

★ ALL HANDS ★

THE BUREAU OF NAVAL PERSONNEL CAREER PUBLICATION

in this issue:
THE SILENT FLEET



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SEPTEMBER 1967





ALL HANDS

THE BUREAU OF NAVAL PERSONNEL CAREER PUBLICATION

SEPTEMBER 1967

Nav-Pers-O

NUMBER 608

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● FRONT COVER: SILENT SERVICE—Artist's sketch portrays Fleet ballistic missile submarine *USS George C. Marshall* (SSBN 654) on patrol beneath the ocean's surface. *USS Marshall* is symbolic of the FBM fleet that stands guard with 16 *Polaris* missiles at the ready. Drawing by Pete Sasgen, one of his last assignments while on the staff of ALL HANDS Magazine.

● AT LEFT: SUPER SERVICE—Sea King helicopter from antisubmarine aircraft carrier *USS Hornet* (CVS 12) delivers mail to crewmembers of surfaced submarine during ASW operations on the high seas.





Crewmembers of USS FORRESTAL close in on burning aircraft. BELOW: Foam and debris cover flight deck as crewmembers search for armed ordnance.



Carriermen wear gas masks for protection.

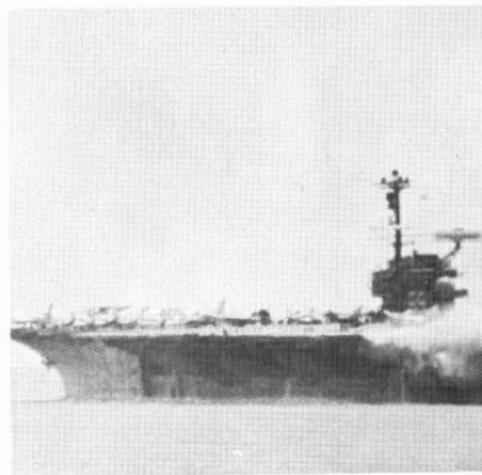
Heroes of

REAR ADMIRAL Harvey P. Lanham, Commander Carrier Division Two, embarked in the aircraft carrier *USS Forrestal* at Subic Bay, Philippines, stated that a preliminary assessment into the cause of *Forrestal's* fire that swept the ship's after section, points to some small type explosion in the pack of aircraft positioned on the ship's flight deck.

"In the hour that followed the start of the fire," stated Admiral Lanham, "I saw more heroic instances than I could count. With great disregard of exploding ordnance, men rushed in to fight the fire."

An A-4 *Skyhawk* fuel tank was punctured and ignited. Cause of the puncture is unknown at this time.

FORRESTAL fire is seen from USS ORISKANY.



ALL HANDS



They work their way through dense smoke.

Forrestal

Fire spread immediately and caused ammunition to explode from the area awaiting to be launched. Within seconds, the first engulfed the entire after section of the ship's flight deck.

The fire, which occurred at approximately 1053 (local time), was brought under control at 2030 Saturday, 29 July, with all flames out by 0020 Sunday.

As ALL HANDS went to press, the latest personnel casualty figures indicate 102 men were killed either at the time of the initial fires and explosions or in heroically fighting fires. Another 30 men have been reported missing, and 20 seriously injured. There was not yet any account released of other injuries as a result of the fire.

Carrier was on station in Gulf of Tonkin.



With larger fires under control DC teams join fight to control small fires on hangar and flight deck.
BELOW: Hoses are trained on burning aircraft.





FLARE FIRE—Firefighting instructors approach multiple ignition fire at DC Training Center in Philadelphia.

TRYING OUT A NEW TECHNIQUE—

FIGHTING FLARE

THE 25 MEN assigned to the fire-fighting school at the Naval Damage Control Training Center in Philadelphia are primarily concerned with teaching people the art of fighting shipboard fires.

The school's students, some of whom attend for nine weeks, include recent boot camp graduates, Reserve and Coast Guard personnel, and civilians from oil companies who are interested in the Navy's firefighting techniques.

In addition, Fleet units often send damage controlman strikers to the school for short courses. Each week since October 1966, the school has trained more than 100 men from units of the Naval Air Force Atlantic.

Although the school primarily teaches well established techniques, occasionally it evaluates new fire-fighting methods, equipment, and chemicals.

The school recently tested Purple K, a dry firefighting chemical, and light water, which defies the normal rules and floats on top of burning fuel to smother the fire.

One such test program recently brought rather surprising results.

FOLLOWING the tragic fire aboard USS *Oriskany* (CVA 34) last October, the school received numerous letters from Fleet units asking how to combat a fire resulting from accidental ignition of parachute flares.

The *Oriskany* fire, you will recall, began when a flare was touched off by accident, then it ignited the other flares stored with it, and soon the fire had spread to other sections of the ship.

Shipboard knowledge about flare fires was limited, to say the least. It seems the only known way to combat such a fire was for some fearless Navyman to grab the flaming flare and fling it overboard.

This method, while admittedly heroic, was either difficult and dangerous, or virtually impossible, because flares are usually stored below decks in a confined space.

So, the firefighting school began tests to find out how to put out a

burning Mark 24 illuminating parachute flare. The answer: use water.

THIS is heresy.

If you've handled Mark 24s you've probably seen a red-lettered warning about dousing a burning magnesium flare with water. When water comes in contact with the magnesium powder inside, there is a violent reaction. Sparks fly in all directions. Highly explosive hydrogen gas is released, and adds to the danger of the fire.

For the uninitiated, the Mark 24 AP (for aircraft parachute) flare is the standard illuminating flare, which is usually dropped by an aircraft to light up ground targets, or to locate downed airmen.

The flare is about 20 inches long, with a diameter of almost five inches. It is actually a cardboard tube which is contained in an aluminum casing. At a predetermined time, the flare ejects from the aluminum casing, and floats earthward on a parachute, emitting illumination at the rate of two million candlepower.

Inside the cardboard tube is a pyrotechnic consisting of magnesium powder, oxidizer and binder in compressed form, which provides the illumination. It burns rapidly. It produces an extremely brilliant light. It is exceedingly flammable.

When the school began its tests, it visualized any number of conceivable shipboard accidents. The tests simulated:

- Accidental ignition of a single flare from within;
- Ignition of a flare by an outside source, such as a small fire in the flare locker;
- Ignition of one flare by another; and
- Multiple flare ignition, in which a pile of six flares was lit off.

THE EQUIPMENT and dress of the school's firefighters were not extraordinary. The hoses were standard Navy issue, although the size varied from one and one-half-inch to two and one-half-inch.

The Navy all-purpose nozzle was attached to the end of a four-foot applicator. The men wore dunga-

The usual way to douse a fire with water removes the heat element from the triangle. The water cools the material to a temperature which will not support a fire.

In the case of the Mark 24 parachute flare, during the burning of the flare pyrotechnic, the "pre-reaction zone" and the "primary reaction zone" combined are very thin. Here's an explanation from the experts:

"Since all chemical reaction products of burning are solids, except nitrogen and its oxides (at usual non-elevated temperatures), the flare flame is relatively small or of medium size. The flame however burns at approximately 4500 degree C. Water entering this flame is initially flashed into steam which has a cooling effect. Continuous application of water breaks through the flame and cools the pyrotechnic's heated surface to

the Mark 24 flare continued burning.

When the tests involved multiple flare fires, the experts found that the same basic method could be used, except that the several flares were first separated with the applicator or other implement (an axe is handy), and then each flare was attacked individually. This sounds like a lengthy process, but when the pile of six flares was lit off, they were all out in 12 seconds.

Best results came when the standard one and one-half-inch hose was used with the Navy all-purpose nozzle and four-foot applicator. With this equipment, the firefighter was able to stand off some distance from the burning flare, yet reach it with no trouble.

Thus, he could see what he was doing, and still be a safe distance from the burning magnesium.



HOT STUFF—Instructor equipped with protective gear picks up burning flare.

FIRES

rees, antifiash gloves, and welder's goggles equipped with number six shade lenses.

The first tests involved single flares, with no other flammable material close at hand.

A firefighter equipped with one and one-half-inch hose, four-foot applicator, and all-purpose nozzle, approached the burning flare with his applicator head in the low velocity water stream position. He placed the applicator head directly into the burning magnesium end of the flare. Within seconds, the flare sputtered out. The same result came when low-velocity fog was used.

Low velocity in both cases, you'll note.

At this point, it is appropriate to explain how the fire was extinguished. As you know, a fire must have three elements for it to be a fire: combustible material (fuel), heat of combustion, and oxygen. These three elements are usually thought of as a fire triangle. If one of the sides, or elements, is removed, the triangle is only an angle, and the fire has fizzled.

below its ignition temperature. Thus the fire can no longer be sustained and goes out."

AFTER EXTENSIVE testing of this method of snuffing out the Mark 24 flare, Lieutenant John J. Donnelly, USN, who supervised the tests, was ready to report the Training Center's findings.

The firefighters found that, when using the foregoing technique in putting out the flares, it is necessary to keep the stream of water or fog at a low velocity. When a high velocity stream was used, it tended to roll the flare away from the firefighter, and

TEST PERSONNEL found that the heat from a flaming flare is not a particularly great problem. The extreme brilliance of the flare, however, is dangerous. The burning Mark 24's two million candles can easily cause temporary blindness. For this reason, the welder's goggles with number six shade lenses were recommended.

Equipped with these goggles and antifiash gloves, the firefighters were repeatedly able to approach an ignited flare and grab the parachute or its shrouds, or even pick up the flare by the non-burning end, and take it to a safe area.

If the proper equipment is not available, it is possible to approach



TOOLS OF THE TRADE—Firefighter snuffs out flare with low velocity stream.

the burning flare without gloves or goggles, using one arm as an eye shield and grasping either the parachute or its shrouds to drag the flare to a safe area. However, in this case the firefighter should not try to get close enough to grasp the non-burning end of the flare itself.

THE TRAINING CENTER concludes it is safe to let an individual flare

burn itself out, if it is taken to an area free from flammable or explosive material. The flare burns for three minutes, and when two flares burned themselves out on $\frac{3}{8}$ -inch steel plating, it was not damaged.

LT Donnelly also reports that these firefighting techniques are equally applicable when the burning flare is below decks or in a confined space. The danger of an explosion is pres-

ent when water is applied to a magnesium fire, since free hydrogen gas is liberated which in concentrated amounts becomes highly explosive; however, the saving grace is the speed with which the firefighter can snuff out the flaming flare. When the fire is put out in a few seconds the hydrogen does not have time to reach an explosive concentration.

The Damage Control Training Center's final conclusions are aimed at adequate preparation beforehand. The recommended precautions include:

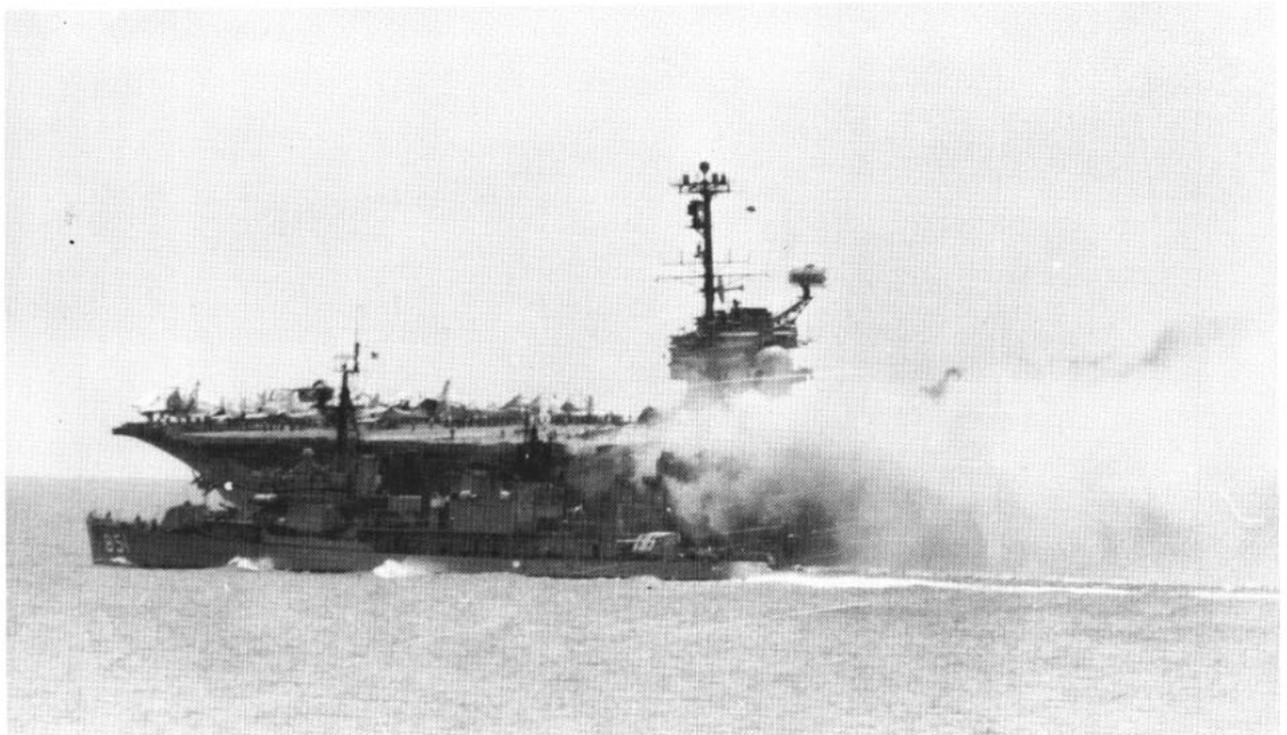
(1) Adequate firefighting equipment, including separation tools, goggles, and gloves should be kept ready when handling Mark 24 flares.

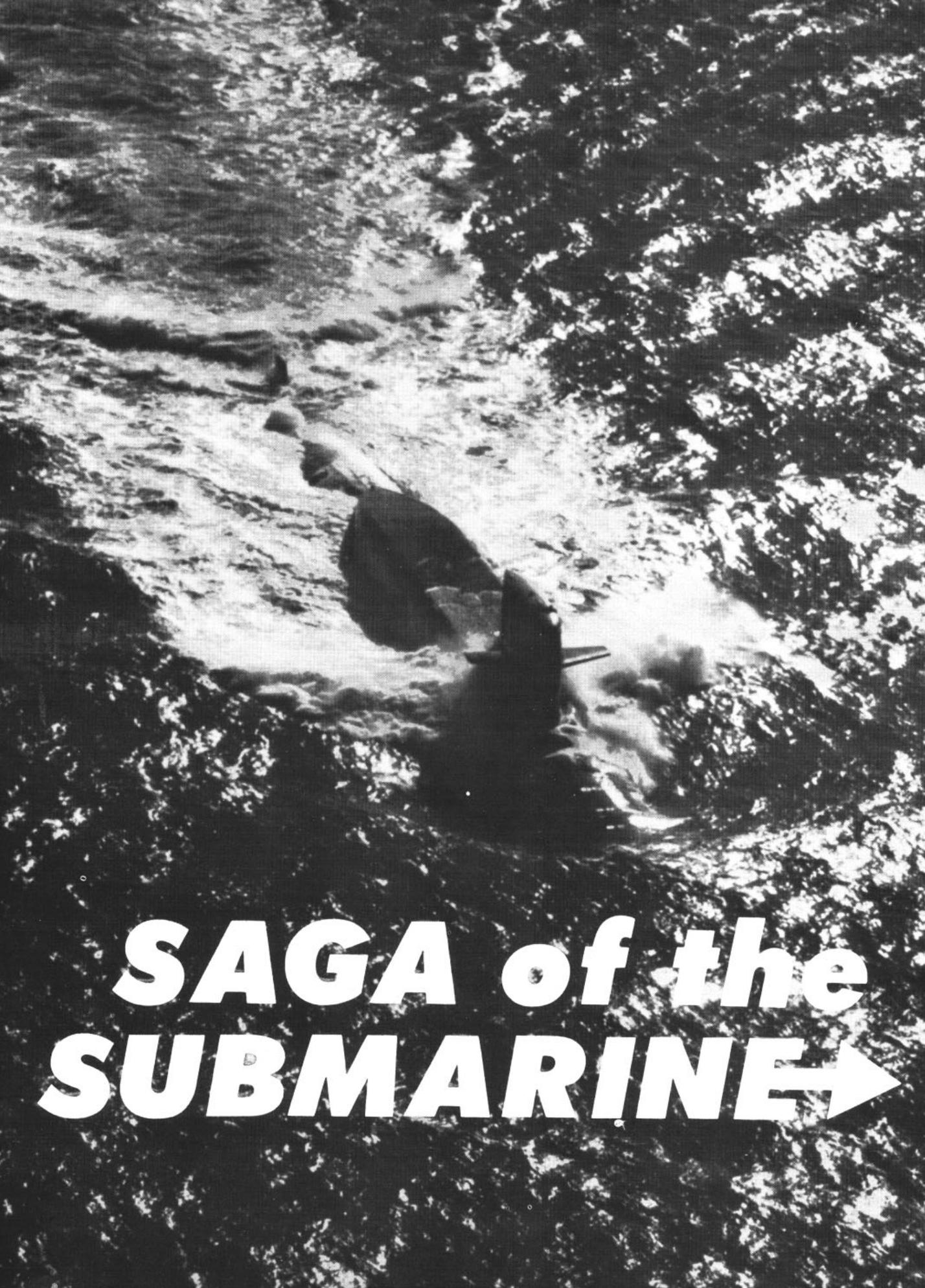
(2) Aircraft carriers should increase the number of one and one-half-inch hoses with nozzles and four-foot applicators available on flight and hangar decks and related spaces.

(3) All firefighting schools should include Mark 24 flare firefighting in their curricula.

(4) Ships should train their own crews in flare firefighting techniques, using remote areas of shore stations. This training should, of course, be supervised by qualified damage control personnel.

TEAMWORK by Navy ships and heroic action of trained crews bring carrier fire under control.

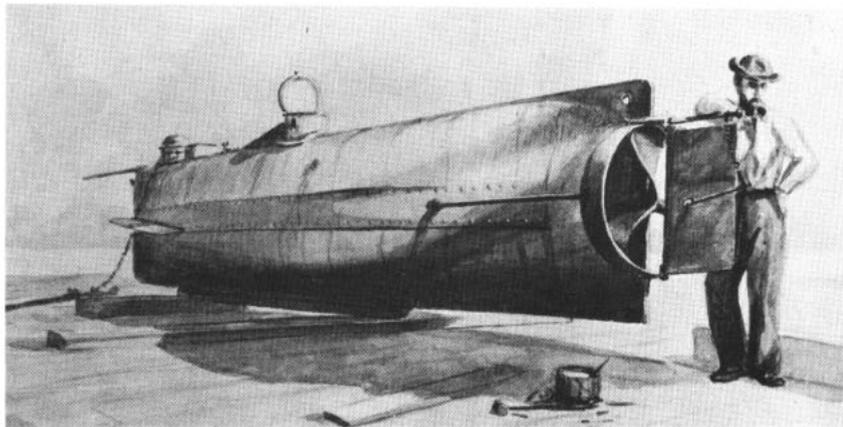




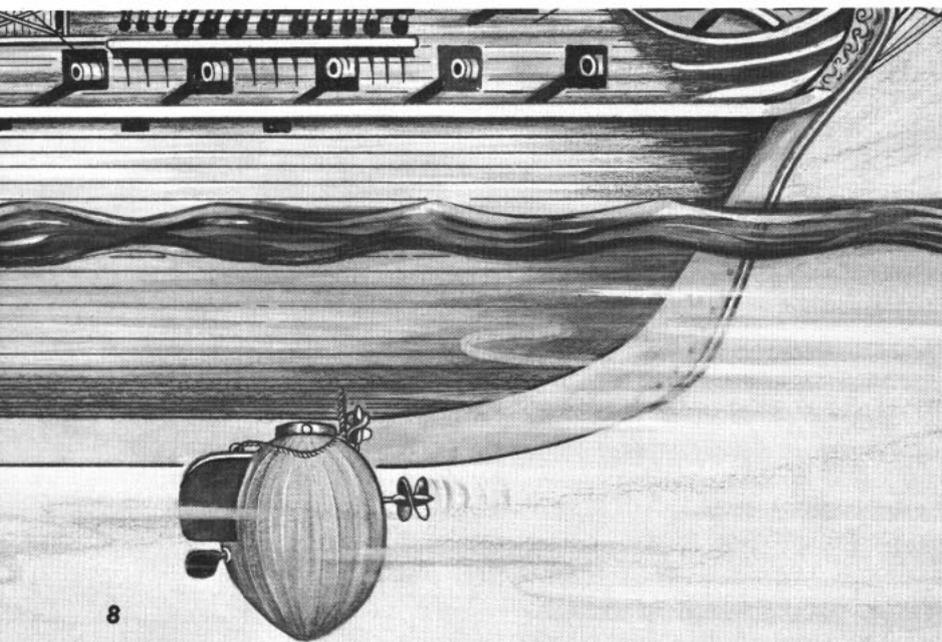
**SAGA of the
SUBMARINE** →



NAVY'S FIRST—USS *Holland* (SS 1), was delivered to the Navy in 1900.



