and sink the Union steam sloop USS *Housatonic*. The resulting explosive wave swamped *H. L. Hunley* and she went down with her third crew (see page 00).

• James B. Eads—When Naval Constructor Sam Pook designed eight river gunboats for Flag Officer Andrew Foote, then with headquarters at Cairo, Ill., for use on the Mississippi. James B. Eads of St. Louis built those eight "Pook Turtles" which changed the course of the Civil War on the western rivers. Eads promised to build the craft in 2 months; he delivered the first to Foote in 45 days.

• John P. Holland—the Irish-born inventor of the submarine built several experimental versions, one of which, *Holland*, was commissioned by the Navy. He's been called the father of the submarine.

• Simon Lake—Actually a competitor of Holland even though they worked together at one time. Lake ended up founding what was to become the Electric Boat Company—birthplace of many U. S. Navy submarines.

• Glenn Curtiss—the West Coast builder of airplanes who offered to train one naval officer without charge as a way of assisting "in developing the adaptability of the aeroplane to military purposes." LT T. G. Ellyson was ordered to report to the North Island (San Diego) Curtiss Aviation Camp on 23 Dec 1910.

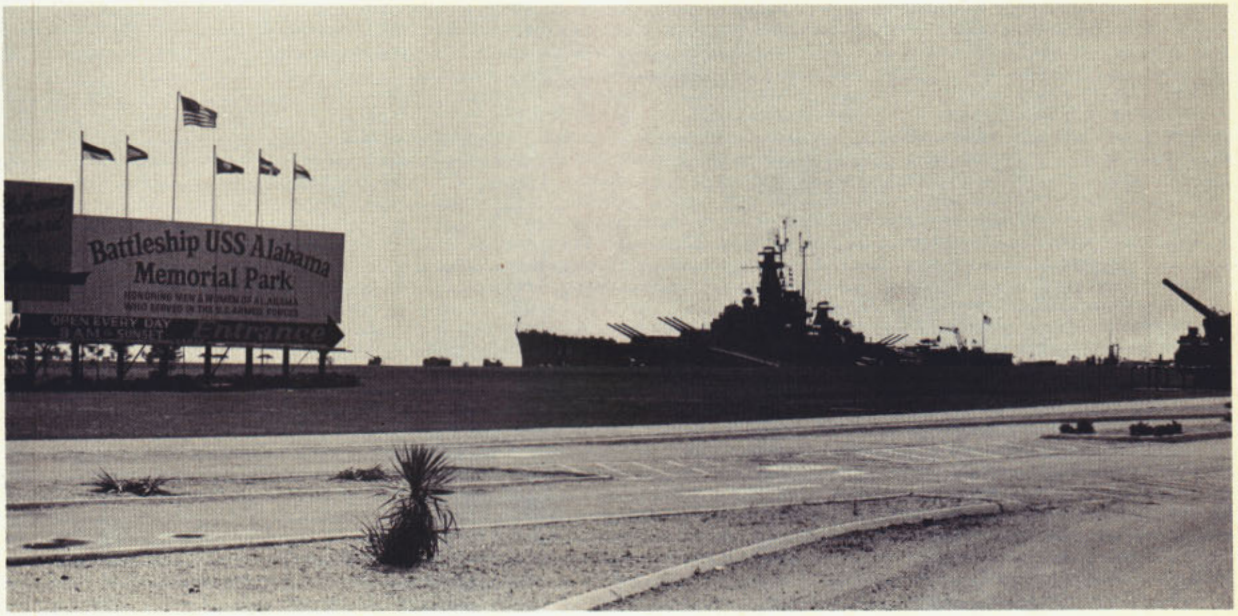
One could well wonder how many dedicated individuals have given a large part of their working lives to the service of a Nation and the U. S. Navy. The list would indeed be long since it covers the entire 200-year span of the naval service.

—J. F. Coleman

Facing page: Civilian worker adds finishing touches to propeller of USS Dixon (AS 37). Left: USS Spruance, under construction at commercial shipyard, points up role of industry in cooperation with the Navy. Below: Naval shipyard employees await arrival of ship in drydock.

Where 200 Years of History Come Alive ★★★★★★

NAVY MUSEUMS



Above: Entrance to Battleship Alabama Memorial Park in Mobile, Ala., where USS Alabama and USS Drum are berthed.

The word museum comes from the Greek word "mouseion" meaning "temple of the Muses," a place of thought and study. Today's version of the word can mean a place where a person can get lost in a time machine, a place where history can come alive. So it is with the many and varied nautical museums which are located in every part of America.

Naval history, of course, plays a large role in the makeup of these museums. The 200 years of history which the Navy has experienced have offered much in the way of documents, weaponry, ships and other significant memorabilia which are now displayed in these museums.

The history of the United States Navy is an exceptionally fascinating one. For the person with an inquiring mind, or for one who simply wants to spend an entertaining hour or two, a naval museum is the place to go. Chances are there's one nearby.

The following is a rundown of some of the nautical museums in operation around the country and what you are likely to see there. It is by no means complete. If there is a museum that you think is of interest to the members of the Navy family, write and tell us about it. We'll try to cover some of the other Navy-oriented museums in a future issue.

• USS *Alabama* (BB 60) is a good example of a battleship which is now a museum. Located in the *Battleship Alabama Memorial Park* in Mobile, the ship stands ready to show tourists what life was like on and 'tween decks of one of World War II's big fighting machines. *Alabama* was built in 1942 and joined the British Home Fleet in the North Atlantic that same year. She continued her service both in the Atlantic and Pacific until the end of the war, winning nine battle stars. She was decommissioned in 1947 and became a state shrine in 1965.

Tied up alongside her is the submarine USS *Drum* (SS 228); she was constructed in Portsmouth, N. H., in 1941. *Drum* saw action in the Pacific during World War II, completing 13 patrols and sinking 15 enemy ships.

• There is a unique collection of relics at the *Naval Academy Museum* in Annapolis, Md. More than 55,000 items are on display in the collection which was started in 1849, four years after the academy opened, making it one of the oldest museums in the nation. It houses the Henry Huddleston Rogers collection of 108 ship and small boat models and collections of historical marine paintings by many artists including Edward Moran, an English-born painter.

In addition to its paintings and ship models, the Naval Academy Museum has collected many pistols, rifles, muskets, swords, cutlasses and other lethal weapons, both ancient and modern. Not all the museum's possessions are in the museum building itself. There are many in Bancroft Hall, the midshipmen's dormitory, with its Memorial Hall and reception area.

• The oldest existing U. S. Navy ship, the sailing frigate *Constellation*, is today tied up in the Chesapeake Bay at the port of Baltimore, Md. *Constellation* was

built in Baltimore under the direction of Major David Stodder and commissioned in 1797. She is considered by many to be the oldest ship in the world continuously afloat. There are many displays of interest aboard, including early Navy relics and memorabilia of Commodore Charles Stewart.

• Farther north from *Constellation*, berthed in the Boston Harbor, is the oldest ship in the Navy which still retains a commission—USS *Constitution*. Popularly known as "Old Ironsides," she received her commission in 1797, also, and saw service during the Tripolitan War and in the War of 1812.

Constitution's best-known battle was her victory over the British vessel *Guerriere*. She has undergone two complete rebuildings, once in 1833 and again in 1927-1931. After that last rebuilding, she visited 91 ports around the U. S. She is currently in overhaul, but is scheduled to be on display for the nation's bicentennial celebration. Her wooden decks, tall masts and extensive rigging give visitors a good idea of what life on board an 18th century warship was like.

• In another part of the state, USS *Massachusetts* (BB 59) is one of several ships tied up at Battleship Cove in Fall River and gives visitors a good idea of life on a 20th century warship. Making her last voyage in 1965, she entered the harbor at Fall River to serve as a memorial to those who gave their lives in the service in World War II. The 35,000-ton ship was completed in 1942 in Quincy, Mass.

Massachusetts' war service included 35 major naval engagements during which she earned 11 battle stars. The area open to visitors covers seven decks and includes the 16-inch turrets, galleys and conning tower, with additional sections opened periodically. The complete tour takes about two hours. The submarine *Lion Fish*, the destroyer *Joseph P. Kennedy, Jr.*, and the bow section of the cruiser *Fall River* complement the battleship.

• Even if you're a thousand miles away from an ocean, you can still see a naval ship. Docked on the Mississippi River waterfront in St. Louis, Mo., is USS *Inaugural* (MSF 242). Launched in October 1944 and commissioned later that year, *Inaugural* served in the western Pacific during 1945 and participated in the Okinawa campaign. After the end of the war, she engaged in minesweeping operations in the waters around Japan and Korea. She was decommissioned in 1946 and assigned to the Atlantic Reserve Fleet. Various areas of the ship are open to the public to give one a look at one of the Navy's smaller war vessels.

• The *South Street Seaport Museum*, located near the waterfront in lower Manhattan, New York City, has one of the most interesting and extensive nautical collections in the nation. There are displays of New York's maritime history—including the many important parts New York Harbor has played in the nation's wars—as well as photos, paintings and ship models.

Eight vessels at Pier 16 near the museum are also on display. The three-masted iron-hulled sailing ship *Wavertree* is the largest; other ships include the schooner *Caviare*, light ship *Ambrose*, steam tug *Mathilda*, and ferry *John Lynch*. The South Street museum is a must for New York visitors interested in maritime history.

• The USS *North Carolina Battleship Memorial* is located on the west bank of the Cape Fear River in Wilmington, N. C. The battleship herself was built in 1941 and served throughout the Pacific during World War II; in 1961 she was brought to Wilmington as a memorial.

Two of her three 16-inch gun turrets can be visited as well as one engine room, small gun mounts, living areas and conning tower. Nearby is the restored *Kingfisher* float plane. The memorial area also features an outdoor "Sound and Light" drama for visitors during the summer.

• The importance of the Great Lakes in the history of the U. S. Navy is exemplified by the presence of USS *Niagara*, now at Erie, Penn. USS *Niagara* was one of six small war vessels built on the shore of Lake Erie to provide a naval force against British squadrons operating on the Great Lakes during the War of 1812. In the Battle of Lake Erie, the ship was Commander Perry's second flagship.

Niagara is a square-rigged warship of 34 guns. She was reconstructed in 1913 and is now the property of the state of Pennsylvania. Adjacent is the prow section of USS *Wolverine*, the first iron warship of the U. S. Navy on the Great Lakes.

• No other city in America is richer in American history than Philadelphia. Although located far inland on the Delaware River, Philadelphia is actually a port city, and many important events in naval history occurred there. It isn't surprising then that Philadelphia has three major museums devoted to nautical history.