EARLY ATTEMPTS—Artist's conceptions show Confederate Hunley-type sub and (below) Bushnell's *Turtle* trying to bore into ship during the Revolution.



Origin

THE U. S. Navy's Submarine Service this year is observing its 67th anniversary. On a spring morning in the opening days of the 20th century the submarine boat *uss Holland* (SS 1) was accepted by the Navy after demonstration trials off Mt. Vernon on the Potomac River. The trials were held in the Potomac because the shore-patrolling *Holland* could not go to sea.

From its beginning, men of the submarine service have fought a strange kind of war, a war of technology. The submariner's problem has always been how to improve his capacity. And, his capacity is his ship. Early in submarine history his problem often was how to make his ship work at all.

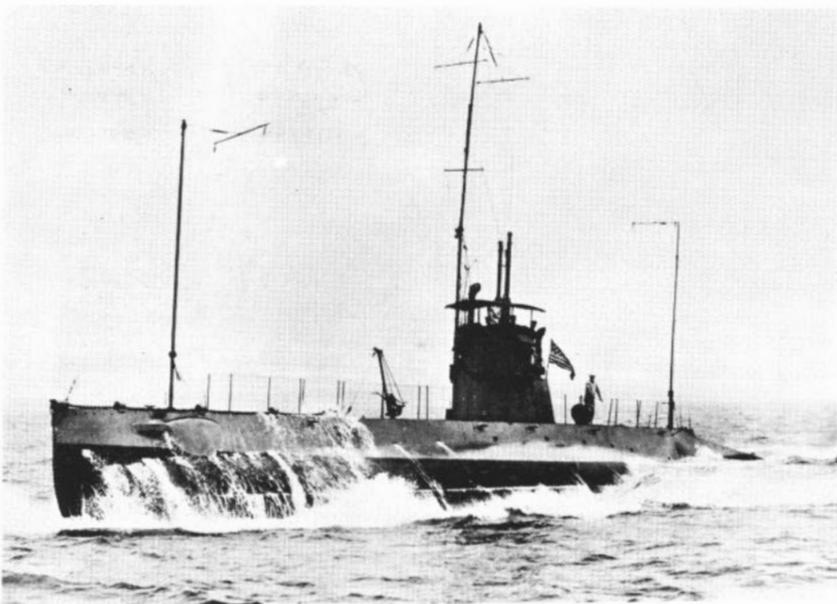
Historical accounts point out that man, bound to dry land by his lungs and the inexorable forces of gravity, has always sought to explore the underseas. The earliest record—from the Nile Valley in Egypt—gives us the first illustration. It is a wall painting that shows duck hunters, bird spears in hand, creeping up to their prey beneath the surface as they breathe through hollow papyrus reeds.

The Athenians are said to have used divers to clear the harbor entrance during the siege of Syracuse. And Alexander the Great, in his operations against Tyre, ordered divers

GOING STRONG—USS *Haddock* (SS 32) shown here in 1914 used diesel and batteries for her power.

→
to destroy any submarine defenses the city might undertake to build. While in none of these records does it actually say he had any kind of submersible vehicle, legend has it that he descended in a device which kept its occupants dry and admitted light.

NOT UNTIL 1578 did any record appear of a craft designed for underwater navigation. William Bourne, a British naval officer, designed a completely enclosed boat which could be submerged and rowed beneath the surface. His



of the Undersea Navy

creation was a wooden framework bound in waterproofed leather. It was to be submerged by using hand vises to contract the sides and lower the volume.

Although Bourne's idea never got beyond the drawing board, a similar apparatus was launched in 1605. But it didn't get much farther, because the designers had neglected to consider the tenacity of underwater mud. The craft was buried at the bottom of a river during its first underwater trial.

What might be called the first "practical" submarine was a rowboat covered with greased leather. It was the idea of Cornelius Van Drebbel, a Dutch doctor living in England, in 1620. Van Drebbel's submarine was powered by oarsmen, the oars protruding through flexible leather seals. Snorkel air tubes were held above the surface by floats, thus permitting a submergence time of several hours.

Van Drebbel successfully maneuvered at depths of 12 to 15 feet below the surface of the Thames River.

Van Drebbel followed his first boat with two others. The later models were larger but they relied upon the same principles. It is reported that after repeated tests, King James I of England rode in one of his later models to demonstrate its safety. But even royal favor failed to arouse the interest of the British Navy. It

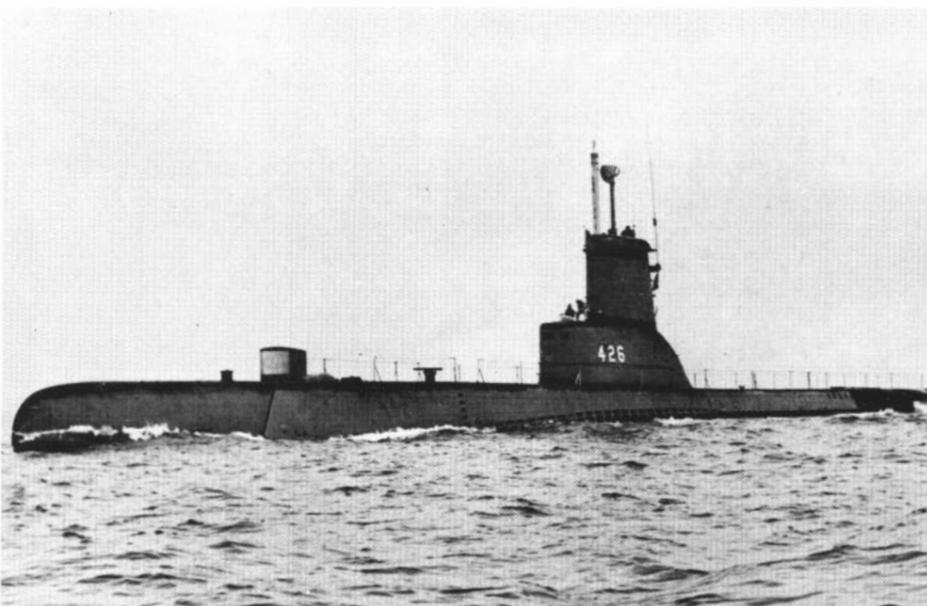
was an age when the possibility of submarine warfare was still far in the future.

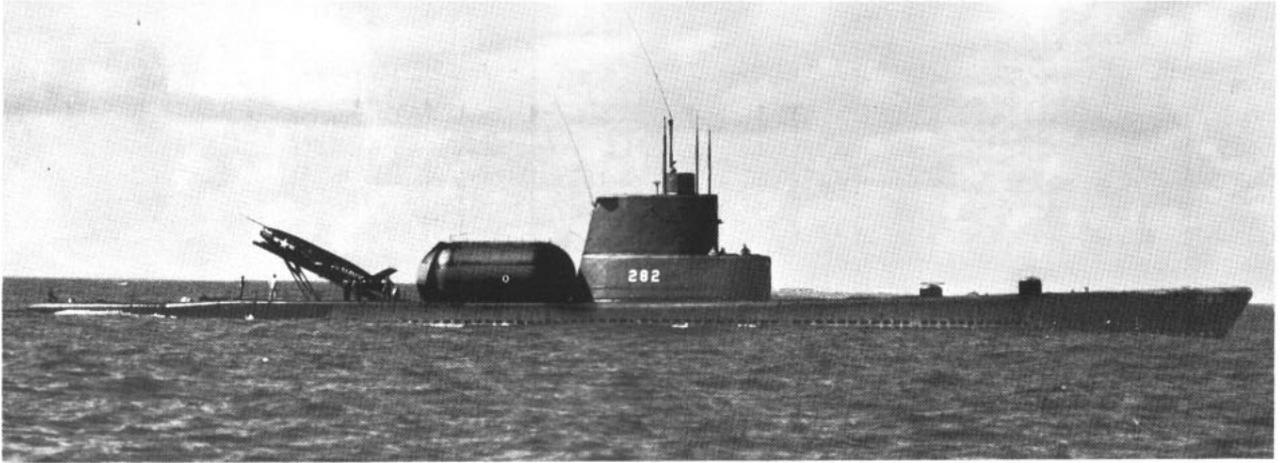
IN 1747 an unidentified inventor introduced a most unusual device for submerging and surfacing. As reported in a British periodical in 1747, his craft was to have had a number of goatskins built into the hull. Each was to be connected to an aperture at the bottom. He planned

to submerge his vessel by filling the skins with water, and to surface it by forcing the water out with a twisting rod. Thus, we have what was probably the first approach to the modern ballast tank.

The first American submarine is as old as the United States itself. David Bushnell, a Yale graduate, designed and built a submarine torpedo boat in 1776. The one-man vessel submerged by admitting water and sur-

LATER MODEL—Post-WW II Guppy sub is illustrated by USS *Tusk* (SS 426).





MISSILE MARRIAGE—USS *Tunny* (SSG 282), one of first missile subs, readies *Regulus I*, surface-to-surface missile.

faced by pumping it out with a hand pump. Powered by a pedal-operated screw and armed with a keg of powder, the egg-shaped *Turtle* gave Revolutionary Americans high hopes for a secret weapon—a weapon which could destroy the British warships anchored in New York Harbor.

The keg of powder was to be attached to an enemy ship's hull and detonated by a time fuse. However, a boring device which was operated from inside the oak-planked *Turtle* failed to penetrate the copper-hulled vessel. Since the keg could not be attached, the project was abandoned, but not before an actual attempt was made to blow up HMS *Eagle* (see **ALL HANDS** special sup-

plement, November 1951, page 59).

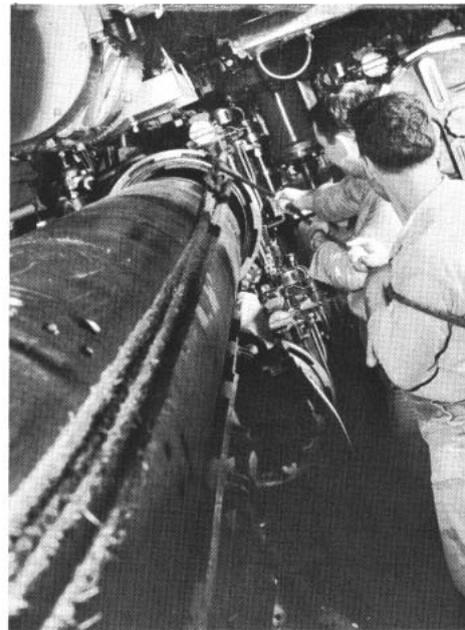
Then came another American, Robert Fulton, who successfully built and operated a submarine (in France) in 1801, before turning his talents to the steamboat. Fulton's cigar-shaped *Nautilus* had a kite-like sail for surface power. It also carried flasks of compressed air which permitted the two-man crew to remain submerged for five hours. Today, nuclear powered submarines carry compressed oxygen to help renew the air supply during long underwater periods.

William Bauer, a German, built a submarine at Kiel in 1850, but met with little success. Bauer's first boat sank in 55 feet of water. He opened

the flood valves to equalize the pressure inside the submarine so the escape hatch could be opened. Bauer had to convince two terrified seamen 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. Bauer's simple technique was rediscovered years later and modern submarines have escape compartments which operate on that principle.

A STEAM BOILER was converted into a submarine for the Confederate States of America by H. L. Hunley during the War between the States. The *David* was propelled at four

BACK THEN—Submen take coffee break on patrol in 1943. *Rt*: Practice torpedo is loaded during 1951 exercise.



knots an hour by a hand-driven screw, but sank repeatedly in trials at New Orleans, Mobile, and Charleston. Since *David* had no periscope, direction was determined by surfacing and peering out the conning hatch. Consequently, a small wave would swamp the boat. Hunley himself was drowned with eight other crewmembers in Charleston Harbor. His submarine was raised and renamed *Hunley*. Armed with a 90-pound charge of powder on a long pole, *Hunley* attacked and sank a new Union ship, the *Housatonic*, in Charleston Harbor, in 1864.

The concussion wave swamped *Hunley* and it sank with *Housatonic*, but it had proven that the submarine could be a valuable weapon in time of war.

From 1864 to 1872 the U. S. Navy tinkered with a hand-cranked submarine named the *Intelligent Whale*. Intelligent or not, the *Whale* failed during its first trials. Inventors realized that until a method of propulsion better than manpower could be developed for underwater use, submarines were not going to be worth the effort.

SURFACE SHIPS were now driven with steam; why not the submarine? But the use of fire to heat the water and steam was impossible owing to the limited air supply of a submerged submarine. Today, the atomic reactor has eliminated this drawback to a heat source and submarines are driven by steam. But the internal combustion engine was the submarine's first source of real power.

This engine offered speed and comparative endurance on the surface, but its deadly carbon monoxide exhaust fumes and high oxygen consumption were obstacles to life beneath the surface. By 1900, the storage battery was in use. An Irish-American, John Holland, was the first to conceive of employing the electric and the internal combustion engine to power a submarine. Holland and another American, Simon Lake, became the first modern submarine designers. They began their experiments in the last decades of the nineteenth century, Holland in the 1870s and Lake in the 1890s.

Holland built nine submarines, one under Navy contract, before the Navy would accept one. The Navy also considered but decided not to accept Lake's *Argonaut*, an advancement on his *Argonaut, Jr.*



REPRESENTATIVE—USS *Flasher* (SS 249) is typical of WW II subs. Below: USS *Stingray* (SS 13), commissioned in 1909, served with Atlantic Torpedo Fleet.

Lake's *Argonaut, Jr.*, had wheels with which to crawl along shallow bottoms and air locks to permit divers to enter and leave the wooden hulk while it was submerged.

In 1900, Holland sold the Navy its first submarine, *uss Holland*. *Holland* had the "amazing speed" of seven knots surfaced, made possible by her 45-horsepower internal combustion engine, and an endurance of several hours submerged when running on rechargeable storage batteries.

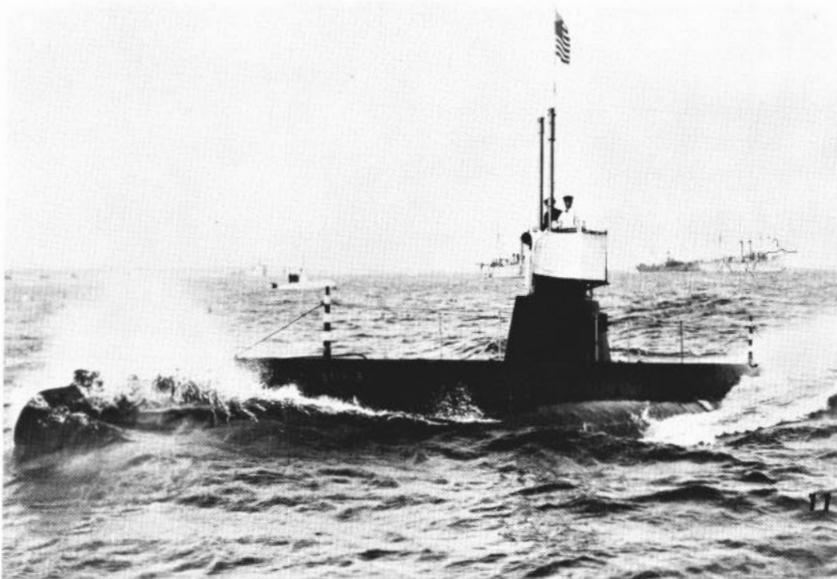
Holland was armed with three Whitehead torpedoes and a bow gun that recessed into the bow. The depth of the Whitehead torpedoes' run was controlled by a pressure-sensitive piston. Its stability was controlled by a pendulum, and its direction by a gyroscope. Many modern torpedoes are much the same.

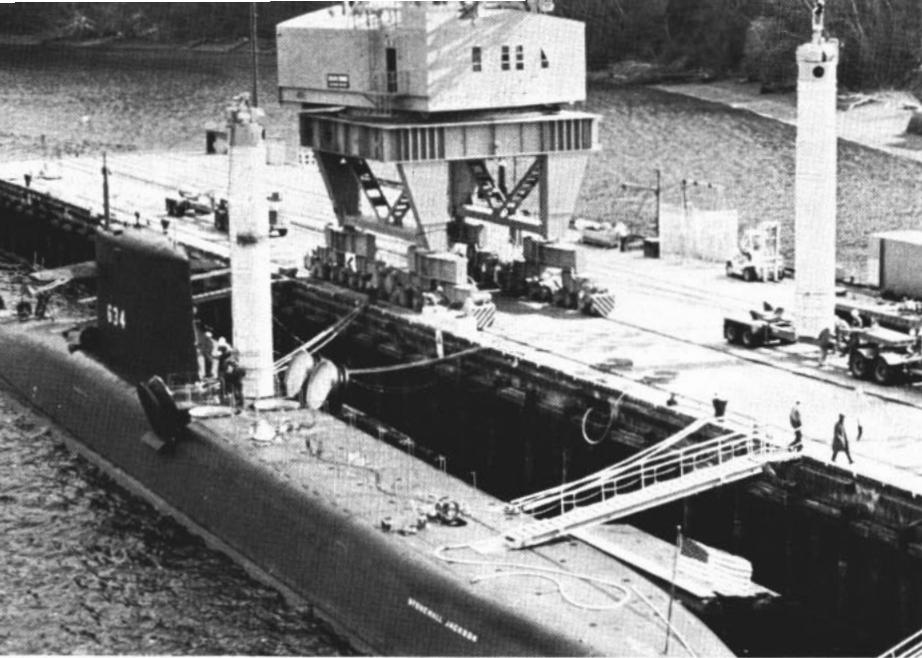
HOLLAND AND LAKE were at odds in their conceptions of the submarine. Lake experimented with boats that ascended vertically according to negative or positive buoyancy

controlled by pumps and tanks. Holland's boat was given a neutral buoyancy by admitting water to balance the weight of the boat with the weight of water it displaced. With diving planes and a constant source of power, Holland's boat could dive and surface on diagonal lines. Holland's principle, with some alternatives for fast diving and surfacing, is still used.

Hunley was sunk because of her lack of vision when submerged. Even *Holland* had to broach the surface so the crew could look out the windows in the conning tower. This broaching lost the *Holland* one of the submarine's greatest advantages—surprise attack.

Loss of vision when submerged was corrected by Simon Lake, who experimented with a set of prisms and lenses he bought from a window display. Lake and a Johns Hopkins University professor worked out the periscope device. This was the submarine's only visual aid until underwater television was installed aboard





PACIFIC SIDE—USS *Stonewall Jackson* (SSBN 634) receives a supply of missiles from Polaris Missile Facility, Bangor, Wash., prior to leaving on patrol.

the nuclear powered *Nautilus*.

The diesel engine replaced the gasoline engine in 1912, when it was first installed aboard *uss Skipjack* (SS 24) and *Sturgeon* (SS 25). The oil-burning engine required no complicated ignition, or sparking systems. It produced fewer noxious fumes and was more economical.

The diesel engine and the electric battery remained the power source for submarines until nuclear power was introduced. While the large majority of submarines are still diesel powered, nuclear power has become the basic propulsion in new submarine construction.

THE UNITED STATES entered World War I with a total of 24 diesel powered subs. They did not see a great deal of action, and in the small number of encounters with the enemy they were unable to confirm a single victory. The U-boats of Germany, however, were to demonstrate the vital role of the submarine in any future conflict.

After the war the Navy continued to build up its submarine force and

the Portsmouth Naval Shipyard in New Hampshire became one of the largest submarine builders in America. Between 1924 and 1929 the Portsmouth yard designed and built five 381-foot, V-class submarines and between 1932 and 1941, an additional 22 subs in the 1500-ton category. It was during this period that the first all-welded submarine, *uss Pike*, was completed. The welded hull allowed *Pike* to submerge to much greater depths than her predecessors and at the same time provided greater protection against depth-charge attacks.

Radar and sonar were World War II innovations. Both were developed by the English to combat German U-Boats, but were incorporated into the submarine to warn of airplane attack and counterattack from surface vessels. 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.

Toward the end of World War II, the Germans perfected a snorkel de-

vice which had been invented by the Dutch years before. This device permitted the running of diesel engines while the ship was submerged. The best storage batteries discharged rapidly and limited submergence time. The snorkel greatly increased underwater endurance, but protruded above the surface and could be detected by radar.

Although the U. S. Navy still had a relatively small number of submarines when World War II broke out, this fact did little to dampen the spirits of submariners, and the tales of their successes fill countless pages of history books. When the figures were finally tabulated it was found that American submarines sank five and one-half million tons of Japanese shipping during the war which included over half of the entire Japanese merchant fleet.

Another significant fact is that U. S. subs accounted for about 60 per cent (over 1300 ships) of all Japanese tonnage sunk, yet the submarine strength at that time comprised less than two per cent of the entire U. S. Fleet.

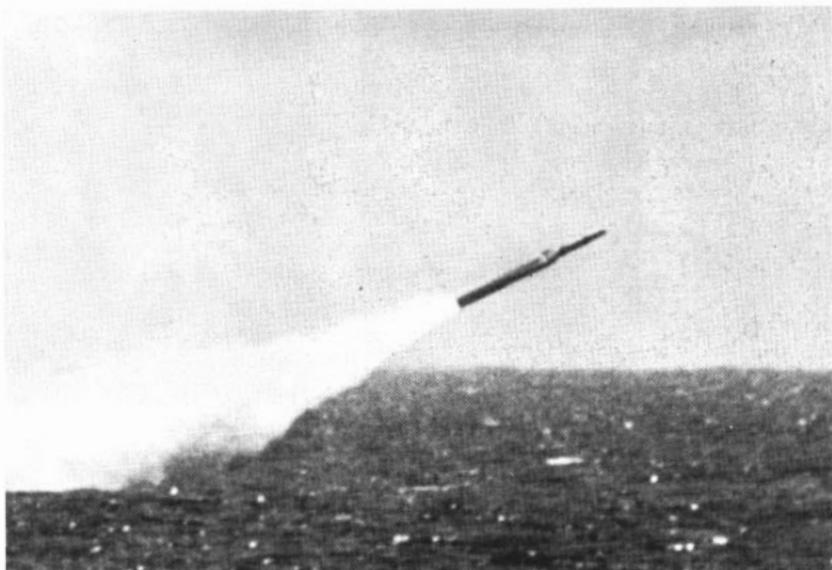
Such advancements as sonar, radar and the snorkel came about as a result of the pressures of World War II, and the U. S. Navy was quick to improve these systems and incorporate the lessons of the war into its modern submarine force.

One of the first results of this scientific and technological advance was the conversion of WW II Fleet submarines to *Guppy* types. As part of this conversion the guppies were streamlined to give them more speed and they were fitted with more modern radar and sonar systems.

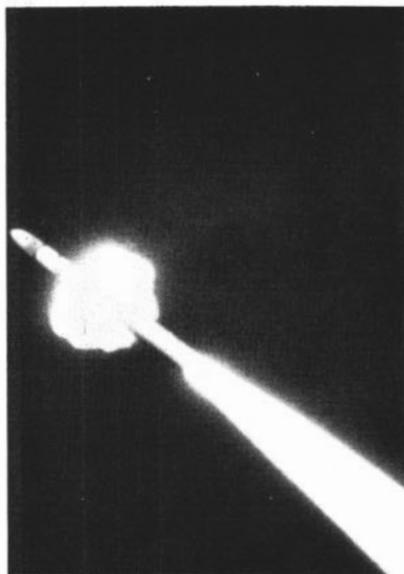
Then, with the introduction of nuclear power, the submarine of old became a true submarine—a ship with greater endurance than its human engineers.

Many records have already been chalked up by the nuclear powered submarine, and many more are still to come. See the following pages.





Subroc breaks the surface.



Rocket separates from warhead.

Fish Out of Water

Subroc is a very strange fish indeed.

It's a hybrid: half missile, half torpedo. It's for sinking enemy subs. It's fast, it's long-range, it's deadly and it's a standard weapon aboard most U. S. nuclear attack submarines.

The killer sub has always had several advantages over other types of ASW units. It can operate effectively in all weather conditions; it can operate undetected in forward enemy-controlled waters; it can transit in the deep sonar channel, thus enhancing its listening capability; and has the inherent qualities of stealth and surprise to take advantage of any tactical situation.

Subroc is about the length and diameter of a standard torpedo. It was designed this way so that it could be ejected from a submarine tube.

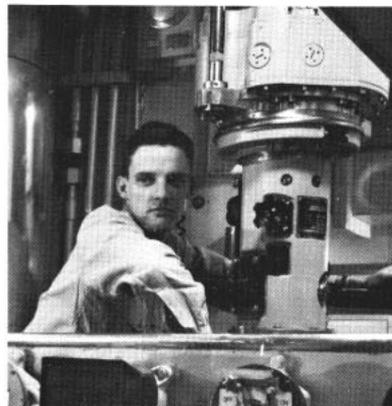
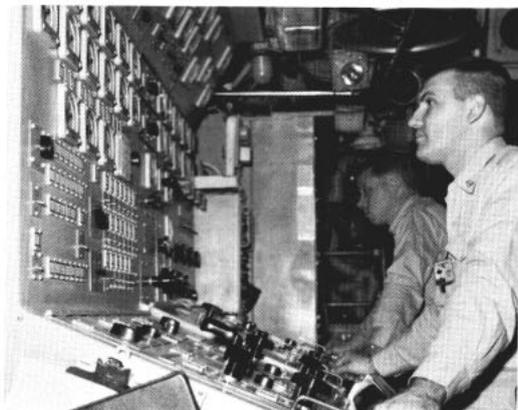
Once fired, the weapon clears the ship and then the solid-fuel rocket motor ignites. After breaking the surface the booster accelerates to a predetermined altitude and speed before separating from the payload and tumbling back into the sea.

The explosive device continues its flight, without power. It describes a ballistic course, descends, reenters the sea and detonates.

A direct hit is not necessary.



BIG SHOT—Subroc is moved for loading aboard the *USS Plunger* (SSN 595).



Why They Wear the



WHY DO NAVYMEN volunteer for the Submarine Service?

What makes a sailor willingly submit himself to the rigors of the confining and often uncomfortable life of a submariner?

The men of the U. S. underseas fleet claim they put in longer hours, are separated more from their families, must perform more diversified tasks and take greater risks than their surface counterparts. They live in an atmosphere where there is not enough water for daily showers at sea, where sleeping quarters are sparse and overcrowded, and where daily living can be rigorous as well as demanding.

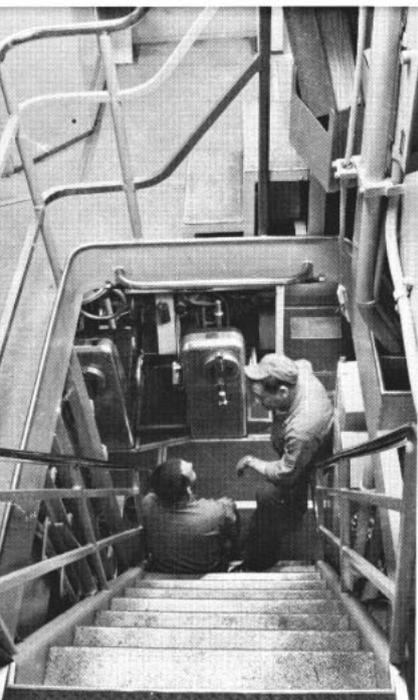
Yet each year thousands of Navy-men—seamen apprentices and veteran salts alike—volunteer for submarine duty. What's more, those who volunteer seldom change their minds. The dropout rate is practically nil. Why?

Here are the opinions of men in Submarine Flotilla One. It is a sampling of some 35 crewmembers from the following submarines: *uss Bream* (AGSS 243), *Baya* (AGSS 318), *Caiman* (SS 323), *Diodon* (SS 349), *Razorback* (SS 394), *Redfish* (AGSS 395), and *Salmon* (SS 573).

Most of the men who took part in the survey decided upon the Submarine Service after studying all the Navy's programs. More often than not their initial interest was sparked by friends who had served in—or were at the time serving in—submarines.

BUT WHAT brought about the ultimate decision?

Most gave more than one reason. Some were lured by the call of adventure, and the opportunities available to seek greater challenges and to tackle more responsibility. Others





Dolphins

sought a more rounded career.

For 20 per cent, the idea of being part of an organization so well endowed with prestige, esprit de corps, and high morale was appealing. That image is the result, they say, of the need for teamwork and close-living compatibility, coupled with the reputation built through the deeds of their WW II predecessors.

And it is significant to note that nearly 46 per cent were attracted by the higher pay afforded submariners, as well as for some of the foregoing reasons. That extra pay, it goes without saying, was a motivating factor.

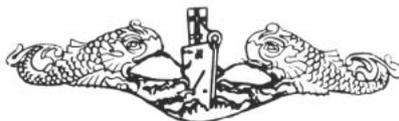
What with life the way it is aboard a submarine, how does one adjust?

The overwhelming reply was that submariners must first learn to adjust to their unusual environment, then do their best to get along with their shipmates. Many indicated that the problem of adjustment is an individual one.

Keeping active is important, according to one underseaman. He claims that if a man earnestly tries to contribute to the over-all effectiveness and betterment of the ship, he can forget his own discomforts.

"Experience in human relations is helpful," states another. "Even if you have none to begin with, you soon become an expert—otherwise you won't stay in submarines."

Another submariner feels that adjustment is no problem because those who are unable to adapt are weeded out before or during their Submarine School indoctrination.



WHAT DOES a submariner like most about life aboard a submarine?

By far the most popular answer to that question is "esprit de corps." More specifically, the submariners cited "competent personnel," "a family atmosphere," "teamwork," "working with highly educated people," "good-natured crews," "friendly association with other crewmembers," and "informality."

In addition to the informality, the submariners preferred the less rigid adherence to regulations, greater challenges, and more responsibility.

Still others regarded highly such benefits as better food, all-night movies, training programs, and submarine operating schedules.

On the opposite side of the scale, the submariners referred to overcrowded living and working conditions and lack of stowage space as what they liked *least* about their undersea life. Nearly 50 per cent indicated they would be more comfortable if there were enough bunks to go around, more privacy, and greater storage space.

Long patrols, long hours, and per-



sonnel shortages rated next on their list of dislikes, followed by the lack of laundry facilities and enough water for daily showers at sea. One submariner volunteered that most of his sub pay is used for laundry expenses, which, he said, puts him in no better financial position than a surface Navyman who receives free laundry services.

Ever since the crew of *uss Holland* was formed in 1900, submariners have boasted about their food. Since no survey of submarine

personnel would be complete without a query on the subject, an attempt was made to support or refute that long-standing claim.

About three-fourths of those questioned upheld the traditional boast. A few were undecided. And a few more said, "It depends." One replied, "not necessarily," and one opposed the claim altogether concerning meals in submarines.

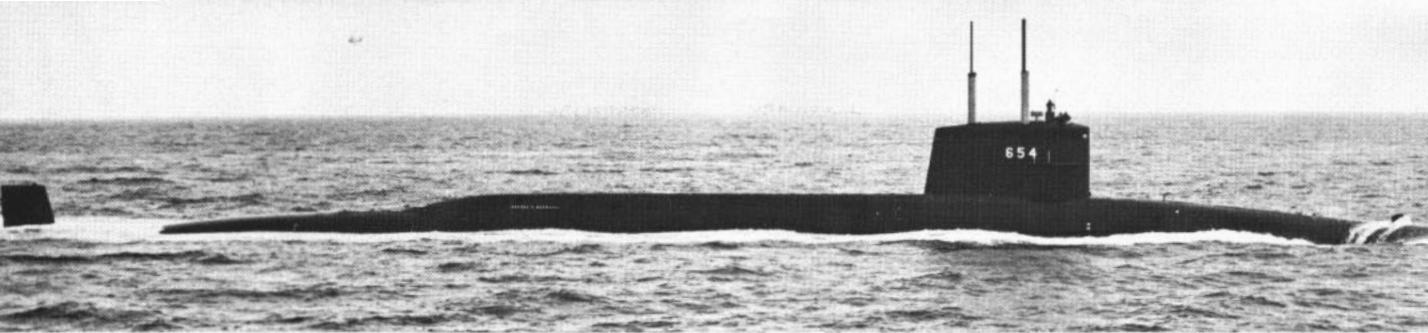
The affirmative replies were due to a variety of reasons. Some praised the high caliber of food and supply

personnel, and their pride in their work. Others reasoned that a smaller crew permitted a more personal touch. Then, too, many approved of the family-style dining atmosphere, as well as the quality and quantity of food.

One dolphin-wearer had the final answer. He couldn't make a comparison, he said, because he had been in submarines so long he had forgotten how it was in other segments of the Navy.

—W. J. Thomas, JOC, USN





ALIKE BUT DIFFERENT—FBM sub *USS George C. Marshall* (SSBN 654) is the 36th *Polaris* submarine to join the Fleet.

No Two Subs Are Alike

NO SHIP is ever exactly like another ship. *USS George C. Marshall* (SSBN 654) is not exactly like her sister ships. She is, nevertheless, representative of the Fleet ballistic missile submarine.

The ship is the 36th FBM and the 58th nuclear powered submarine to become an operating element of the nuclear deterrent force.

Like most Fleet ballistic missile submarines, she is named for a great American. George Catlett Marshall was General of the Army, Secretary of Defense, Secretary of State, and author of the Marshall plan for European recovery. He won the Nobel peace prize in 1953.

As a member of the *Lafayette* class of FBM submarines, which are the largest ever built, *George C. Marshall* displaces 8250 tons when submerged and 7250 tons when riding on the surface. This can be compared to the nuclear powered guided missile frigate *USS Bainbridge* (DLGN 25), which displaces 7600 tons standard.

GEORGE C. MARSHALL is outfitted with the equipment to fire 16 A-3 *Polaris* missiles.

These missiles, with a maximum range of 2500 miles, are carried in 16 tubes amidships. They may be launched either while the submarine is on the surface or under the sea.

The missiles are ejected from the tubes by means of compressed air, though later models have steam launchers. In the steam launching method, a small solid fuel rocket motor burns and pours its extremely hot gases into a water-filled chamber. This water immediately turns to steam and forces the missile out of its receptacle. (For more on *Polaris* and *Poseidon*, see page 24.)

The ship can also launch torpedoes. She is equipped with four

21-inch torpedo tubes on the bow.

Like other subs of her type, *George C. Marshall* was built to patrol for extended periods of time. Consequently, her designers allowed as many comforts as possible. The crew has access to a small laundry, which includes washers and dryers. There is a three-man gym. A crew's lounge also does duty as a lecture room and study hall. The galley, which would please any modern housewife, is open to the crew—the submariner who prides himself as a chef practically has carte blanche.

A fellow can also get an education down there—via PACE (Program for Afloat College Education), formerly known as *Polaris University*. It's possible for the ambitious submariner to earn as much as two years of credits toward a degree from Harvard, the University of South Carolina, San Diego State College or the University of Hawaii. (For more on PACE, see ALL HANDS, January 1967.)

It requires two crews to keep up with a *Polaris* sub. *George C. Marshall* presently patrols out of Holy Loch, Scotland. Each cruise is approximately 60 days in duration, with one month between cruises. The off crew, when relieved, is flown back to the U. S. for training, leave and liberty.

GEORGE C. MARSHALL slid down the ways on 21 May 1965, after Mrs. George Marshall had broken a champagne bottle across her bow. The principal speaker that day was Dean Acheson, former Secretary of State.

The nuclear submarine spent the next month alongside the pier at Newport News. She was commissioned on 29 April.

In one respect *George C. Marshall* is exactly like her sister ships: She has never failed to meet her commitments due to failure of the system, which includes the missile, the submarine, and the crew.

HERE WE GO—Quartermaster Chief of Watch plots submarine's movements.



World's First True

ON 17 Jan 1955, approximately 200 diesel powered submarines were in commission in the U. S. Navy.

On that day they became obsolete, as did all the other submarines in the world. That was the day when the hull SSN 571 (later to be known to the world as *uss Nautilus*), the first nuclear powered submarine, put to sea for the first time. That was the day that then-Commander Eugene P. Wilkinson, commanding officer, sent the message which was to change permanently the concept of seapower:

"Underway on nuclear power."

Before *Nautilus* became a reality, a submarine was



The age of A Subs began with *Nautilus*, shown here at launching.

more or less a small surface ship that could submerge for short periods of time. In 1955, the submergence time and the average submerged speed of a submarine had not greatly changed from those of submarines in operation 30 years earlier.

The trouble was, diesels needed oxygen to operate. So did crewmembers. When submerged, that oxygen supply was cut off. The boat depended for its power on electric batteries; the men depended upon the air trapped within the hull or carried in bottles and chemicals. The whole concept was limited by one of the basic facts of life—men and machines must breathe to live.

A NUCLEAR SUB was different. Its nuclear reactor eliminated the diesel engines which had limited a sub's range and speed; had eliminated the need for diesel fuel and resultant storage spaces; had eliminated the need to surface periodically to recharge batteries.

The power plant of a nuclear submarine is based upon a nuclear reactor which provides heat for the generation of steam. This, in turn, drives the main propulsion turbines and the ship's turbo-generators for electric power.

The primary system is a circulating water cycle and consists of the reactor, loops of piping, coolant pumps and steam generators. Heat produced in the reactor by nuclear fission is transferred to the circulating primary coolant water which is pressurized to prevent boiling. This water is then pumped through the steam generator and back into the reactor for reheating in the next cycle.

From the steam generators, steam flows to the engine room where it drives the turbo-generators, which supply the ship with electricity, and to the main propulsion turbines, which drive the propeller. After passing through the turbines, the steam is condensed and the water is fed back to the steam generators by the feed pumps.

In the steam generator, the heat of the pressurized water is transferred to a secondary system to boil water into steam. This secondary system is isolated from the primary system.

None of these steps require the presence of air or oxygen. Thus, any ship so powered is able to operate completely independent of the earth's atmosphere for long periods.

During the operation of the nuclear power plant, high levels of radiation exist around the reactor, and members of the crew are not permitted to enter the reactor compartment. Heavy shielding protects the crew so that a man receives less radiation on submerged patrol than he would from natural sources ashore.

IN 1960, 14 nuclear powered submarines were commissioned, demonstrating that production was rolling, only a few years after the pioneering work that had brought about the world's first nuclear ship, *uss Nautilus*. Here's the background:

At the request of then-Captain (now VADM) H. G. Rickover, USN, the first study of the application of a high-pressure, water-cooled reactor for a submarine was undertaken at Oak Ridge, Tenn., in September 1947. In January 1948 the Department of Defense requested the Atomic Energy Commission to design, develop and build a nuclear reactor which would propel a submarine.

In August 1949 the Chief of Naval Operations established an operational requirement to develop a submarine nuclear propulsion plant with a ready-for-sea date of January 1955. The late Admiral Forrest P. Sherman, then CNO, recommended the construction of a nuclear submarine to Congress on 25 Apr 1950, and the following August, the President signed Public Law 674 which authorized construction of *Nautilus*.

That same month saw the start of construction of the *Nautilus* land-based prototype (submarine thermal reactor, Mark I) at the AEC's National Reactor Testing Station in Idaho. Mark I (*Nautilus* was known as STR

Submarines

Mark II) was built from the start inside a submarine hull, complete with a surrounding tank of water, on the assumption that it was a true seagoing power plant. Breadboard techniques and engineering shortcuts were not allowed.

The model went critical at 11:17 pm, MST on 30 Mar 1953—an occasion which marked the first production of significant quantities of useful nuclear power in the world. About three months later, on 25 June, Mark I commenced a 96-hour sustained full-power run, simulating a submerged crossing of the Atlantic.

MEANWHILE, in August 1951, the Bureau of Ships (now the Naval Ship Systems Command) awarded a contract for the construction of the first nuclear-powered submarine. From this point onward, events moved rapidly.

Nautilus' keel was laid 14 Jun 1952 at Groton. She was christened on 21 Jan 1954 and was commissioned 30 Sep 1954. Her nuclear power propulsion plant was first operated at power on 20 December and first developed full power alongside the dock on 3 Jan 1955.

As mentioned earlier, it was on 17 Jan 1955 that *Nautilus*, putting to sea for the first time, signaled her message: "Underway on nuclear power." Her Mark II reactor, a refined version of the prototype Mark I reactor, behaved beautifully.

During her first sea trials, she completed high speed test runs, both surfaced and submerged, and dived more than 50 times. After further testing, she was accepted by the Navy on 22 Apr 1955.

SHE THEN PROCEEDED to smash just about every existing record that pertained to subs.

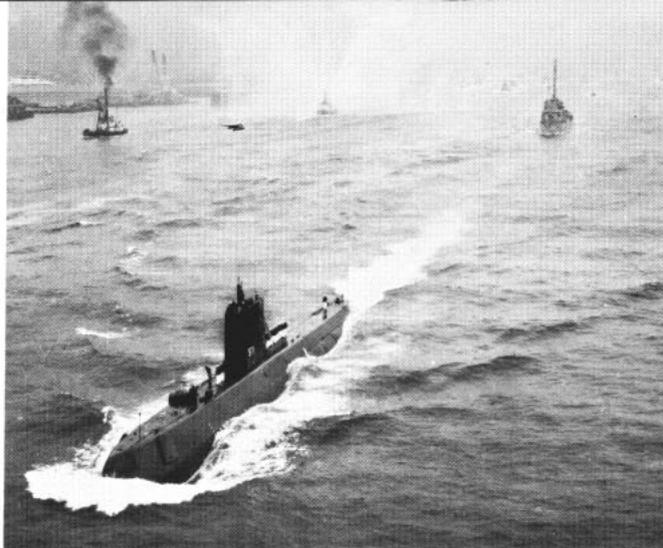
On her shakedown cruise in May, *Nautilus* steamed submerged from New London, Conn., to San Juan, Puerto Rico, traveling over 1300 miles in 84 hours—more than 10 times further than any submarine had ever traveled while submerged.