• Founded in 1960, the *Philadelphia Maritime Museum* traces man's nautical history from the time of early sailing ships to the present day, with emphasis on the maritime heritage of the Delaware River Valley. There is an outstanding display of ship models, prints, paintings and nautical artifacts. Other displays cover early naval history. The Underwater Museum Gallery covers exploration of the depths. Another exhibit is the one-man research submarine *Star I*.

• *The Army-Navy Museum*, located in the reconstructed Pemberton House, may be found in a section of the Independence National Historic Park in Philadelphia. The section is known as Carpenters' Court which, in the 1775-1800 period of our history, was the equivalent of the Pentagon of our fledgling nation. The Army-Navy Museum offers panoramic and dioramic "living" displays and exhibits dramatizing the birth of our Navy.

• USS *Olympia*, docked in Philadelphia harbor, is the last survivor of the "new Navy" of the 1880s and 1890s. She was launched in 1891 at San Francisco and commissioned in 1895. During the Spanish-American War, *Olympia* was Commodore Dewey's flagship at the battle of Manila Bay. After service in World War I, she was decommissioned.

Several areas of the ship can be visited, including Admiral Dewey's quarters. On exhibit are naval uniforms, medals, flags, ship models, and relics of naval history.

• Although never in the American Navy, HMS *Rose*, a 20-gun British frigate now berthed at *Fort Adams State Park* in Newport, R. I., has an important place in American naval history. This ship is a full-size replica of the one which took part in the blockade of

NAVY MUSEUMS

American ports during the Revolutionary War. HMS *Rose* was launched in 1970 in Nova Scotia and below the main deck is a maritime exhibit with 20 ship models, a collection of nautical items and colonial military exhibits.

● *Texas* is another state which has played an important part in naval history. Texas was the first state to preserve its namesake battleship. The ship rests in a special slip off the *Houston Ship Channel* and is reached by a bridge from land. Completed in 1914, she was the last major fighting ship to use reciprocating engines.

After extensive service during World War II, *Texas* was placed in her permanent berth in 1948. The Admiral Nimitz Room and Cruiser Houston Room in the ship contain exhibits of note. Other displays honor the Texas Navy, which was active when Texas was fighting for its independence from Mexico.

● *The Fleet Admiral Chester W. Nimitz Memorial Museum* is located in Fredericksburg, Texas. It is located in a former hotel built by Admiral Nimitz's grandfather. Admiral Nimitz's personal collection of historic artifacts, documents and other memorabilia are located in the museum.

● Docked near Pelican Island in Galveston, Tex., is USS *Cavalla*, a submarine which made six patrols before the end of World War II. Her torpedoes sank the large Japanese aircraft carrier *Shokaku* for which the ship received the Presidential Unit Citation. In later years she was outfitted as a killer submarine with sophisticated electronic equipment to detect and destroy enemy underwater craft. A submarine warfare display has been set up near the ship.

● A must for anyone interested in naval history and in the Newport News, Va., area is the *Mariners Museum*. Founded in 1930 by Archer M. Huntington, the museum features the most extensive nautical collection in America. International in scope, the exhibits cover many areas of the history of man's conquest of the sea. More than 1000 models show the development of water transportation.

The painting and print collection contains 14,000 items which provide for frequently changing exhibits in the nine galleries. Among other nautical items are displays of ship decorations, navigation instruments, naval weapons and figureheads. Many small craft can be seen outside the main building.

● Not far away, the *Portsmouth Naval Shipyard Museum* portrays the history of the nation's oldest naval shipyard, the Portsmouth area, and the armed services of the region. Ship models, uniforms, arms of all types, from early muskets to the *Polaris* missile and various naval memorabilia are on display. The feature attraction is a model of CSS *Virginia* (originally USS *Merrimack*) the nation's first ironclad. More than 35 models of ships, many of which were built at the naval shipyard, are on display.

● Tied up at the Bremerton, Wash., Naval Shipyard is one of the Navy's prized possessions, USS *Missouri* (BB 63), site of the Japanese surrender at the end of World War II. Though the ship is in reserve, visitors can still visit the surrender deck. *Missouri* served on duty for more than 10 years before going into the Reserve fleet in 1955.

● Manitowoc, Wis., was the site of much of the submarine construction that took place during World War II, and the maritime museum now there reflects it. The submarine collection includes 28 undersea craft built during that war. The museum also features collections on the maritime history of the Great Lakes region. The submarine *Cobia* is open to the public.

● In Florida, the *Naval Aviation Museum* in Pensacola shows the growth and heritage of the Air Navy from its beginnings in 1911 to the era of space flight. Hundreds of displays and exhibits for the museum have been shipped from naval air units throughout the world. Such a one is the F4B-4 fighter used by the Navy from August 1929 to the mid-1930s. Later it was used as a trainer through 1941. For a detailed article on what the newly dedicated Naval Aviation Museum has to offer, see the April 1975 issue of ALL HANDS, page 2.

● On the West Coast at *NTC San Diego, Calif.*, another Navy museum contains many historical objects from the early seafaring days. There is a detailed replica of HMS *Victory*, Admiral Lord Nelson's flagship, which was presented to the Navy several years ago by a film producer. Near *Victory* is the eight-foot model of the cruiser USS *San Diego*. Originally the ship was commissioned *California* in 1907, but the name was changed in 1914.

Other displays feature officer and enlisted uniforms that date back to the early 1900s, a bell that rang on board the old *Yorktown*, an old Spanish cannon and shot, and panoramas of the history of the U. S. Navy. There is also a 30-star flag from the sloop-of-war *Kearsarge* which was engaged in actions against the Confederate Navy during the Civil War.

● The Seabees, too, have their own special museum,

and it couldn't be in a more fitting place than *Port Hueneme, Calif.* There, too, is contained much of the memorabilia of the 100 years of the Navy Civil Engineer Corps. The main building has an extensive set of German battleflags, Japanese swords and Viet Cong weaponry, plus dioramas depicting some of the Seabees' large construction feats.

One of the most prized possessions in the museum is a six-foot mahogany crucifix which was hand-carved by CM1 H. M. Coe. It is displayed in a small room set aside as a chapel dedicated to the memory of Seabees who have lost their lives while serving their country. A number of sculptures by Felix de Weldon, a World War II Seabee and world-famous creator of the Iwo Jima monument, are also on display.

● Another area with a lot of Navy history and consequently an abundance of navy and nautical museums is that around Washington, D. C. The *Navy Memorial Museum*, located at the Washington Navy Yard, is filled with so much history that it could keep a visitor busy for many days. The largest institution of its kind in the country, the museum contains more than a football field full of paintings, flags, displays, dioramas, ship and plane models, documents, and other memorabilia.

The museum itself is located in a historic area. The building which houses the museum once served as a breech mechanism shop in the manufacture of large naval guns. The first Japanese diplomatic mission to the United States landed in Washington near the present site of the museum, and it was near the building's front door that John Surratt landed after Egypt extradited him for complicity in President Lincoln's murder. Charles Lindbergh stepped ashore at the Washington Navy Yard after his return from his famous trans-Atlantic flight to France.

Below: Overhead view of part of Navy Memorial Museum located at Washington Navy Yard.

In Willard Park, just outside the museum's front door, stands a line of rifled 100-pounders taken from the ironclad ram *Tennessee* which was called "the most powerful vessel ever to fly the Confederate flag." Even now, more than a century later, the guns look formidable. It was the torpedoes (mines) from this ship which Admiral David Farragut damned into history when he decided to steam full speed ahead into Mobile Bay, capturing it for the Union.

● Just a few blocks from the White House in Washington is the *Truxtun-Decatur Naval Museum*. This museum was opened in 1950 and is located in the carriage house adjoining the historic home of Stephen Decatur, one of the Navy's early heroes. The exhibits there cover the Merchant Marine, U. S. Marine Corps and Coast Guard in addition to the U. S. Navy. The displays are changed periodically but include many ship models and paintings of historical events.

● The Smithsonian Institution's nautical museum is another good place in which to take in a lot of the nation's naval history. Located in the Museum of History and Technology on Constitution Avenue in Washington, the exhibit has two parts—the Hall of American Merchant Marine and Armed Forces Hall. In the merchant marine display, one can see a collection of more than 175 of the world's finest ship models and can trace the evolution of shipping from the Revolution to modern times.

The Armed Forces Hall displays models of fighting ships as well as collections of naval arms, uniforms and other memorabilia. The prize exhibit is the gunboat *Philadelphia*, built in 1776 and sunk at the Battle of Valcour Island on Lake Champlain. Raised in 1935, it has been restored and is now on display.

● USS *Yorktown* (CVS 10), the "Fighting Lady" of World War II, is slated to become a national shrine and Navy museum at Charleston, S. C. She will be preserved by the Patriot's Point Development Authority of South Carolina, a nonprofit state agency, and will be the first carrier ever donated to such an agency. The 40,000-ton, 872-foot-long ship was towed to Patriot's Point from the inactive ship maintenance and storage facility, Bayonne, N. J., earlier this year.

● *A Bicentennial Navy and Marine Corps* museum is scheduled to open at the Twelfth Naval District Headquarters Building, Treasure Island, San Francisco, Calif., as part of the ComTwelve celebration of the Navy's and the Nation's 200th birthday. The museum will display ship models, photographs, documents, military uniforms and other historical items. Museum doors are scheduled to open to the public on 1 Oct 1975 and remain open through 1976. There is a possibility that it may become permanent.

Nautical museums, then, are not in short supply in this nation which is rich with naval history. It would be altogether fitting that in this year of the Navy's 200th birthday, you should spend some time in the one nearest to you. Who knows what dramatic moment in history will come alive for you there.

—JO2 Jim Stovall

Today's Navy in Today's World

When our Navy was first getting underway, U. S. sailors went to sea in wooden ships driven by the wind. They fought with brass and iron cannon and cutlass, lived under spartan conditions, spent seemingly endless months at sea, and got precious little compensation for it all. Obviously, things have changed. The electronic, supersonic, nuclear Navy of 1975 has, by necessity and design, come a long way in the past 200 years.

Ships have changed dramatically. Wooden hulls, billowing sails and brass and iron cannon have given way to steel and aluminum, computers, nuclear energy and electronic weapons. Compare today's ships with those of the Continental Navy—the recently commissioned USS *Nimitz* (CVAN 68), for example, is a far cry from the frigates of 1775. Four and one-half acres of flight deck cover her 1092-foot length and 252-foot breadth. Her two nuclear reactors can push her 94,000-ton mass through the water at speeds in excess of 30 knots. She will not have to be refueled for 13 years, making her completely independent of fuel logistic support. (Her reactors will provide fuel equivalent to about 11,000,000 barrels of oil during that period.) *Nimitz* is so big she can accommodate 6286 men, including an air wing of 100 planes.