It was the first time that a combatant submarine had maintained such a high submerged speed (about 16 knots) 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.

She later made an even faster submerged passage from Key West to New London, a distance of 1397 miles, at an average speed of more than 20 knots.

After more than two years of operation and evaluation, *Nautilus* was refueled in April 1957. On her first core she had steamed a total of 62,562 miles, more than half of which was submerged. To cover this distance, a conventionally powered sub the size of *Nautilus* would have required more than two million gallons of fuel oil.

She then resumed operations with the Fleet, deploying to the Pacific via the Panama Canal and, upon her return to the Atlantic, participating in NATO exercises in Northern European waters. She completed several



USS *Nautilus* (SSN 571) is escorted into New York harbor after transpolar voyage.

excursions under the polar icecap and penetrated to within 180 miles of the North Pole.

This was merely prelude. On 12 Aug 1958, she completed a trans-polar voyage from Pearl Harbor to Portland, England. After diving under the ice near Point Barrow, Alaska, on 1 August, she became the first ship to reach the geographic North Pole, passing beneath it on 3 August. She surfaced in the Greenland Sea two days later after steaming 1830 miles under the ice in 96 hours.

For this achievement, which demonstrated the strategic potential of the Arctic, she was awarded the Presidential Unit Citation (the first such to be awarded in peacetime) and her commanding officer, Commander William R. Anderson, the Legion of Merit.

In May 1959, she was again refueled and received her first regular overhaul—after more than four years of intensive operation. She had steamed more than 153,000 miles on her first two reactor cores, 115,000 miles of which had been submerged. During her first four and one-half years of operation, she had been submerged for more than one year.

By September 1966 she had completed 300,000 miles of steaming on nuclear power, more than 250,000 of which were submerged.

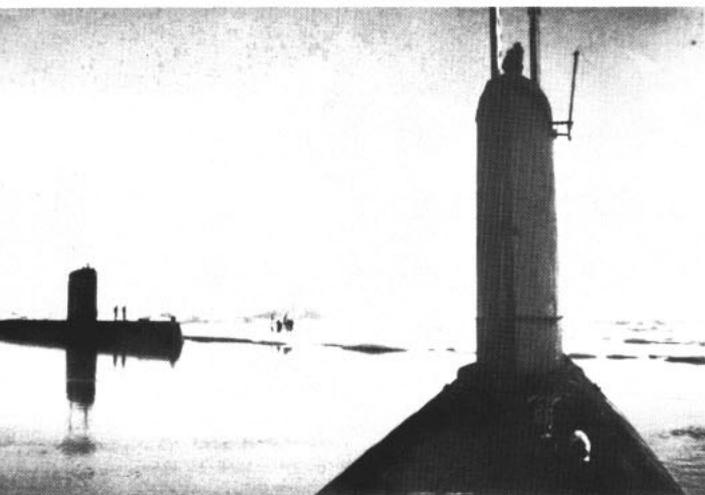
Admiral H. G. Rickover (center) watches as the Navy's first nuclear powered ship gets underway.



THE RELIABILITY of *Nautilus'* nuclear propulsion plant was considered to be due in large measure to the experience gained in the construction and operation of the land prototype plant. After being refueled in late 1955 following two years of nearly continuous operation and testing, the prototype completed a continuous full power run of 66 days with its new core installed.

This would have been sufficient to carry *Nautilus* twice around the world without refueling, and served to demonstrate the virtually unlimited cruising range of nuclear powered ships, even at high speeds.

The prototype, again refueled in early 1958 and late 1960, and now being refueled with an advanced design core, is used today as a test facility for investigating new concepts in the technology, design and operation of advanced nuclear power plants as well as a training facility for crewmembers of nuclear powered ships.



Two nuclear submarines rendezvous in ice flow at North Pole. Foreground: USS *Seadragon* (SSN 584) and USS *Skate* (SSN 578).

PRELIMINARY development work had involved the investigation of many concepts. Of these, only two—the pressurized water and the liquid metal (sodium)—were of sufficient interest from a naval standpoint to warrant a prototype and shipboard installation.

The pressurized water concept was first applied to *Nautilus*; the liquid sodium concept to the Navy's second nuclear powered sub—*Seawolf*.

As with *Nautilus*, the development of the *Seawolf* liquid sodium plant involved the construction of a land prototype plant. Known as the Submarine Intermediate Reactor, this was built at the Knolls Atomic Power Laboratory at West Milton, N. Y.

Seawolf's keel was laid 15 Sep 1953, and she was launched 21 Jul 1955. However, trouble developed in her reactor and she was not ready for her sea trials until January 1957.

After acceptance, *uss Seawolf* (SSN 575) operated as an active unit of the Atlantic Fleet and on 6 Oct 1958, completed a record-breaking 60-day submerged run, traveling a distance of more than 13,000 miles submerged with a completely sealed atmosphere.

Although she was able to operate satisfactorily for almost two years on her sodium-cooled reactor, technical and safety considerations indicated that the concept be dropped. In December 1958, the sodium-cooled

reactor was removed and was replaced with a pressurized water plant similar to that in *Nautilus*. When she shut down her sodium plant for the last time, she had steamed a total of 71,000 miles, of which 57,000 were submerged.

With her new pressurized water plant installed, *Seawolf* was recommissioned on 30 Sep 1960. In May 1965, she was refueled for the first time since the installation of her pressurized water reactor. On this core she had steamed more than 160,000 miles, of which more than 130,000 were submerged.

USS TRITON (SSN 586) was designed to be fast enough to operate with a fast carrier task force.

One of the largest submarines ever built, *Triton* is 447 feet long, displaces more than 7700 tons submerged, and carries a crew of approximately 170. Her keel was laid 29 May 1956, she was launched 19 Aug 1958, and was commissioned 10 Nov 1959. She has two pressurized water reactors, one for each of her two propellers.

On 16 Feb 1960, she departed New London on a submerged circumnavigation of the world. Following the same route taken by Ferdinand Magellan in 1519, *Triton* proceeded to St. Peter and St. Paul's Rocks in the Atlantic and crossed the equator on 24 February. Two weeks later she rounded Cape Horn and entered the Pacific Ocean. From there, she sailed to Magellan Bay in the Philippines, thence south through Lombok Strait and rounded the Cape of Good Hope. She again reached St. Peter and St. Paul's Rocks on 25 April and proceeded via the Canary Islands and Cadiz, Spain, to the United States.

Surfacing off the coast of Delaware on 10 May, she had traveled 36,000 miles completely submerged in 83 days and 10 hours. For this voyage, she received the Presidential Unit Citation and her commanding officer, Captain Edward L. Beach, was awarded the Legion of Merit.

She has since been refueled once, and now operates with the Fleet as an attack submarine.

THE NEED for a nuclear propulsion plant similar to that of *Nautilus* but smaller, suitable for smaller subs, soon became apparent. Bettis Atomic Power Lab was given the assignment.

This plant, known as the Submarine Fleet Reactor uses a pressurized water reactor similar to that used in *Nautilus*, but is much simpler and contains several improvements in operation and maintenance.

Five subs—*Skate* (SSN 578), *Swordfish* (SSN 579), *Sargo* (SSN 583), *Seadragon* (SSN 584) and *Halibut* (SSN 587)—are powered by this type plant. The first four of this class are attack subs; *Halibut* is the first Navy submarine to be designed from the keel up as a guided missile submarine.

Skate was commissioned 23 Dec 1957. On 24 Feb 1958, she departed New London on her shakedown cruise and, eight days and 11 hours later, arrived at Portland, England. Her 176-hour submerged transit of the Atlantic had set a new west-east record.

On her return trip, *Skate* surfaced off Block Island seven days and five hours after departing Lizard Head, breaking still another record. She was the first submarine

to make the transatlantic voyages to England and return while submerged.

In August, *Skate* crossed under the North Pole while exploring undersea routes beneath the polar icecap. During this trip, she spent 10 days and 14 hours and traveled slightly more than 2400 miles under the ice.

She surfaced within the icepack nine times. One of these surfacings was near the International Geophysical Year's Floating Ice Station Alfa, where scientific information was exchanged with the resident scientists.

With only a slight air of facetiousness, she claims to be the first submarine to go around the world in one hour. She circumnavigated the North Pole on a circular course within one mile of the pole.

In March 1959, she made another extensive trip under the polar icecap—this time in winter. During this trip, she traveled 11,495 miles, 11,220 of which were submerged and more than 3000 under the polar icecap. She broke through the polar ice to surface on 10 occasions.

Slightly less than five years after her commissioning she entered the yards to receive her first refueling and overhaul. She had steamed 120,862 miles, of which 105,683 were submerged, on her first core.

SWORDFISH was commissioned on 15 Sep 1958, and *Sargo* followed with her commissioning on 1 October.

Sargo also did extensive polar exploration. Sailing from Pearl Harbor, she entered the Arctic Basin by way of the Bering and Chukchi Seas. Fitted with a new iceberg-detecting sonar, she proved that it is possible for a nuclear powered submarine to cross this shallow route at any time of the year.

Numerous ice ridges, some extending as much as 100 feet deep, were encountered. On many occasions, it was necessary for her to split the distance from the ice to the ocean floor, clearing each by just a few feet.

She returned to the open Pacific through the Bering Sea. She had traveled 6000 miles in 31 days, and surfaced 20 times. Usually, it was necessary to break through the ice before she could surface.

Assigned to the Pacific Fleet after her commissioning on 5 Dec 1959, *Seadragon* reached the Pacific via the Northwest Passage during August 1960. She remained in the Arctic Basin during August and, on the 24th, became the fourth U. S. submarine to reach the North Pole. Another, but less-than-monumental first was achieved—the first baseball game held on the pack ice between the officers and enlisted members of the crew.

Two years later, on 2 Aug 1962, *Skate* and *Seadragon* rendezvoused under the ice at the North Pole, conducted antisubmarine warfare exercises and surfaced together at the Pole.

DESIGN OF A SINGLE SCREW nuclear propulsion plant suitable for installation in a submarine of higher displacement and higher speed than *Nautilus* also was undertaken by Bettis. Much of the experience gained from the Submarine Fleet Reactor was used to incorporate improvements and advancements in this type of plant. It is now being used extensively in both fast attack and Fleet ballistic missile class submarines.

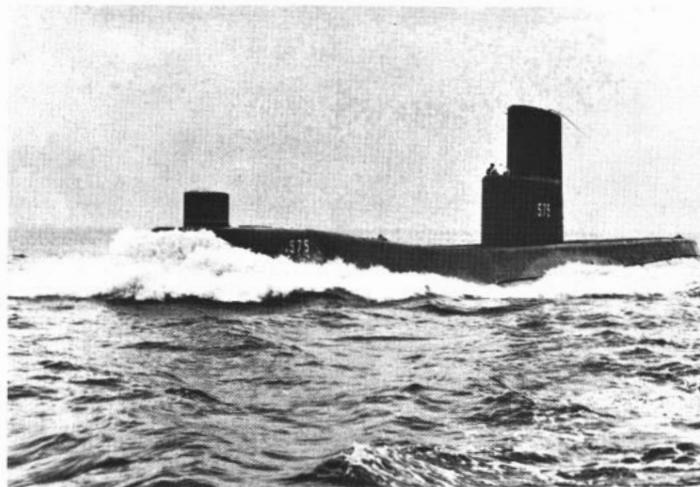
This type of plant, combined with the cylinder-of-revolution hull form developed with *uss Albacore* (SS 569), resulted in the *uss Skipjack* (SSN 585) class.

Commissioned 15 Apr 1959, *Skipjack's* clean design enabled her to break all existing submarine speed

records. Most nuclear submarines built since that time have been based upon the *Skipjack* concept.

While *Nautilus* was still undergoing operational testing, the Navy began development of an intermediate range ballistic missile. Brought from conception to operation in five years, the *Polaris* Fleet ballistic missile system was combined with nuclear propulsion to produce a missile-firing submarine essential to the United States' deterrent concept.

Each *Polaris* submarine carries 16 solid-fuel, two-stage ballistic missiles powered by solid fuel rocket motors, guided by a self-contained inertial guidance system, 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



The Navy's second atomic powered sub, *USS Seawolf* (SSN 575), starts career with liquid sodium reactor.

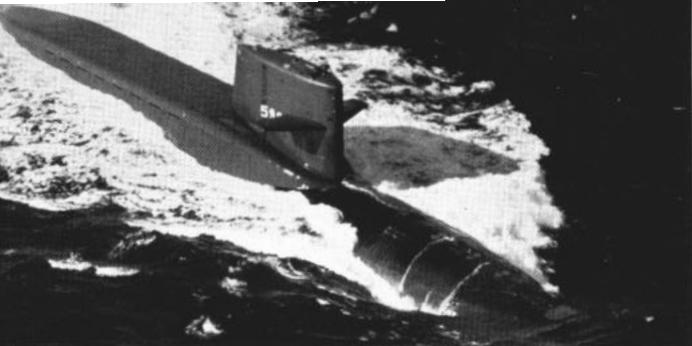
subs to remain on patrol, hidden beneath the surface of the sea, always ready to launch their missiles.

On station, a *Polaris* sub maintains complete radio silence, receiving radio messages but sending none, lest it give away its location. Each ship has two complete crews, the Blue and the Gold, of some 130 men each. The crews alternate on two-month patrols, providing the greatest possible on-station time for the FBM submarines.

USS GEORGE WASHINGTON (SSBN 598) was the first ballistic missile submarine to be built. Originally designed to be a *Skipjack*-class fast attack sub, her partially constructed hull was cut and a 130-foot missile section added amidships.

Commissioned 30 Dec 1959, she successfully test-fired two *Polaris* A-1 missiles while submerged six months later. In November 1960, she departed for her first armed *Polaris* missile patrol, remaining submerged for more than 66 days. After deploying on 15 submerged patrols and steaming more than 100,000 miles, she was ready for refueling and refitting for longer range missiles.

Four other FBM submarines, *uss Patrick Henry* (SSBN 599), *Theodore Roosevelt* (SSBN 600), *Robert E. Lee* (SSBN 601) and *Abraham Lincoln* (SSBN 602) are included in the *George Washington* class. Although originally designed to carry the A-1 missile, all five



Navy's first Polaris submarine USS George Washington (SSBN 598) cruises on the surface.

were, in March 1967, being converted to handle the A-3 missiles.

USS ETHAN ALLEN (SSBN 608) was the first ballistic missile submarine to be designed from the keel up as an FBM submarine. This class, consisting of *Ethan Allen*, *Sam Houston* (SSBN 609), *Thomas A. Edison* (SSBN 610), *John Marshall* (SSBN 611), and *Thomas Jefferson* (SSBN 618) are 410 feet long, displace 6900 tons, and can handle the A-1 (1200-mile) and A-2 (1500-mile) *Polaris* missiles.

On 23 Oct 1961, *Ethan Allen* fired the first submarine-launched A-2 missile; on 8 November she set a missile-firing record by successfully launching six out of six *Polaris* A-2 missiles; and on 6 May 1962 she fired a *Polaris* in what was the first complete test of a ballistic missile, including detonation of the nuclear warhead.

The *uss Lafayette* (SSBN 616) class, third class of FBM submarines, is approximately 425 feet long, and displaces approximately 7000 tons. These 31 ships can accommodate the A-1, A-2 or A-3 missile.

On 28 Sep 1964, a ship of this class, *uss Daniel Webster* (SSBN 626) began her first deployment, carrying the first shipload of the A-3 missiles. On 25 December, a sister ship, *Daniel Boone* (SSBN 629) departed her operational base in Guam loaded with 16 A-3 missiles, marking the first operational deployment of a *Polaris* missile submarine in the Pacific.

Will Rogers (SSBN 659) last of the 41 currently authorized FBM submarines was launched 21 Jul 1966, and completed her sea trials in February 1967. *Will Rogers* marks the completion of the currently planned FBM shipbuilding program.

Nuclear powered attack submarine USS Tullibee (SSN 597) speeds along the surface.



Where They Came From

An impressive roster.

All were made possible through the cooperation and hard work—and taxes—of thousands, if not millions, of U.S. citizens, and through the foresight and planning of countless organizations from Congress and the President on down.

However, a major role in the development of these nuclear craft has been assumed by the Atomic Energy Commission and the Navy Department through the Naval Nuclear Propulsion Program. Its objective has been the design and development of improved naval nuclear propulsion plants for installation in ships ranging from small submarines to large combatant surface ships.

The program is directed by VADM Hyman G. Rickover, USN, Director, Division of Naval Reactors, U. S.

Nuclear Powered Deep-Sea Vehicle

In addition to the nuclear submarines and surface ships described in the accompanying pages, the AEC and the Navy are cooperating in the development of a nuclear powered deep submergence research and ocean engineering manned vehicle. It is anticipated that this vehicle, designated NR 1, will, because of its nuclear power, be vastly more effective than any other deep submergence vehicle now planned or in operation.

NR 1, which will be able to move at maximum speed for periods limited only by the amount of food and supplies it carries, will accommodate a crew of five and two scientists. It will be able to perform detailed studies and mapping of the ocean bottom, temperature, currents and other oceanographic details for military, commercial and scientific uses.

The submarine will have viewing ports plus a remote control grapple which will enable it to collect marine samples.

It is expected to be capable of exploring the continental shelf, an area which appears to contain the most accessible wealth in mineral and food resources in the seas.

Such exploratory charting may also help the United States to establish sovereignty over parts of the continental shelf.

It is assumed that a ship with its depth capability will be capable of exploring an area several times that of the United States.

Atomic Energy Commission and Deputy Commander for Nuclear Propulsion, Naval Ship Systems Command.

Design and development of these plants is carried out by AEC's Bettis Atomic Power Laboratory, Pittsburgh, Pa., and Knolls Atomic Power Laboratory, Schenectady, N. Y.

The program also operates and maintains six land prototype nuclear propulsion plants. Two are located at West Milton, N. Y., one at Windsor, Conn., and three at the Atomic Energy Commission's National Reactor Testing Station, Idaho.

In addition to testing power plant designs, the land prototypes are used to train the men—both officers and enlisted personnel—who operate the shipboard plants.

Approximately 2500 officers and 14,000 enlisted men have been trained at these prototypes to date.

The nuclear power training program is divided into two phases. The first consists of a 24-week course at the Nuclear Power School located either at Bainbridge or Mare Island. This is followed by orders to one of the prototypes for six months. Courses are on a college level for most enlisted men and on a graduate level for officers.

CONGRESS HAS AUTHORIZED 107 nuclear powered submarines including 41 *Polaris* missile-launching type and one deep submergence research vehicle (see page 22), and six nuclear powered surface ships.

Of these, 70 nuclear powered submarines and four nuclear powered surface ships are now in operation and have steamed over 9,150,000 miles. Not once has a mission been aborted because of a failure in the reactor plant.

A total of 234 nuclear cores have been ordered to date, and 92 are in operation today. The first core for *Nautilus* cost more than four million dollars and enabled her to steam 62,000 miles. The second cost three million dollars on which she steamed 91,000 miles.

The long-life cores now installed in nuclear submarines cost about three million dollars and will propel the ship for about 400,000 miles.

Naval nuclear propulsion plant components, including the nuclear reactor and its special instruments and controls, are obtained from private industry on a competitive fixed-price basis. More than 500 industrial contractors—150 large and 350 small businesses—are engaged in the fabrication and supply of this equipment.

Five private shipyards and six naval shipyards are engaged in the construction or overhaul of naval nuclear powered ships.

Shape of Ships to Come

Included in the Navy's fiscal year 1967 shipbuilding and conversion program are one nuclear powered attack carrier (CVAN), one nuclear powered guided missile frigate (DLGN) and five nuclear powered attack submarines (SSN). Here's a brief description of each:

Nuclear Powered Attack Carrier (Project 102.67)—This ship will be nuclear powered with the new two-reactor plant that has been under development in recent years.

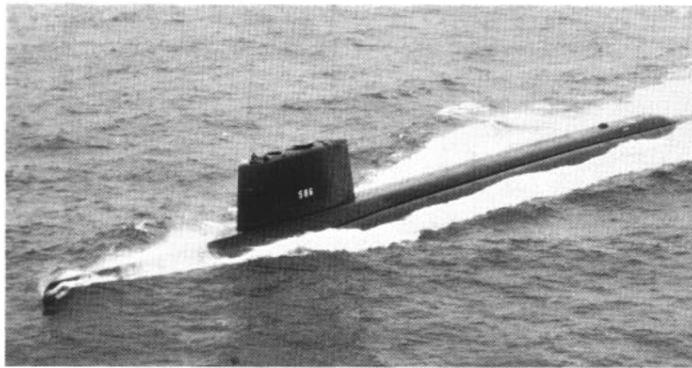
It will be the most modern warship in the world and will be an improved successor to *uss Enterprise* (CVAN 65) which has performed so well in both peacetime and wartime environments.