Compare also a modern Ballistic Missile Submarine such as USS *Lafayette* (SSBN 616). At 425 feet long and 33 feet wide she has roughly the same dimensions as a colonial frigate, but any similarity stops there. *Lafayette* is capable of remaining submerged on patrol for weeks at a time (see page 39) thanks to her nuclear power. She can hurl her sixteen, 34-foot-long, 65,000-pound *Poseidon* missiles 2500 nautical miles to hit a target on the dime.

Navy ships of today are also being developed which can skim over the oceans at speeds and with maneu-

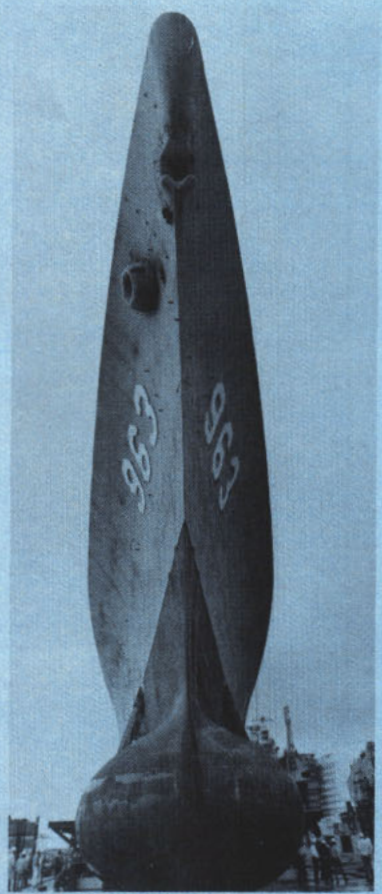
Facing page: F-14A Tomcat. Above: Commissioning of USS Valdez (FF 1096). Below: USS Ulysses S. Grant (SSBN 631) tied alongside tender.

verability our naval forefathers didn't even dream about. These are ships like the patrol combatant missile (hydrofoil) ship USS *Pegasus* (PHM 1) whose gas turbine engine lifts her hull from the water on hydrofoils and drives her to 40-knot speeds. They are ships like the surface effect ships which ride on a cushion of air and, with 100-ton displacement, can hit an incredible speed. (One of them has achieved a world record of greater than 80 knots.) A 2000-ton SES is being developed (its preliminary design has already been completed) and hydrofoil ships are being refined.

Methods of naval warfare are also a far cry from Revolutionary War days. Broadsides, boarding parties and sharpshooters in the fighting tops are gone. Modern Navy ships would seldom even see each other in wartime, carrying the battle to the enemy underwater in submarines, or in the air with the Mach II, an F-14 *Tomcat* now being introduced to the Fleet, or with missiles like the 31-foot-long, greater than 60-mile range *Talos*. The fast new patrol frigates that will be entering the Fleet in the late '70s will be equipped with LAMPS helicopters, *Harpoon* missiles, torpedoes and the rapid-fire 76-mm gun.

Shipboard living conditions have also vastly improved since the days of wooden ships—and even within the past decade. Sailors no longer live out of a seabag and sleep in hammocks slung from the overhead. The modern Navyman's needs for comfort, privacy, self-respect, health, recreation and social interaction are being met.

The 1975 sailor in the new *Spruance*-class destroyer, for example, sleeps in a modern design aluminum berth with a comfortable four-inch-thick foam rubber mattress, privacy curtain, reading light and individual



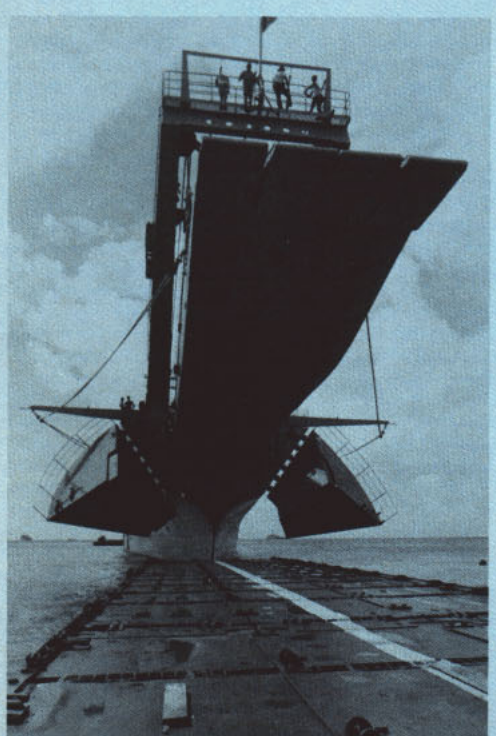
Top: SH-2F Seasprite helicopter serves important role in LAMPS system. Left: A bulbous sonar dome and sleek knife-edge bow of USS Spruance (DD 963) are characteristic of this class of ships. Below: Frigate USS Barbey (FF 1088) underway. Facing page bottom: Tank landing ship USS Spartanburg County (LST 1192) lowers ramp onto causeway.

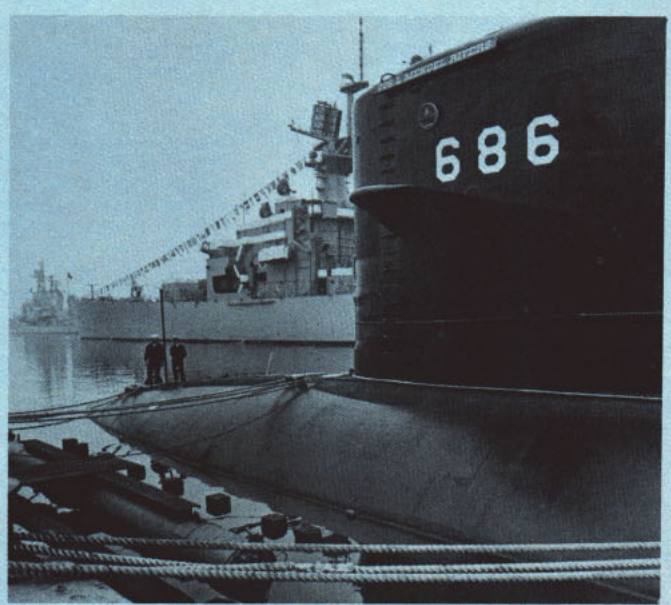
ventilation. Berths are grouped in the compartment for the greatest privacy and comfort, and each man has a locker to keep his personal belongings secure and neat.

The interior of a modern American ship is air-conditioned and living, eating and recreation spaces are brightened with cheerful, coordinated colors, nonglare lighting and modern, easily cleaned, flame-resistant materials. For his off-duty hours, the modern sailor has a crew's lounge furnished with comfortable easy chairs, writing and game tables, commercial and shipboard closed-circuit TV, stereo, carpeting and draperies or paneling. He also has onboard a gym, library, post office, hobby shop, store, snack bar, barbershop, laundry, medical and dental facilities.

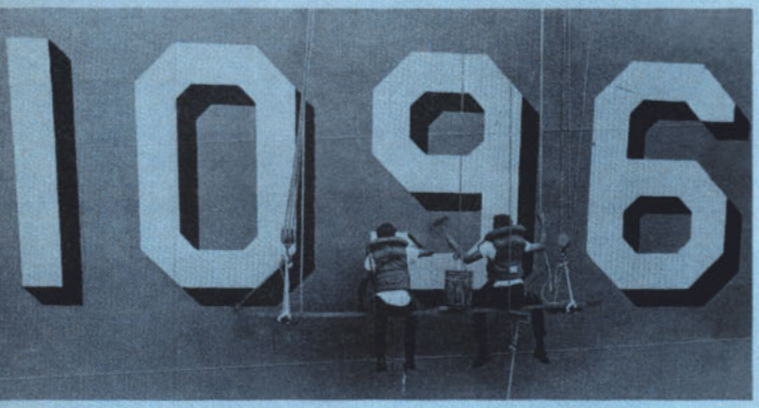
All this is to lift morale and help ease the hardships of life at sea, which in spite of the frills, is still both demanding and challenging. Working in a modern Navy ship no longer means going 100 feet aloft in a hurricane to reef sail, but it does still mean long hours of work and training to develop new skills, drills, watches, and ship's upkeep. However, in the area of ship maintenance, much of the work that was common in the past has been reduced or eliminated. *Spruance* ships have rust-proof aluminum superstructures and new protective paints. Fast disappearing is the endless polishing of bright work. *Spruance* ships have also eliminated many long, tedious watches such as those in the engineroom needed to constantly monitor gauges—computers will now do these jobs.

These are some of the vast improvements in ship design, weapons and shipboard life made since the Navy was launched in 1775, but perhaps the greatest and most important changes have come in the compen-





At right from top to bottom: 100-ton Surface Effect Ship (SES 100B) during trial run. Newly commissioned nuclear-powered attack aircraft carrier USS Nimitz (CVAN 68) underway. Crewmembers wait to hoist union jack during commissioning ceremonies of USS L. Mendel Rivers (SSBN 686). USS South Carolina (CGN 37) is in background.



sations and opportunities available to sailors.

Two hundred years ago a boy enlisted in the Navy for a handful of dollars and a daily ration. Even at the turn of this century a sailor's pay left something to be desired. The pay table in 1902 shows a seaman third class receiving $9 per month, a petty officer second class earning $35 and a chief petty officer entitled to $70 a month—plus allowances. By comparison, today's recruit *starts* at $344.10 per month along with numerous other monetary benefits, which may include basic allowances for quarters, subsistence and uniforms. He may also draw sea pay, special and hazardous duty pay and overseas pay. A chief petty officer with eight years of service draws $702.30 a month in basic pay, plus the allowances to which he is entitled.

But money is not the sailor's only compensation. He also has many training benefits which help him in his naval career. In the old days, a young man went to sea and learned to be a sailor, and little else. If he was lucky he might be chosen for training in gunnery or signaling, or, after being aboard for a while and having shown potential, might be chosen (rarely) as a midshipman. By and large, though, a man went to sea before the mast and stayed there for the rest of his seagoing life.

Today, the Navy offers training in about 70 different ratings and many more subspecialties. Through on-the-job training, formal Navy schools and correspondence courses the enlisted person can learn the skills of such jobs as navigation, computer programming, electronics, mechanics and construction. Few other jobs offer the opportunity (an equal opportunity for all) to get into so many different areas, some in glamorous fields like nuclear power, space technology and oceanography.

Professional education is not the only education available. Personnel are encouraged to pursue off-duty education in local civilian schools as well. To assist them in meeting expenses, they have the Tuition Aid Program, which pays up to 75 per cent of tuition costs; the GI Bill, administered by the Veterans Administration and the Program for Afloat College Education (PACE) on board ship. All this the Navy offers as elements of the broad opportunities for higher education known as the Navy Campus for Achievement.