She will have a full Naval Tactical Data System and an Integrated Operational Intelligence Center. Automation in areas of main propulsion, ordnance handling, ship control and other areas will be included as possible wherever safety can be improved and manning reduced.

Guided Missile Frigate (Nuclear) (Project 241.67)—The nuclear powered frigate will operate offensively, independently or with strike, antisubmarine or amphibious forces against submarines, air and surface threats.

It will be equipped with the most advanced sonar and ASW weapons as well as two dual *Tartar* surface-to-air missile systems, thus providing an effective combination of both AAW and ASW capabilities.

It will also have two conventional guns, making this



King-size *USS Triton* (SSN 586) tests its twin reactors. Below: *Triton's* crewmembers check their position while on round-the-world submerged voyage.



a highly capable multipurpose escort for any task group.

Nuclear Powered Attack Submarines (Project 300.67)—These ships are essentially the same as the attack submarines in the 1966 programs. They are characterized by high submerged speed, good ship control and quiet operation.

Emphasis on the elimination of self and radiated noise is continued and makes excellent sonar performance at high submerged speeds possible.

These ships will incorporate all the modifications developed by the submarine safety program.

***USS Skipjack* (SSN 585) was first nuclear sub to sport new hull design.**



Sentinels of the Free

POLARIS—noun.

Hidden by ocean depths; mobile; having unlimited cruising range; free of the need to surface; as in *Polaris*, a deterrent to global war.

These descriptions aptly define the Fleet ballistic missile weapon system, better known by the name of its missile, *Polaris*. It has been an important word in the Navy's lexicon since 15 Nov 1960, when *USS George Washington* (SSBN 598) deployed with a full load of 16 tactical missiles.

Since the nuclear powered *George Washington* joined the Fleet seven years ago, 40 others have been commissioned.

They come in three sizes.

- The *George Washington* class, of which five were built. They began life with an *Albacore* hull and were, in fact, designed to be nuclear attack submarines. A 130-foot missile section was added, enabling them to accommodate the 16 *Polaris* missiles.

They are 380 feet long, with a 33-foot beam, and displace 5900 tons on the surface.

- *Ethan Allen* (SSBN 608) class. Built specifically to carry *Polaris* missiles, these submarines are larger

than the 598 class, with an improved hull design. Displacing 6900 tons standard, they are 410 feet long, 33 feet at the beam. Five of this class were built.

- *Lafayette* (SSBN 616) class. The remaining 31 FBM subs are of this class, the largest (more than 8000 submerged displacement tons) underseas craft ever built. They are 425 feet long and have a beam of 33 feet.

THESE SUBMARINES, while fantastic in design and capability, are only a part of the FBM story. Equally important are the missiles which they carry in their midsection.

Polaris is a two-stage ballistic missile powered by solid fuel rocket motors and guided by a self-contained inertial guidance system. Once underway, it steers itself to its target.

The two generations of *Polaris* now carried by FBM subs are the A-2 and A-3 models. The *Polaris* A-1 (with its range of 1200 nautical miles) ended its tour with the Fleet when *USS Abraham Lincoln* (SSBN 602) returned to the U.S. in October 1965 for overhaul.

The *Polaris* A-2 is similar to its

predecessor in its bowling-pinnish appearance, but its more powerful solid propellant gives it a range of 1500 nautical miles.

Another important refinement is a second stage rocket motor case made of wound fiber glass, in place of the A-1's steel casing.

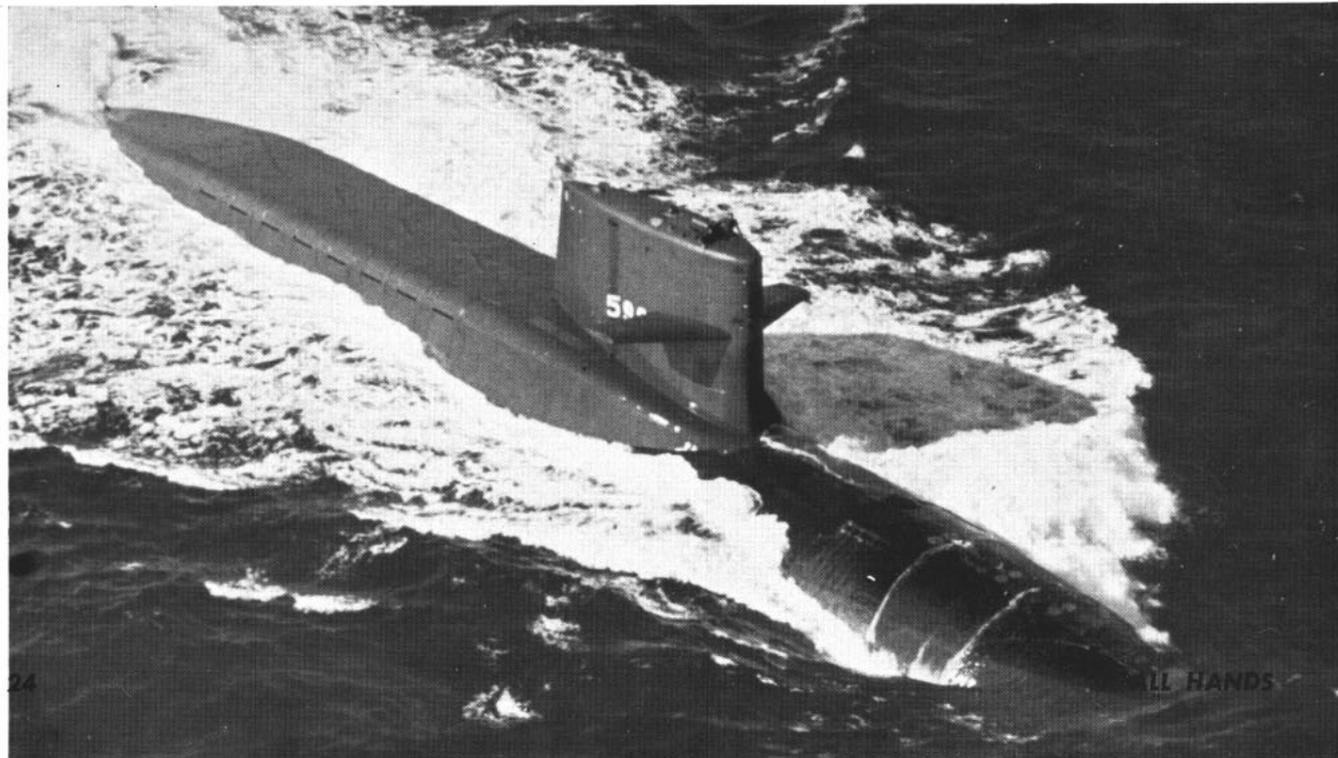
The first test of an A-2 missile from a submerged sub was successfully conducted on 24 Oct 1961, by *USS Ethan Allen* (SSBN 608) off the Florida coast.

The more refined *Polaris* A-3 was first fired from a submerged submarine on 26 Oct 1963. It was launched from *USS Andrew Jackson* (SSBN 619).

The A-3 version of the *Polaris* missile is a significantly greater advance over A-2 than was A-2 over A-1. In terms of hardware design, *Polaris* A-3 is about 85 per cent a new missile. Its increase in range to 2500 nautical miles leaves no target inaccessible to the *Polaris* A-3, since no spot on earth is more than 1700 miles from the sea.

BUT THE Navy is not stopping at the A-3. A completely new missile is being developed for the FBM system—*Poseidon*.

POLARIS PACKER—Fleet ballistic missile submarine *USS George Washington* (SSBN 598) takes 16 missiles on patrol.



Seas

The new missile's most obvious change will be its size. *Poseidon* will be six feet in diameter, about a foot and a half thicker than *Polaris* A-3, and it will stand three feet taller.

Despite *Poseidon's* increase in size, the growth potential built into the submarines' launching system will enable them to fit *Poseidon* into the same 16 missile tubes that now carry *Polaris*.

Poseidon will have double the payload of the *Polaris* A-3, and it will be even more accurate.

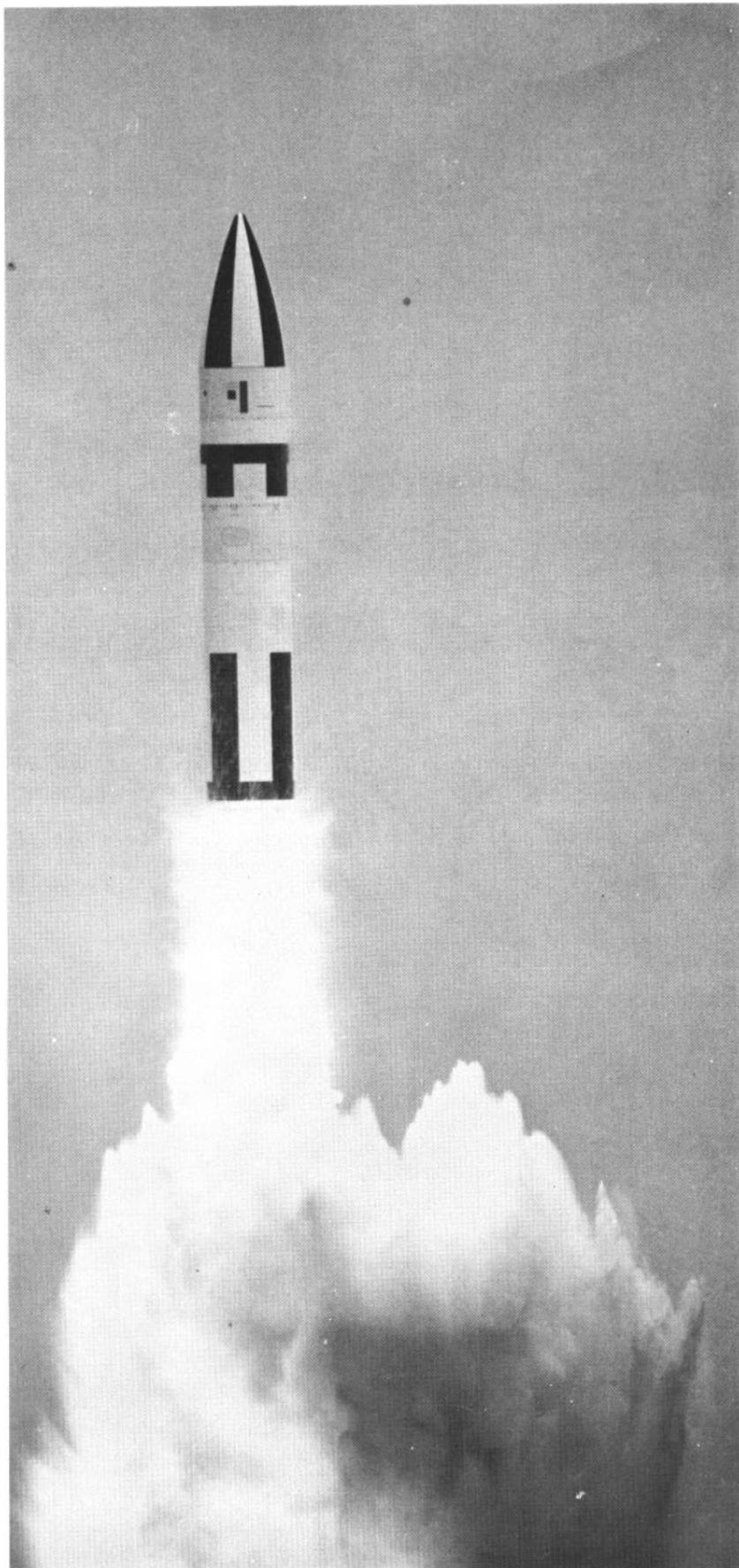
Poseidon's capabilities, coupled with the inherent capacity of the nuclear powered submarine to survive, will give the Navy ample assurance that the FBM system will be a reliable deterrent force in the years ahead.

BUT THAT'S the future. Back to the present *Polaris* missile. The inertial guidance system used in *Polaris* is the smallest in use in our country's ballistic missiles. Using gyroscopes, accelerometers, and its own electronic computer, the guidance system dispatches the missile on correct course at the time of launch.

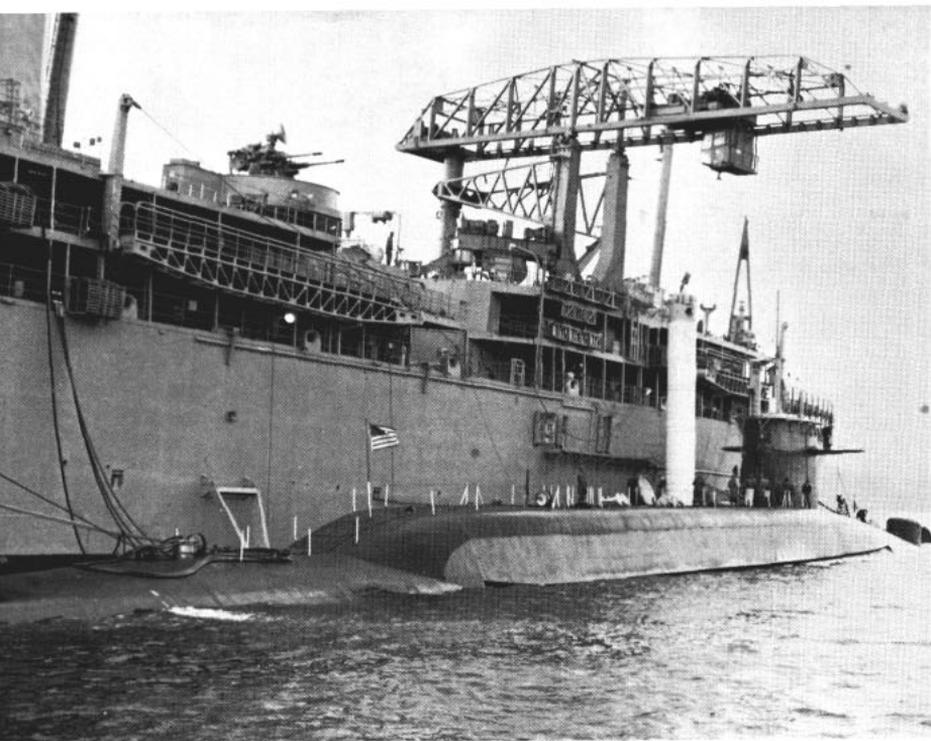
Should the missile be moved off course by high winds or other effects, the guidance system automatically computes a new course and puts the missile on it.

Still the guidance system is not through. At exactly the right instant, the device shuts off the rocket motors and separates the re-entry body from the missile. The payload then follows a ballistic trajectory to the target.

Two things must be known for success in missile launching: the position of the target, and the position of the launcher. In the FBM system, this puts great importance on navigation, since the position of the launcher (the sub) is continuously changing. Several methods complement each other in the *Polaris* submarine to provide great ac-



AND AWAY—*Polaris* A-3 takes off.



ATLANTIC BASE—FBM sub tender *USS Hunley* (AS 31) offloads a *Polaris* from *USS Thomas A. Edison* (SSBN 610) while in port at Holy Loch, Scotland. Accuracy in determining the ship's position provides a continuous report of the sub's position.

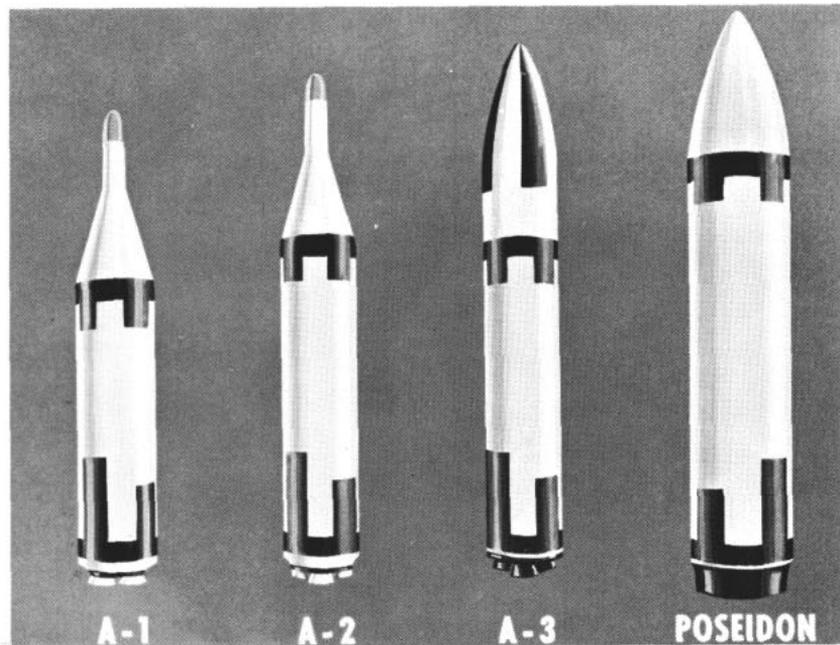
PROBABLY most important of these is the Ship's Inertial Navigation System (SINS), which employs gyroscopes and accelerometers as tools of its trade.

It takes into account movement of the submarine in all directions, its speed, and true North, to pro-

vide a continuous report of the sub's position. The *Polaris* submarine's fire control device feeds this information to the missile up to the instant of fire. The fire control mechanism can prepare missiles for launch at the rate of about one per minute.

Polaris missiles are launched from the submarine by either air or steam. The missile is shot from the

FAMILY TREE—Artist's sketch shows design from *Polaris A-1* to *Poseidon*.



tube up through the water to the surface. When it reaches the surface, the rocket motor lights off, and the missile is on its way. The launchers take advantage of the reliability and fast ignition characteristics of the solid propellant fuel used in *Polaris*.

The result of this launching method is increased safety for submarine and crew.

Each missile tube has its own launching device and is independent of the other tubes. Parts of each missile are accessible for maintenance even when it is loaded in the launching tube and the submarine is underway.

ALTHOUGH the FBM submarine is on patrol for two months at a time, it is never out of touch with home base.

Radio communications with submerged submarines has been possible for a number of years. The radio devices have been devised with special care to protect the locations of the submarine. Tests have repeatedly demonstrated that the Navy's worldwide communications system makes possible continuing command of the always-submerged FBM submarines.

Each FBM sub has two crews, the Blue and Gold, each consisting of about 130 men. While one crew has the ship on patrol, the other is in the home port, undergoing refresher training, taking leave, breaking in new crewmembers, and in short getting set to go back to sea to relieve the other.

Originally the main source for *Polaris* men was from within the Navy. For the most part the training required was only that needed in the specialized *Polaris* field. But with the steady demand for more and more men as the *Polaris* submarine fleet grows, most now are new recruits who are the very best people our nation can make available.

They have to be. The operation of the submarine and its nuclear power plant, the upkeep of the missiles, and in fact the effectiveness of the FBM system as a deterrent to war, are up to the crew.

THE SUBMARINE. The missile. The men. These are the big three elements of the FBM system. But

there are more. The support facilities.

They include missile testing sites, two missile assembly facilities, naval shipyards, submarine tenders, an experimental test firing ship, and a navigational test ship.

The chief testing site for the *Polaris* missile is the Air Force Eastern Test Range, at Cape Kennedy, Fla. The Navy complex includes launch pads and blockhouses, missile assembly and checkout buildings, and associated supply, administration and maintenance facilities. In addition, a Navy pier and associated port facilities at Cape Kennedy are maintained for SSBN and surface ship use.

USS Observation Island (EAG 154), an experimental missile test firing ship, is based at Port Canaveral at Cape Kennedy. The ship, a *Mariner* class cargo ship modified to serve as a firing test ship, has complete submarine-type fire control, navigation and launching systems for missile testing.

A *Polaris* Missile Facility at the Naval Ammunition Depot in Charleston serves as a missile assembly and loading point for FBM subs operating in the Atlantic. A similar activity at the Naval Ammunition Depot, Bangor, Wash., serves the Pacific force. At these activities, completed sections of the missile, including motors, controls, guidance, and other sub-systems are received from contractors, checked out, and stored for loading aboard FBM submarines, tenders, or resupply ships.



A FIRST IN 1960—RADM William F. Raborn, Jr., then Director of Special Projects and *Polaris* Program, relaxes after first submerged firing of a *Polaris* missile test vehicles by the FBM sub *USS George Washington* (SSBN 598).

DEPLOYED *Polaris* submarines operate out of Holy Loch, Scotland; Rota, Spain; Charleston, S.C.; and Apra Harbor, Guam. At each anchorage the subs are serviced by specially-equipped tenders, which provide supplies, service, and all but major repairs.

Operational *Polaris* submarines in the Atlantic are under the control of the Commander in Chief, U.S. Atlantic Command, who exercises his authority through the Commander in Chief, U.S. Atlantic Fleet and Commander Submarine Force, U.S. Atlantic Fleet.

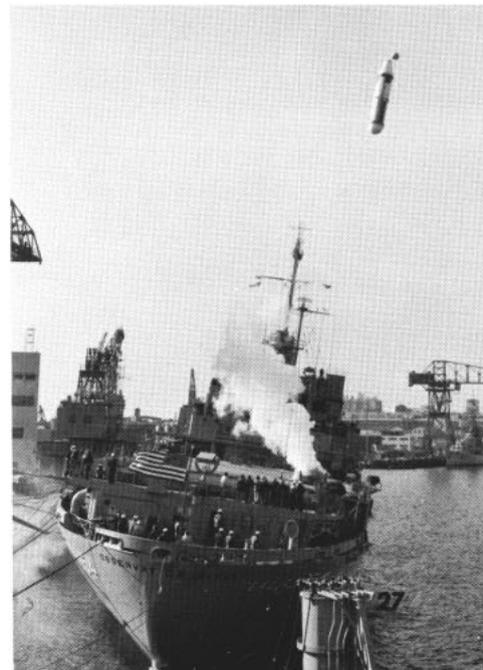
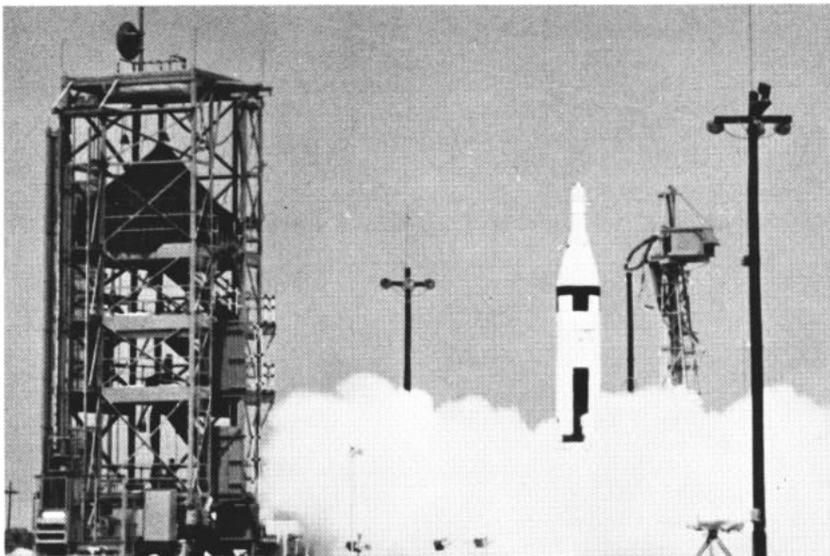
The commanders of Pacific Fleet units control the operations of FBM subs in the Pacific.

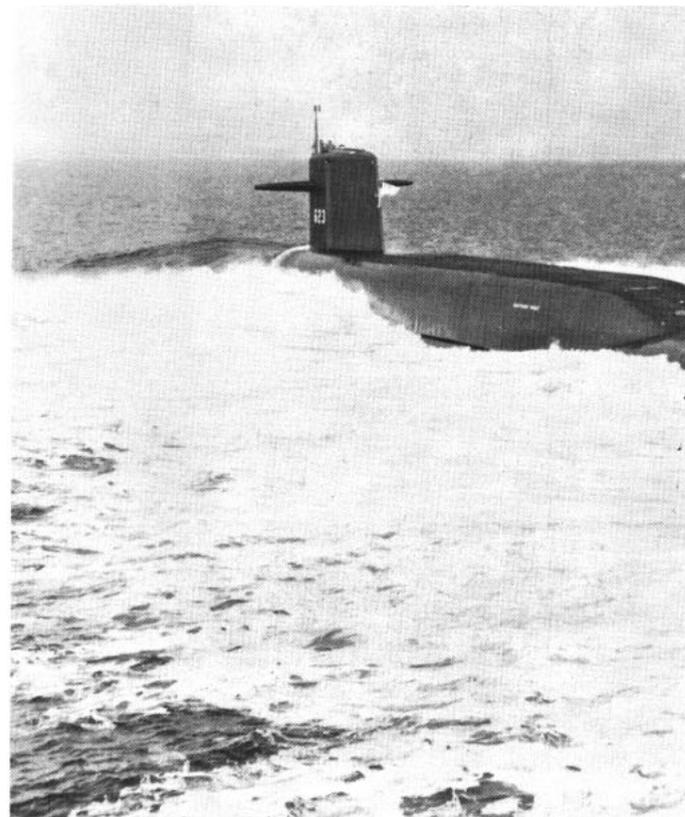
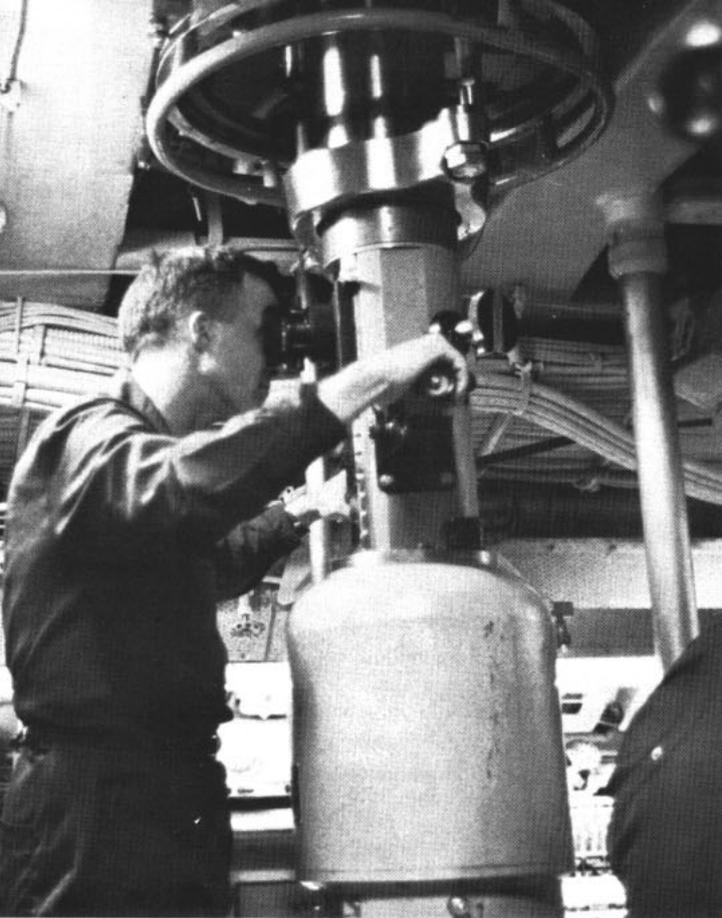
Of the 31 SSBNs now operationally deployed, 8 carry the 1500-mile range *Polaris* A-2 (5 are in overhaul) and 23 carry the A-3. Twenty-five *Polaris* subs are operationally deployed in the Atlantic Fleet, and six are deployed to the Pacific.

There have been well over 350 patrols of FBM submarines. Their 16 missiles have been ready to fire 98.1 per cent of the time.

Polaris. By definition, an important force for peace.

EARLY DAYS—*Polaris* test vehicle is fired at Cape Kennedy in 1959. Rt: *Observation Island* tests launching system.





ON PATROL—Crewmembers man stations on extended patrol. Above: FBM Navyman checks surface with periscope.



THE BLUE

WHEN MOST MEN measure time in days and weeks, *Polarismen* count in months. Months of training. Months on patrol. Months at home.

Their way of life is a mixture of about equal parts adventure, training, education, spaceman-like isolation, family living, and the fellowship of submariners the world over.

One way to understand the life of a *Polaris* submariner is to follow a typical crew of one of the submarines and see what happens during a normal cycle.

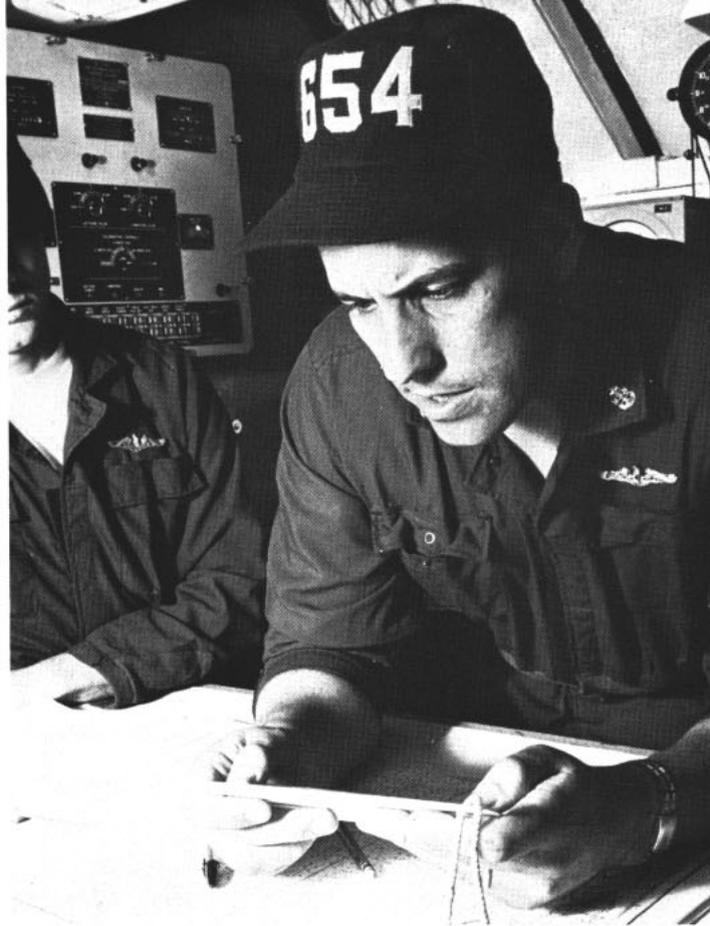
Each Fleet ballistic missile firing submarine is assigned two full crews. Called "Blue" and "Gold," each has its own skipper and full complement of officers and enlisted men. While one crew has the ship on patrol, the other is back in the home port, undergoing refresher training, taking leave, breaking in new crewmembers, and, in general, getting ready to go back to sea.

IT'S THE Gold crew of an FBM submarine homeported in New London, Conn., that is ready to pack up and head out to take their submarine on patrol.

There are 124 enlisted men and 12 officers in the crew. The officers include the CO, XO, navigator, engineer and his three assistants, the weapon system officer and his assistant, the communicator, the supply officer and the ship's doctor.

Thirty-four men in five ratings are directly concerned with the *Polaris* missile weapon system, while another 34 men in four ratings operate the nuclear power plant. These 68 men are ETs, MMs, EMs, ICs, QMs, TMs, FTs, and MTs. The rest of the crew consists of sonarmen, engineers, radiomen, yeomen, commissarymen, storekeepers, corpsmen and stewards, much the same as can be found in any other type ship in the Navy.

The average age of the crew is



TO SEA—USS *Nathan Hale* (SSBN 623) moves out. *Rt: Polaris subman checks position. Below: Men at launch panel.*

AND GOLD

24, and almost all of the men are high school graduates or better.

Goodbyes to families and friends, in this case, are not said dockside but, instead, just before the crew boards buses at New London for an hour ride to NAS Quonset Point. There, a jet passenger plane waits to fly the men to Scotland where their submarine will be returning in a few days.

A few hours after takeoff, the plane touches down at Prestwick AFB where the Navymen again board buses for the short trip to Holy Loch, home base of Submarine Squadron 14's tender.

The tender is mother for the 10 subs of the squadron. When the subs come off patrol they pull alongside her for minor repairs, refitting, reprovisioning and the like. By using an overseas anchorage such as this, transit time to patrol areas is cut down for the submarines, adding considerably to their life.

ARRIVING at Holy Loch, members of the Gold crew report aboard the tender to live until their submarine comes in and the change in command has taken place. Then they move aboard the sub, and, with the Blue crew, discuss the problems, plans, needed repairs, replacements and other matters. This alongside time covers about 30 days, after which the Blue crew returns home to New London.

Meanwhile, the Gold crew, together with the ship's force on the sub tender, begins working to get the submarine into shape for its next patrol.

A few days before going on patrol, the submarine is taken to sea and tested to insure that she is seaworthy and all her equipment is working as it should.

Then, as scheduled, the submarine, complete with new crew, full provisions, and all repairs made, commences her patrol. The crew





AT EASE—Crewmembers of a *Polaris* sub relax in their bunks while off duty.

know they will be gone for 60 or more days and that they will be submerged for the entire time. Where they are going, what route they will take to get there, just when they will return, only the skipper knows.

BUT THERE IS the awareness throughout the crew that the reason for their patrol is to be ready to launch the sub's cargo of 16 *Polaris* missiles if, and when, the President so orders. All of the money, all of the time spent in training, all of the effort put into the system is for that sole purpose, to serve as a deterrent to an enemy attack on our country.

As soon as the submarine reaches deep water, the crew settles down into the routine of living and work-

ing in its inner-sea spaceship. Everyone has already donned the specially designed blue dacron coveralls which is the uniform on patrol. Designed for comfort, the patrol suit is also a practical wash-and-wear item. Dacron, in addition, eliminates the problem of lint which could foul the sub's air.

The work routine for the missile system and nuclear power technicians, and the sonarmen and radiomen usually consists of shifts of six hours on and 12 hours off. The yeoman, corpsman, storekeepers, cooks, stewards and others may work normal 10- to 12-hour days or split their work as necessary.

To keep some sort of distinction between day and night, the ship is rigged for red at nighttime. All white lighting is replaced by red lighting

in berthing spaces and other spaces not requiring daylight conditions.

BECAUSE the submarine has been assigned a specific area to patrol, within range of assigned targets, the main emphasis of the daily routine is bent toward keeping the missiles in an up status, ready to go. Therefore, missile firing drills are as much a part of life to a *Polaris*man as are eating and sleeping.

In addition to being ready to launch missiles, the submarine has to be ever alert to take evasive action if she detects strange ships, either submarine or surface, in her patrol area. To protect herself, an FBM sub carries torpedoes as defensive weapons.

During a patrol, the submarine receives messages regularly, but her radiomen are not allowed to send any since they could give away her position. Daily news broadcasts by the Armed Forces Radio Service are picked up and, considered of equal importance by the crew, so are familygrams.

These are brief, personal messages from families and friends of the crewmen which let them know how things are at home.

Since the FBM submarine is modern in design, her living spaces are roomier and more pleasing than most non-*Polaris* type subs. Bunks for the crew, as well as in the comparatively spacious crew's quarters, are scattered throughout the ship.

Officers double and triple up in well designed, but compact, state-

OVER THERE—Atlantic Fleet Blue and Gold crew of FBM subs are flown to Holy Loch for patrol duties.



rooms. Only the captain has his own stateroom.

The ship is decorated throughout in light pastel colors to provide a homey atmosphere.

BY SUBMARINE standards, the crew's mess is large. It serves additionally as the movie and recreation hall, study area, and the old country store cracker barrel.

Eating, of course, is of major concern, and every possible effort is made to provide the crew with outstanding food. The effort begins with the ship's cooks receiving special training at top-flight restaurants before joining a *Polaris* crew.

When the sub left Holy Loch, it was carrying enough food to more than cover the expected duration of patrol. Boneless and rationdense foods are used to save storage space, but submariners swear by the ability of the cooks to prepare a meal as fresh looking and tasting as anyone can get.

Food consumption on a typical patrol will include something like 4000 lbs of beef, 3000 lbs of sugar, 1200 lbs of coffee, 120 lbs of tea, 2000 lbs of chicken, 1400 lbs of pork loin, 1000 lbs of ham, 800 lbs of butter, 3400 lbs of flour, and 960 dozen eggs.

Some of the more enticing entrees listed on the menu are Chicken Isabella, Baked Alaska, Shrimp Newburg, Beef Stroganoff and Lasagna. Standard favorites are roast beef and steak. Four meals are prepared daily—breakfast, lunch, soupdown in midafternoon, and dinner—and the galley is open the rest of the time so the crewmen can help themselves (Exercise machines are available to help keep their weight down).

ORIGINALLY, it was thought that boredom would plague the crews of FBM submarines on long patrols, but it has not proven to be a problem. This is largely because of the long hours and hard work required by all hands on board to keep the submarine always ready for its mission. Off-duty hours can be more than filled with recreational or educational activities.

For instance, each *Polaris*man has the opportunity to take college level courses for self-improvement and college credit. Harvard University has devised a full, two-year course of instruction through which credits

toward a bachelor's degree may be earned. Lectures for the most part are on film and the greatest share of the work is done while the submarine is on patrol. Any lectures, tests, or laboratory work which cannot be completed on patrol is done in the home port as part of the day's routine.

A prime entertainment feature is the evening (or matinee) movie, which often is shown twice daily to take care of both day and night workers. Talent show, game and sing-along nights also help to enliven the crew's spirit and morale.

ALL IN ALL, the crew usually finds that time passes quicker than expected and soon it is time to head back to Holy Loch and turn the ship over to the Blue crew once again.

A few miles out from the tender, the submarine surfaces and the men rejoin the topside world. The first taste of fresh air is not too greatly

appreciated, since the controlled air of the submarine is cleaner and purer. And too, a rash of colds may crop up within the crew shortly after their return, for they have been free of such impurities since about a week after submerging on patrol.

Once alongside the tender, the Gold crew spends a few days handing the ship over to the Blue crew, and then they reverse the trip they took three months before.

After a week or two of getting accustomed to home life again, the Gold crew resumes its regular five-day-a-week program of refresher training. Newcomers will join the crew, and begin their roles as *Polarismen*, looking forward to the end of the three-month shore tour and the beginning of their first FBM patrol.

Such is the life of a *Polaris* submariner. If not unique, it is certainly different from that of other men, be they sailors, soldiers, airmen or civilians.

READY TO GO—Blue and Gold crewmembers are ready to take over as they stand at attention during commissioning ceremonies of their submarine.

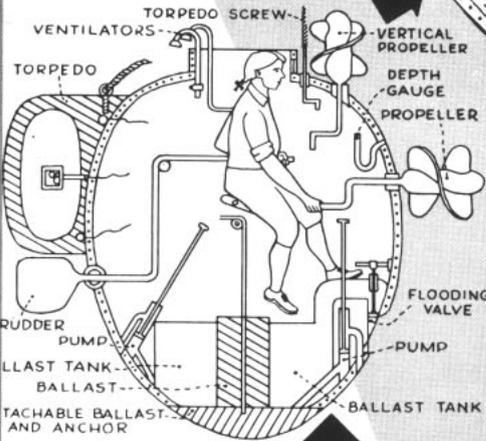
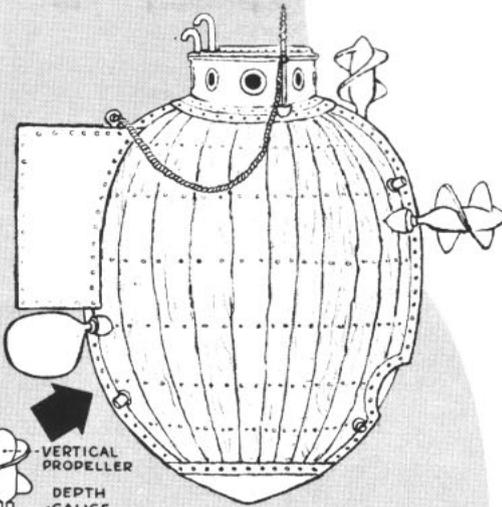


SAGA of the SUBMARINE

A THUMBNA

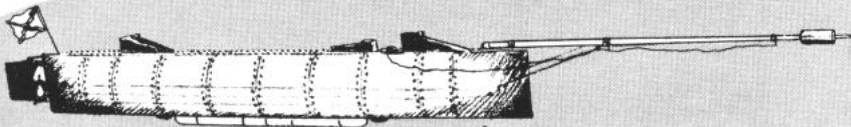
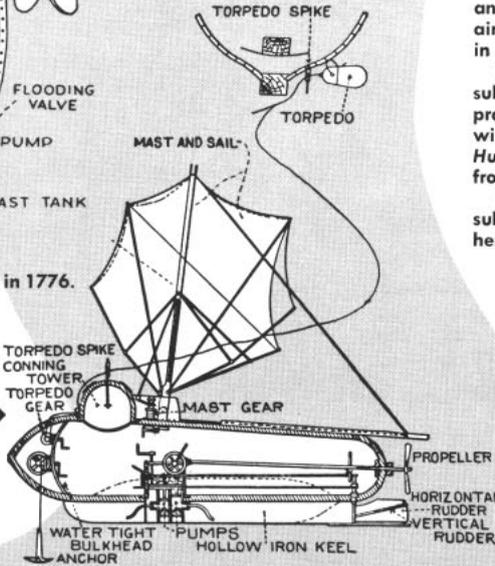


Alexander the Great and his glass barrel in the period of 356 to 323 B. C.

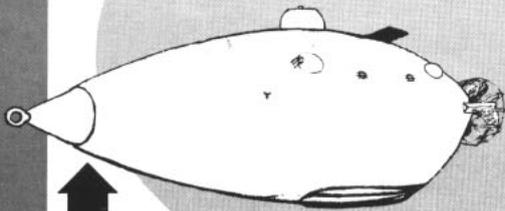


The submarine *Turtle* built by David Bushnell in 1776.