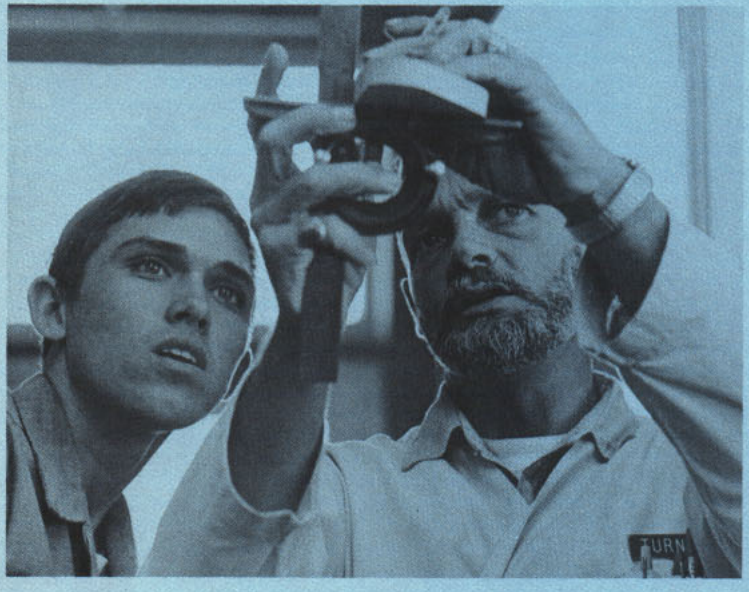
Commissions are more available to enlisted people today through Navy programs such as Officer Candidate School, The Navy Enlisted Scientific Education Program (NESEP), the Navy Enlisted Nursing and Dietetic Programs (NENEP and NEDEP), Naval Academy Preparatory School and the U. S. Naval Academy. Today, about one in six officers on active duty advanced from the enlisted ranks, most likely through one of these programs. That is, over 15 per cent of the officers in the Now Navy are former enlisted personnel.

Promotions within the enlisted ranks are more open as well. In the sailing Navy, getting beyond the deck

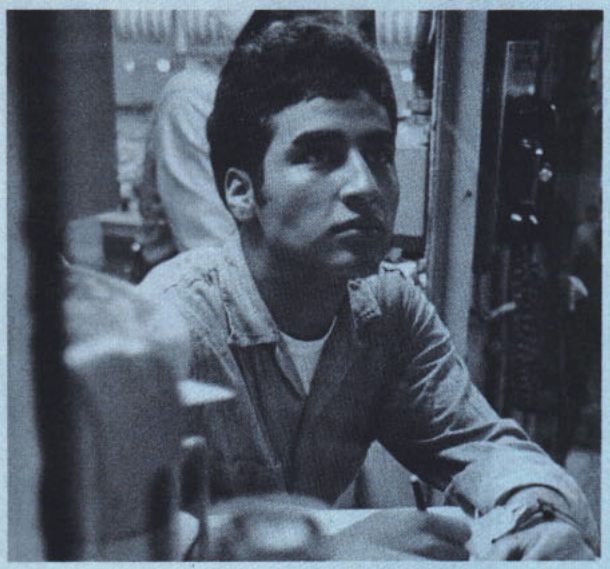
It's people who make today's Navy. Left from top to bottom: Crewmen still paint—this time it's USS Valdez (FF 1096), newly commissioned frigate. On-the-job training at sea provides instruction in the operation of Pelorus. Below: Seabee David A. Murphy at work in Puerto Rico. Facing page top left: Crewman checks gas turbine engine on board destroyer USS Spruance. Top right: Navy recruiter, Master-at-Arms 1st Class Ella Black. Center: A time for reflection. Bottom left: Instructor at pattern-maker-molder school checks a student's project. Bottom right: A sextant reading is taken aboard a Navy ship.

force was a long, tough haul, requiring many years of arduous work. The few men who had some education, or were lucky, might have made petty officer, but that was a long shot and relatively few did it. Today, promotions are both equitable and more rapid, although they take a lot of study and hard work. A seaman now is able to make third class petty officer after just two years' service.

Not only is the individual Navy member provided for today, but his entire family is looked after, something unheard of 200 years ago. Dependents (see page 76) have the advantage along with their sponsor of such benefits as medical care, legal aid, use of Navy recreation facilities, commissaries and exchanges. In addition,



Today's Navy in Today's World



they receive the benefits of reduced insurance premiums through SGLI, Navy credit unions, the Navy Relief Society, tax advantages, scholarships for eligible dependent children and travel, to name a few.

From two small sailing ships in 1775 to the world's most modern Fleet in 1975—that's the progress the United States Navy has made by its bicentennial year. We can only anticipate the advances appearing on the horizon and the promises of the next two decades—to say nothing of the Navy's tri-pronged role, on, over and under the seas, as it celebrates its tricentennial year a century ahead.

—JO1 Tom Jansing

Upper left: Mexican-American Fireman Apprentice Arturo Marmelejo checks log aboard USS El Paso (LKA 117). Left: Crewman assists pilot in cockpit of F-14A Tomcat. Above: Members of the Navy team. For color painting at right see page 1.

ALL HANDS The Magazine of the U. S. Navy, published for the information and interest of all members of the naval service, is issued monthly by the Navy Internal Relations Activity, Office of the Chief of Information, Room 2E329, Pentagon, Washington, D. C. 20350. Issuance of this publication is approved in accordance with Department of the Navy Publications and Printing Regulations, NAVEXOS P-35. Opinions expressed are not necessarily those of the Department of the Navy. Reference to regulations, orders and directives is for information only and does not by publication herein constitute authority for action. All original material may be reprinted.

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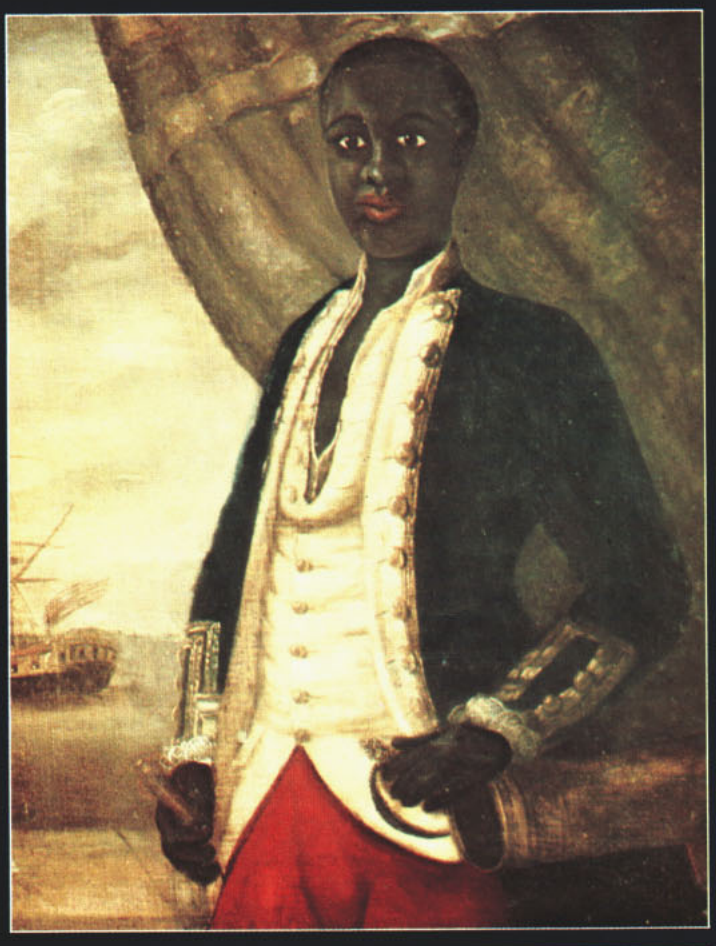

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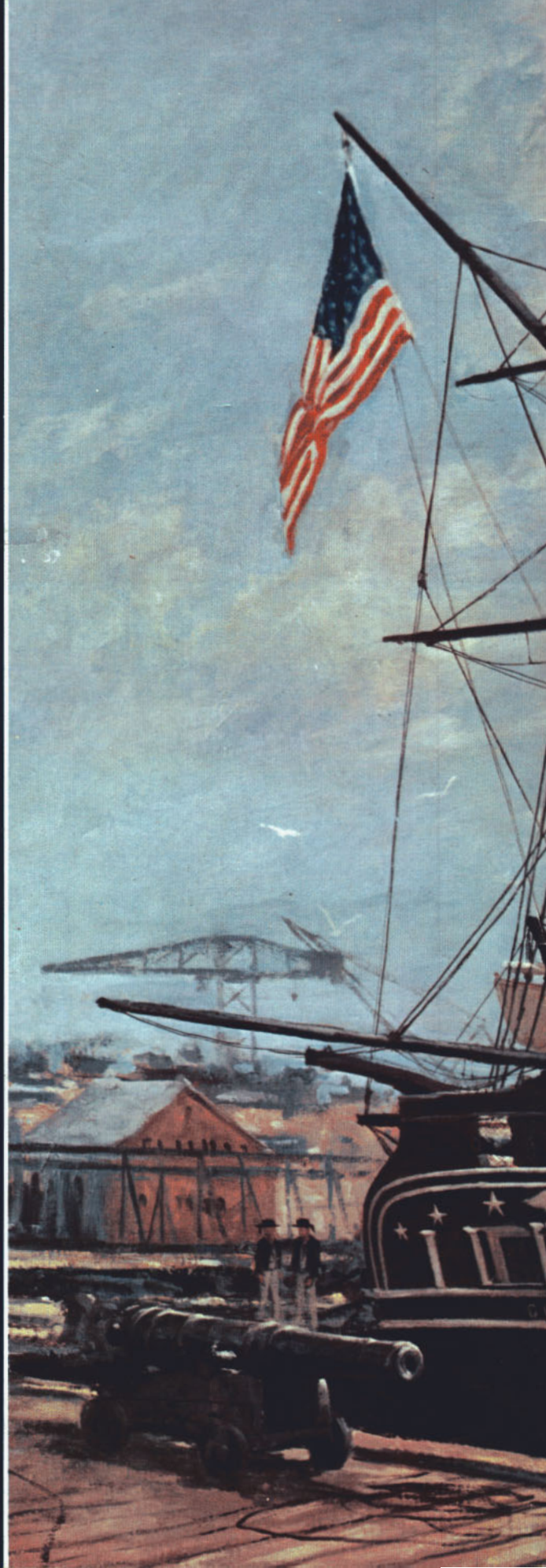

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