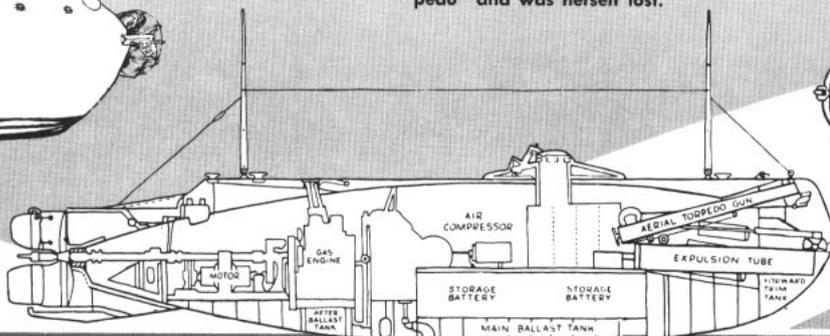
The first *Nautilus* was built by Robert Fulton and launched in 1800. This craft was rejected by both the British and French. Fulton came to fame in the United States for his steamboats.



Having been sunk three times by various mishaps, *CSS H. L. Hunley* of 1864 finally sank *USS Housatonic* with her "spar torpedo" and was herself lost.



From 1864 to 1872 the Navy experimented with a hand-cranked submarine called *Intelligent Whale*, now an exhibit at Washington Naval Yard.



SS 1 Holland in 1900 design for all subms was truly the first su the U. S. Navy.

In the third century B. C. Archimedes discovered the laws of floating bodies, an event which might be called the invention of the submarine.

It was Alexander the Great who was the first man on record to go below the surface of the water in a boat of any type. It is said he had himself lowered into the sea in a glass barrel.

Leonardo da Vinci also experimented with the idea of a submarine as did many of his contemporaries.

Cornelis Drebbel, a Dutch inventor, is credited with building the first submarine. His craft, built in 1620, consisted of a wooden frame covered with greased leather. Oars sealed with watertight flaps provided the propulsion on the surface and when submerged.

In 1747 an unidentified inventor introduced a method of submerging and surfacing his submarine by having a number of goatskins built into the hull and attached to an aperture in the bottom of the boat. To submerge, the skins were to be filled with water. To surface, the skins were twisted with a rod, forcing the water out. This was a forerunner of the modern ballast tank.

During the American Revolution a Yale student by the name of David Bushnell built a submarine to use with the underwater gunpowder he had developed. One man alone had to crank one of the two screws and manage the pumps, valves and changes of ballast.

Some twenty years after Bushnell, Robert Fulton built the *Nautilus*, which was a submarine with a sail for surface operation and a hand turned screw for use when submerged. Fulton conceived the ideas of the vertical and horizontal rudders, ballast tanks and compressed air for replacing foul air. These ideas were incorporated in our modern submarines.

During the Civil War, the Confederate forces built a submarine named *CSS H. L. Hunley*. This submarine was propelled by eight men turning hand cranks. Armed with a torpedo at the end of a fifteen-foot pole, *CSS H. L. Hunley* sank a Union ship in 1864. She never returned from her mission.

From 1864 to 1872 the Navy experimented with a submarine called the *Intelligent Whale*. She flooded on her first trial, ending any further attempts.

IL HISTORY

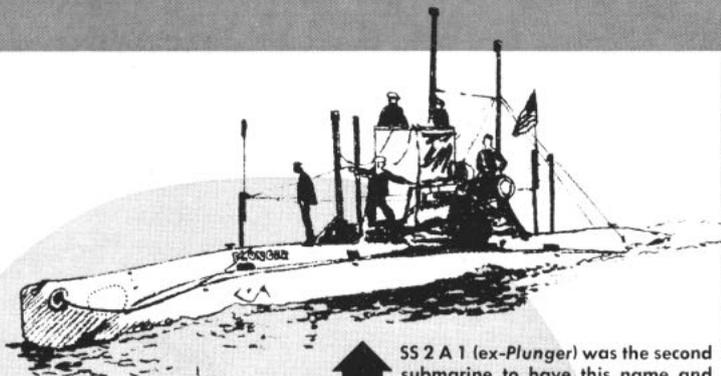
With the development of electrical machinery, an all electric submarine was built in 1886 by Wolsey and Lyon of England. Its speed was six knots and it was powered by two 50-hp electric motors and a 100-cell storage battery. It had a range of only 80 miles since the batteries would have to be overhauled and recharged after that distance.

In 1895 John Philip Holland was contracted to build the submarine *Plunger* for the U.S. Navy. Foreseeing her failure because of naval restrictions, he began building another entirely from his own plans which was called *USS Holland*. This was truly the first successful submarine of the United States Navy and was delivered in 1900 to become the basic design for all submarines to follow. *Holland* was propelled on the surface by a 50-hp gasoline engine and had an electric motor, run by a large storage battery, for underwater power. Her speed was eight knots on the surface and five and a half knots when submerged. She carried a crew of five men and one officer.

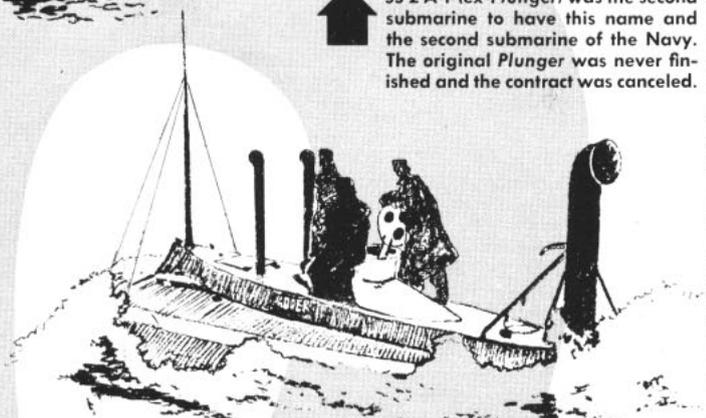
In the early part of this century almost all the submarines were powered by gasoline engines or steam engines and battery-fed motors. In 1890 Rudolph Diesel, a German engineer, developed a very simple engine which was far more efficient and safer than gasoline engines, and the United States first used it in 1912 on the submarine *E-1*. Today it is still used as the auxiliary engine on nuclear-powered submarines.

Germany, one of the last European nations to begin building a submarine force, set the pace in developing the diesel-electric submarine as her major weapon in both world wars. In 1914 the German submarine *U-9* sank three British cruisers. With increased U-boat production of WWI, merchant losses mounted alarmingly. The submarine at this point was proven to be a superior weapon.

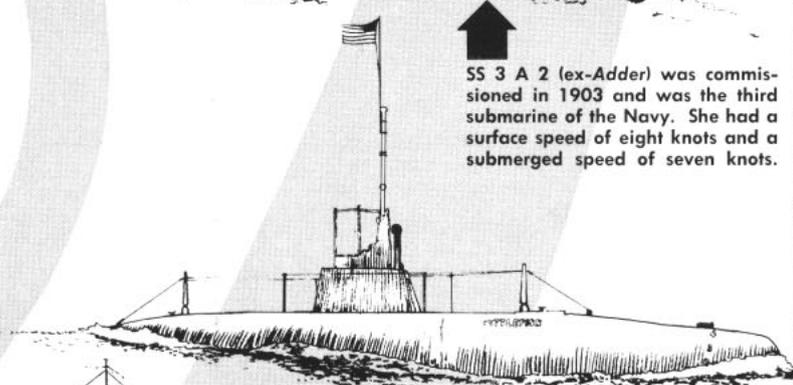
In 1917 Britain built its K class submarines, with steam plants giving them 23½ knots on the surface and electric motors for speeds of 10 knots submerged. In the 1920s the United States built its V class submarines, *Narwhal*, *Nautilus* and *Argonaut*, which served extensively in WWII.



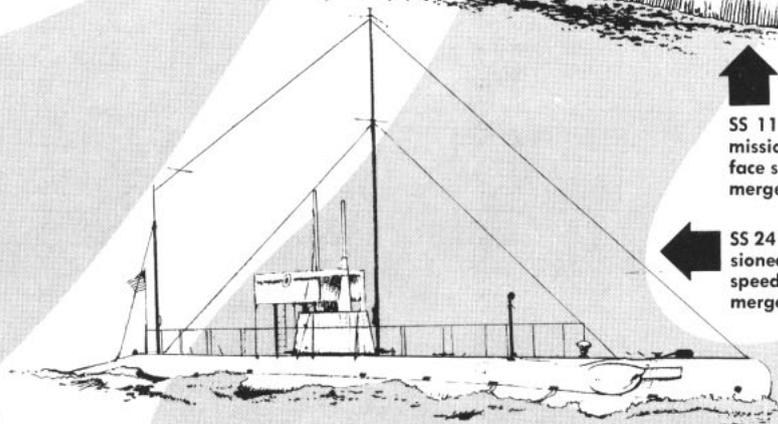
SS 2 A 1 (ex-*Plunger*) was the second submarine to have this name and the second submarine of the Navy. The original *Plunger* was never finished and the contract was canceled.



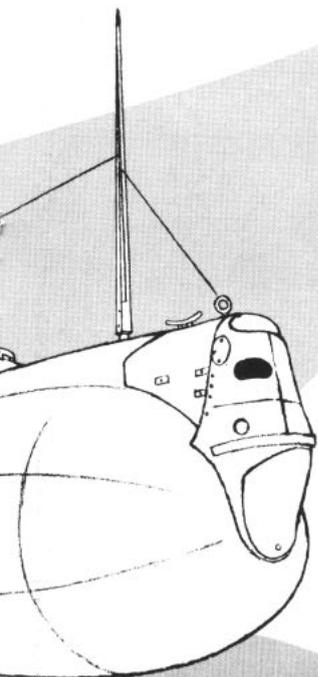
SS 3 A 2 (ex-*Adder*) was commissioned in 1903 and was the third submarine of the Navy. She had a surface speed of eight knots and a submerged speed of seven knots.



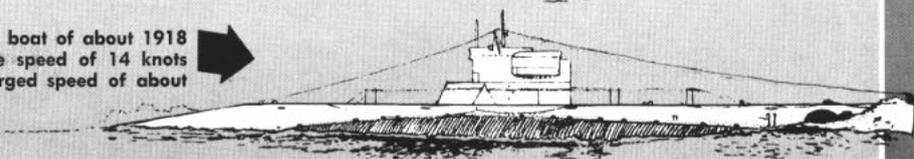
SS 11 B 2 (ex-*Cuttlefish*) was commissioned in 1907 and had a surface speed of nine knots and a submerged speed of eight knots.



SS 24 E 1 (ex-*Skipjack*) was commissioned in 1912. She had a surface speed of about 13 knots and a submerged speed of about 11 knots.

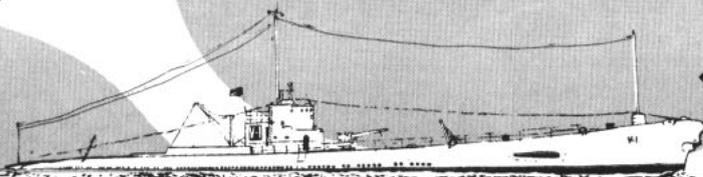


The Navy's O boat of about 1918 had a surface speed of 14 knots and a submerged speed of about 10 knots.



SS 163 (ex-SF 4) *Barracuda* (ex V 1) was commissioned in 1924. Her surface speed was 21 knots

became the basic design to follow and the most successful submarine of



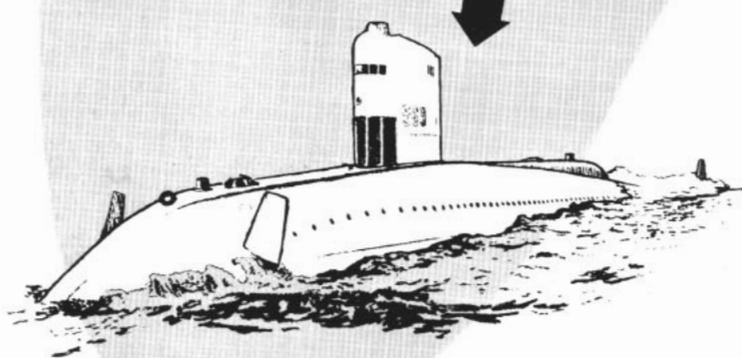
SAGA of the SUBMARINE



SS 403 *Atule* is shown after being converted to a Guppy from the Fleet-type submarine. She was commissioned in 1944 and underwent the conversion between 1950 and 1951.

SS 475 *Argonaut* was commissioned in 1945 and is a Fleet-type submarine. Her surface speed was about 20 knots and the submerged speed was a little over eight knots.

AGSS 569 *Albacore* was commissioned in 1953 with a mission to provide data for future submarine construction.



World War II submarines were essentially the same as they were during WWI. U.S. submarines built throughout WWII were of the *Gato*, *Balao* or the *Tench* types, having a surface speed of about 20 knots and being a little over 310 feet long. All had one small and four large diesel engines. Battery-fed motors allowed about nine knots underwater. Actually, up to this point in submarine history, these craft were basically surface craft with the ability to submerge for limited periods of time.

The submarine's new age came with the development of nuclear power. Authorization for the first nuclear submarine was signed by President Truman in 1950. This was to be *USS Nautilus*. *Nautilus* was commissioned on 30 Sep 1954, and was to prove the nuclear propulsion system. On her first two reactor cores, she traveled 153,886 miles, 115,383 miles of this distance having been steamed fully submerged. (Air is filtered and re-used.)

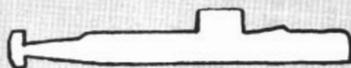
In the nuclear power plant, the heat of the reactor is transmitted to water, generating steam to drive the turbines. *Nautilus* can maintain speeds in excess of 20 knots.

Following *Nautilus* came the nuclear submarine *USS Sea Wolf*.

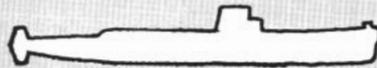
USS Albacore was commissioned in 1953 and was designed and built to carry out experimentation in hydrodynamics with the purpose of improving hull design.

Using the power plant of *Nautilus* and hull design of *Albacore*, the United States began building nuclear-powered submarines in production quantities. They may become the most self-sufficient war craft of all time.

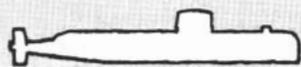
THE NUCLEAR SUBMARINE FLEET: REPRESENTATIVE TYPES



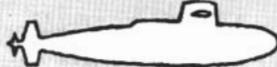
1954—Attack submarine *Nautilus* the world's first true submersible.



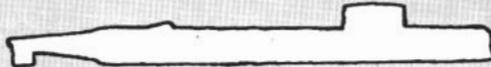
1957—Attack submarine *Seawolf* was the second nuclear submarine.



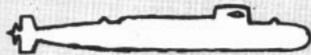
1957—First production model of the attack submarine was *Skate*.



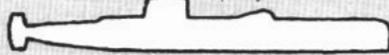
1959—Whale-shaped attack submarine, the first being *Skipjack*, was fastest and most maneuverable.



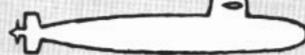
1959—World's longest attack submarine is the *Triton* with twin reactors.



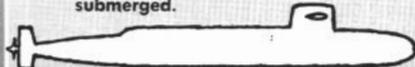
1960—Attack submarine *Tullibee* was designed to detect and destroy enemy submarines while both were submerged.



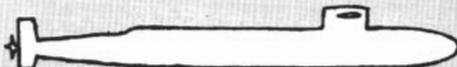
1960—Guided missile submarine *Halibut* was first submarine designed to fire *Regulus* missiles.



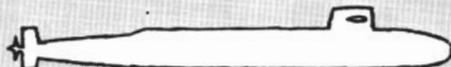
1962—Attack submarine of *Permit* class has advanced *Skipjack* design.



1959—First Fleet ballistic missile submarine was the *George Washington*, designed to fire the *Polaris*.

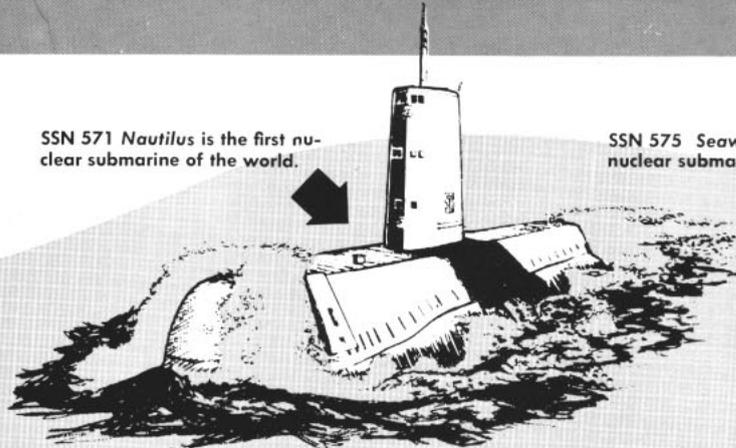


1961—Second generation Fleet ballistic missile submarine of the *Ethan Allen* class.

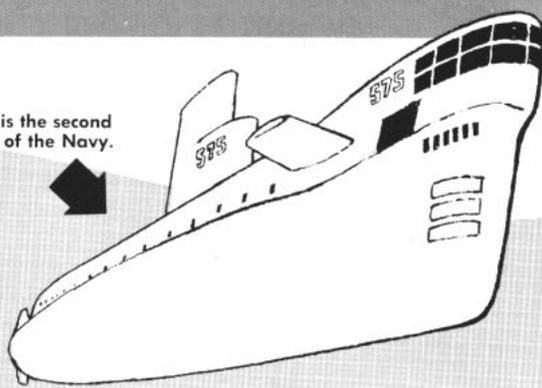


1963—Third generation Fleet ballistic missile submarine is the *Lafayette*.

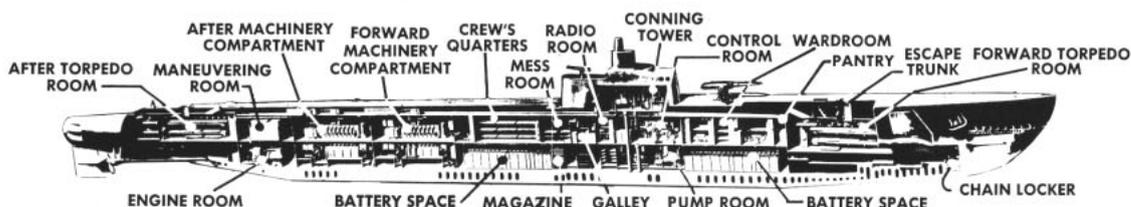
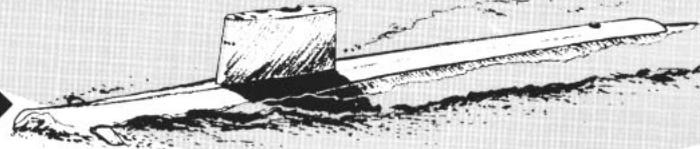
SSN 571 *Nautilus* is the first nuclear submarine of the world.



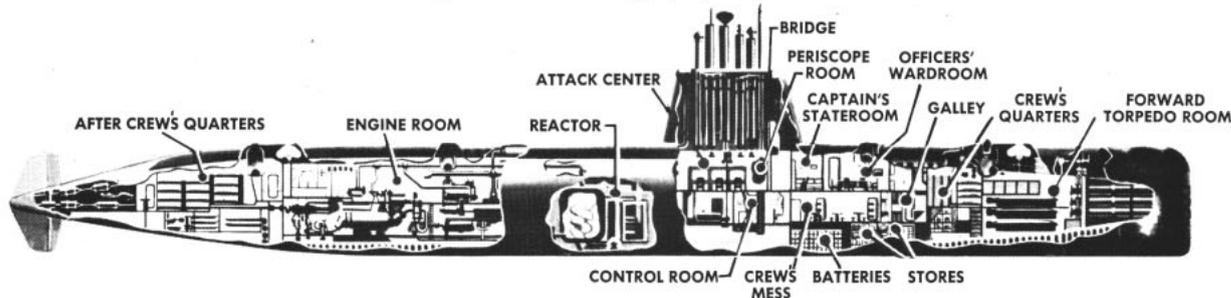
SSN 575 *Seawolf* is the second nuclear submarine of the Navy.



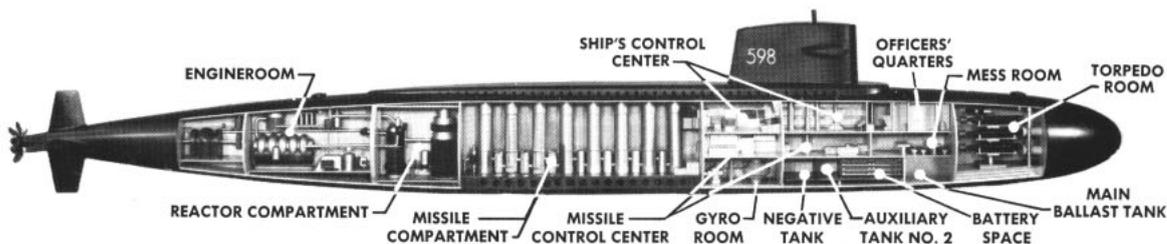
SSRN 586 *Triton* is the Navy's longest nuclear submarine and has twin reactors. *Triton* was commissioned in 1959.



Cutaway of a World War II Fleet type submarine. This type played a prominent role in Pacific warfare.



Shown is a cutaway of the present *Nautilus* (SSN 571) designed to cruise longer, farther and faster than conventional submarines.



Cutaway of the *George Washington* SSBN 598, a Fleet ballistic missile submarine.

AMERICAN PIONEERS IN THE SUBMARINE FIELD



DAVID BUSHNELL
c1742-1824



ROBERT FULTON
1765-1815



HORACE L. HUNLEY
1823-1863



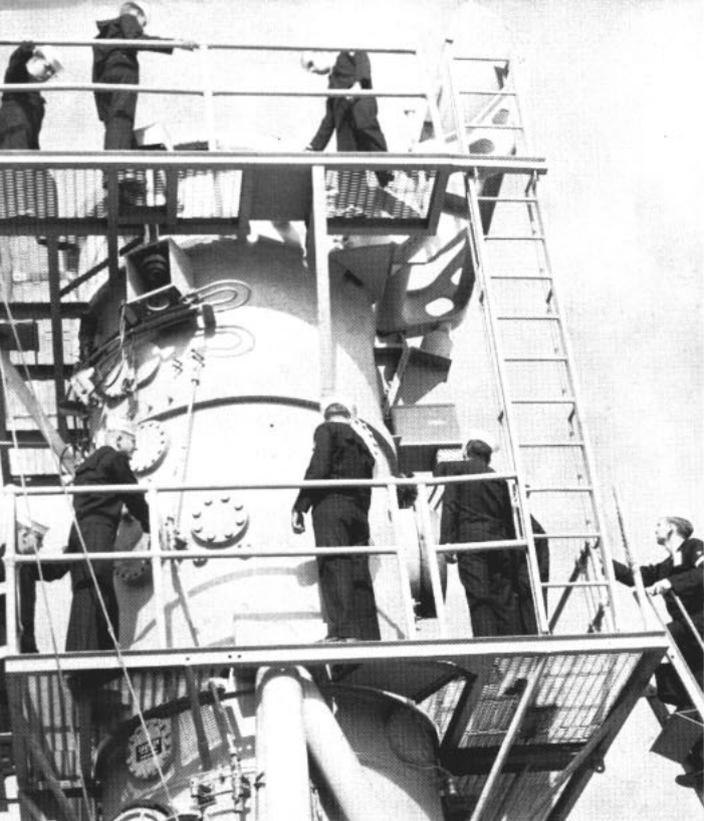
JOHN P. HOLLAND
1840-1914



SIMON LAKE
1866-1945



VADM. H. G. RICKOVER USN
1900-



SHORE AND SHIP—FBM students meet a *Polaris* tube at Dam Neck. Rf: FBM submarine training continues.

POLARISMAN

FOR ALL ITS complexity, the *Polaris* submarine is only as good as the men who breathe life into it.

This aphorism is used in the indoctrination phase of *Polaris* crew training. Because an FBM (Fleet ballistic missile) submarine is literally a world unto itself, each crewman must be highly trained, well qualified, reliable and self-sufficient. He must fit neatly into his specific niche within the sub's technological and psychological network.

In other words, he must be a *Polarisman*.

Training of *Polaris* submariners falls into broad categories: that required before assignment to a *Polaris* sub, and that received while on patrol or on shore between patrols.

A certain amount of training is common to all *Polarismen*. Every sailor goes through nine weeks of boot camp right after enlisting in the Navy. This gives him an introduction to the Navy and his new way of life. Later, all potential submariners spend eight weeks in submarine school, where they learn the rudiments of submarine life.

Even when first assigned to a submarine, a man is still not a full-fledged submariner. Before his dolphins are presented to him, he spends about 36 weeks earning the right to wear them. He must be familiar with the complete workings of his submarine. He spends hours tracing pipes, wiring and air vent systems, all of which are essential to the sub.

BUT IT TAKES more, much more, to become a *Polarisman*.

Originally, the main source of FBM sailors was the diesel subs. But with the steady demand for more and more specialists within the *Polaris* fleet, the mainstream of personnel is now coming from recruit centers.

A special Advanced Electronics Field (AEF) program has been established as a primer for *Polaris* trainees. The program may cover more than a year of formal training in basic and advanced electronics schools.

Study begins with a course of instruction—varying in length from 22

to 36 weeks—at one of the following Class "A" schools: CTM, DS, ETR, ETN, FTG, FTM, GMM, STG, STS, and MT.

The student first learns the fundamentals and application of electronics, electricity, magnetic amplifiers and synchro/servo remote control systems.

More advanced courses are taught as the student proceeds through school. These may include the study of radar special circuits, transistors and analog and digital computer fundamentals.

AFTER SUCCESSFUL completion of an "A" school, the student may be sent to a "C" school to begin the detailed study of specific equipment related to the ET, FT, MT, and TM ratings. There are more than 25 different courses at the various "C" schools lasting from 11 to 29 weeks, depending upon the complexity of the Fleet ballistic missile system equipment.

The training required for FBM systems is centered at the U.S. Naval Guided Missiles School, Dam

Neck, Va. *Polaris* facilities at Dam Neck include actual tactical systems duplicating those which the men operate and maintain on board ship. These systems include a ship's inertial navigation system (SINS), a fire control system, and a full-size missile launching tube which ejects a mushroom of multicolored water instead of a missile.

To be able to maintain and operate the equipment, a *Polaris* technician must be thoroughly familiar with the basic theory and fundamental physical principles involved. All the courses contain an eight-week preliminary course which helps the student grasp the basics of digital computers, inertial theory, computer logic, transistor theory and use of testing devices. Some of this training is available outside the Navy only at the postgraduate college level.

AT LEAST HALF of the students' time in most courses is devoted to laboratory work. ETs receive a 27-week course in one of three fields, all concerned with the operation, maintenance and testing of navigation system devices. These include the SINS, the navigation control console, sonar equipment, star tracking periscopes and satellite receivers.

FTs learn the theory, operation, maintenance and testing of the entire missile fire control system, including checkout equipment, in the 29-week course.

MTs spend 28 weeks studying the theory and operation of missile guidance systems and missile checkout equipment. In an 11-week course, TMs master the missile launching system and associated hardware.

Quartermasters assigned to FBM crews also attend a special six-week course at Dam Neck to learn the use of various special navigational aids.

IN ADDITION to the advanced courses for enlisted men, there are highly accelerated courses for prospective commanding and executive officers, and complete courses for weapon system and navigation officers.

After completing such courses, the *Polaris* man can look forward to serving in submarines of the Fleet where he will gain additional experience. But his schooling may not end here. For as new and better



POLARISMAN watches complicated monitoring gear for missile firing system.

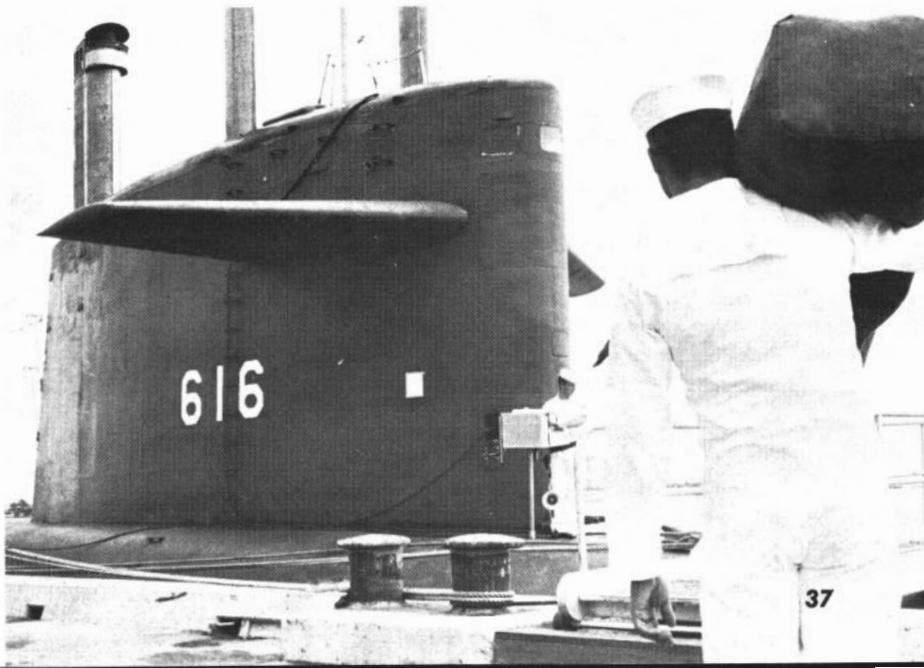
equipment is developed for the system, he will return to school for a few weeks or months to learn how to operate and maintain it.

After a man has mastered his own specialty, he then starts on the road to supervisor and must learn the op-

erations of the entire system, much as a systems engineer does.

At this point, the circle of training becomes complete and he is given the responsibility of instructing new men striving to become full-fledged *Polaris*men.

HIGHLY TRAINED *Polaris* submariner reports aboard *USS Lafayette* (SSBN 616).



THE BULLETIN BOARD

It's a Bonny Life in the Land of Kilts and Bagpipes

WHEN NAVYMEN and their families complete a tour at duty stations overseas, they leave with a better appreciation of the country and its people, thanks to their life as neighbors of the local residents. That's part of the broadening experience of travel, one of the service fringe benefits that has a tendency to be overlooked.

Of course, some duty stations abroad are more interesting than others. Some have an ideal climate. Some have exotic scenery.

And then there's duty in Holy Loch, Scotland . . .

Navy families have been known to return from a couple of years in Holy Loch almost unrecognizable to family and friends they had left behind.

Hitherto unmusical Navymen can be seen—and heard—sending the skirl of the bagpipes wafting across the water as their submarine pulls into Charleston, S. C.

Friends are sometimes startled when newly returned families rush outside at the first sign of sunshine and throw their arms skyward as if greeting a long-lost comrade.

Former diehard bachelors come home with brides, whose thoroughly charming accent quickly devastates the local populace.

There is no U. S. naval base at Holy Loch. A small, protected bay near Scotland's western coast, it is used by the Navy as an anchorage for a submarine tender (currently USS *Simon Lake* (AS 31) is assigned), and the boats of Submarine Squadron 14, most of which are Fleet ballistic missile subs.

Since there is no base, Navy families are required to live among the Scots (not Scotch, if you please), and it apparently doesn't take long to become captivated by the whole Scottish scene. Most of the scene, anyway. The Scottish weather is notoriously uncaptivating.

There are three principal towns close to Holy Loch. Most Navy families set up housekeeping in

William Roger Maul, CTC, USN



"Ah! . . . '007', I presume? . . ."

either Greenock, Gourock, or Dunoon.

Greenock (about 77,000 population) is the largest of the three, and thus has most to offer the Navy family, especially with respect to available housing.

It is also only 25 miles from Glasgow, Scotland's largest city. Greenock has one major disadvantage. It is on the wrong side of the Firth of Clyde, as far as the submarine tender is concerned, and the boat ride to the ship is rather long.

Gourock (about 10,000) is near Greenock, also across the Firth of Clyde from the tender, and the boat ride to the ship is still lengthy.

Many Navy families choose to live in Dunoon (about 10,000), since it is closest to the anchorage. There is a small Navy Exchange and Commissary located here, and the tender is anchored nearby.

Housing: Most Navy families rent furnished apartments (called flats) or houses. Unfurnished houses are available, but are much more difficult to find, and often require a minimum two-year lease. Furnished two-bedroom apartments and houses usually rent for \$100 per month and

up. One-bedroom flats start at \$45 per month.

Houses are generally unheated. But, even if they are provided with central heating, the maximum temperature may not be as high as that to which you are accustomed during the winter months in the States. Heating is usually by portable electric or paraffin (kerosene) heaters. Gas heating is more expensive than in the States.

Scottish communities have an electrical supply of from 200 to 240 volts at 50 cycles. Electrical appliances of American manufacture normally operate on 110/120 volts, 60 cycles; therefore, they can be used only with a transformer. It is suggested that you check your American-made appliances to determine the correct size transformer to use.

You should bring plenty of sheets, pillowslips, towels, and tablecloths so that you do not have to do your laundry too frequently. Good drying days do not come with any regularity.

Clothes dryers are especially helpful items to bring with you, although the limited space in the kitchen area can present a problem, and you may have to pay for special wiring or run your dryer on half power.

Clothes washers of the semiautomatic or wringer type will work with a converter. Automatic washers can present a number of problems due to the difference in cycles, plumbing lines, and fixtures.

Radios, hi-fi's, phonographs, mixers, toasters, grills, vacuum cleaners and electric heaters are desirable, and you will want to bring them with you. However, it is suggested you store television sets (completely useless), freezer, stoves, and automatic washer-dryer in the States until you get back home. Television sets may be bought or rented locally.

Medical and Dental Care: There are two U. S. naval clinics, one in Dunoon, the other in Greenock. Medical care is also available from

civilian sources, but dependents may not use the free facilities of the British National Health Service without the permission of a U. S. Navy medical officer. When hospitalization is required, it must be obtained from civilian sources.

It is recommended that dependents have all necessary dental treatment completed before leaving the U. S., because only limited dental treatment is available from the Navy Dental Clinic and local civilian dentists. British dentists are highly skilled and qualified, of course, but their first concern is to their own patients. Some, however, will accept other than National Health patients. Their fees are comparable to those charged by dentists in the States.

Commissary and Exchange: The U. S. Air Force has a commissary store and exchange at Prestwick Air Base, approximately 40 miles from Holy Loch. The store is, of course, open to Navymen and their dependents.

You will probably find yourself doing considerable shopping in the local markets, since the Air Force commissary is so far away. (In Scotland, a 40-mile jaunt can turn into quite an expedition. There are few super highways between Holy Loch and Prestwick.) You will find that personal contacts in your daily marketing are far more important than they are in the U. S. supermarket, and you will get personal attention that you will not find at home.

There are many small towns and villages in this area, and you will rarely find it necessary to leave your neighborhood for most of your needs.

A limited selection of commissary and exchange items and package liquors is available at the Ardnadam Recreation Complex, near Dunoon.

Money and Banking: U. S. currency is used on U. S. bases in the United Kingdom. Elsewhere, British sterling is the medium of exchange.

The pound sterling (£) is valued at approximately \$2.80, and is composed of 20 shillings. A shilling is valued at 14 cents. Other units of exchange are: 10-shilling notes (\$1.40), half crown, or two and one-half shillings (35 cents), two-shilling piece (28 cents), six pence (seven cents), three pence (pronounced "thruppence") (three and one-half

cents), and half-penny (pronounced "hayp'nee") (one-half cent).

One U. S. bank maintains a branch in Glasgow. Military personnel may maintain dollar or sterling checking accounts with this bank. However, checks drawn on this bank are not readily negotiable outside Britain. Postal money orders and bank drafts are the only practical means of remitting funds to the States. While it is suggested that you consider retaining your checking account with your present bank, a local bank account is most convenient and highly recommended.

Clothing: The reporting uniform for Navymen is Service Dress Blue Bravo. In addition to the prescribed military uniform, personnel are permitted to wear civilian clothing for shore leave. A full seabag should be brought when reporting for duty.

Local prices on women's clothes are from moderate to expensive, depending on taste. Materials are of excellent quality, and woolens can be bought at a considerable saving. Sweaters and other woolens are in good supply and reasonably priced. If you wear narrow shoes you may find it difficult to get a proper fit. Otherwise, shoes are attractive and moderately priced. It is a good idea to be in contact with your favorite shoe dealer in the States. Have your size and width handy, and allow three to four weeks for delivery. Comfortable walking shoes are a must.

Clothing for girls is easier to find

William Roger Maul, CTC, USN



"Well, Chief, let's put it this way . . . if I decide to transfer the 'non-producers' out of my department, you'll be the first to know . . . Heh! Heh! . . . in a manner of speaking . . ."

than for boys. Girls' wool skirts and sweaters are plentiful as are good coats. Mail order houses in the States give good service and orders can usually be obtained in three weeks. If you enter a child in a British school, the school uniform is comparable in price to other clothing, and is of good quality.

You will probably want to bring some summer clothing, but the bulk should be placed in permanent storage in the States. For everyone, a raincoat with a lining is another must.

Automobiles: There are no restrictions on the importation of a privately owned automobile, as long as it is in a safe operating condition and in good mechanical order. A mandatory inspection of all automobiles manufactured over six years ago is now in effect in the United Kingdom.

Vehicles are entered free of duty and purchase tax, provided that a certificate is executed which requires the owner to export the car at a later date. A sale to another U. S. serviceman, who must execute the same type of certificate, is permissible.

Spare parts and repairs on American cars are expensive in Scotland and hard to get. Compacts are preferable to larger automobiles, since some of the roads and gates are quite narrow.

Military personnel are not required to obtain a British driver's license, but must hold a valid U. S. license. If your stateside license expires while you are in Scotland, you can obtain a British license for five shillings (70 cents) a year, upon the presentation of a certificate signed by your commanding officer.

Two other items are essential for operation of an automobile in Great Britain: payment of road tax at the rate of 15 pounds a year, and automobile insurance for which the yearly rates vary according to a number of circumstances. In regard to automobile insurance, a letter from your present insurance company attesting to the number of accident-free years you have driven will result in a no-claims bonus policy with the resultant reduced rates.

Exchange gasoline is sold at Ardnadam Recreation Complex, at

25 cents per imperial gallon. Gasoline at this price is rationed for use in driving to and from work (that is, the appropriate pier). Gasoline on the local market (petrol, of course) costs 70 cents per imperial gallon.

Education: Since there are no U. S. schools in the Holy Loch area, your children will attend British schools. Each school is under the supervision of a headmaster, who is generally one of the faculty. The children are placed in classes according to age and ability.

These classes are called "forms" instead of grades—thus, what we call the sixth grade is called the sixth form. The first stage of schooling, called the "infant stage" is for children from five to seven years old. The next stage, the "primary," takes the child through age 11.

At this point the local children are given an examination called the eleven plus exam, which determines where they will be placed in the secondary system. American children do not have to take these examinations.

The secondary system takes the child through to ages 15 to 18, or older. In secondary, or grammar school, the student will be offered college entrance courses, commercial, homecraft, or technical courses.

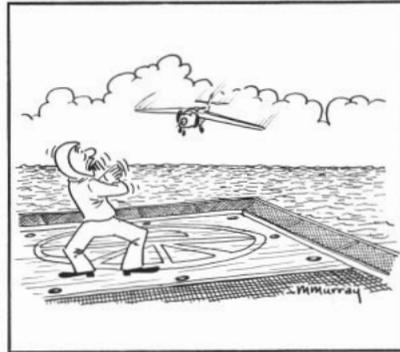
American children are placed in classes based on the records transferred from their last school and, in some cases, as a result of conferences with the teachers. Once school is in session, the child will be moved up or down until he is with a class of the same educational level.

Children are generally expected to walk or cycle to school if they live less than two miles from the school. Students who are under 15, living two or more miles from school, are entitled to transportation. The transportation provided may be a season ticket on public transportation and does not have to be a special bus or automobile.

Students at most schools in the Holy Loch area wear uniforms. This is often just a blazer, but is sometimes a complete outfit. Although wearing the uniform is not mandatory, it is strongly encouraged.

Preparing for the trip: Dependents planning to travel to Scotland would be wise to check early on immunization requirements. Applications for

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passports and visas should also be made well in advance.

It is a good idea to maintain close liaison with your sponsor so that you will have up-to-date information on requirements.

Pets: As there is a six-month quarantine for all pets arriving in Great Britain, you are advised not to take your pets to Scotland. Costs of maintaining animals in quarantine are high, and must be borne by the owner.

Recreation: Most of the towns in the Holy Loch area have public facilities for individual sports such as golf, tennis, swimming, bowling, and fishing.

The U. S. Navy contingent also has established its own sports program. There are softball and bowling teams for the ladies, and baseball competition for boys.

The men participate in basketball, softball, swimming, soccer, boxing, golfing, skiing, cycling, bowling, camping, and other sports.

• **INITIATIONS**—Traditional initiations and ceremonies are permitted in the Navy, if they are not hazardous or detrimental and if they do not involve unbecoming conduct by the participants. That policy was announced by the Secretary of the Navy in SecNav Inst. 5060.20.

Such activities often contribute greatly to the esprit de corps and public image of the Navy, and are consequently encouraged—with, of course, the stipulations outlined above.

The ruling pertains to CPO initiations, as well as to ceremonies associated with special events such as crossing the equator or the international date line.

Launching of 3-M System Will be Reflected In Changes to Quals Manual

Advancement qualifications for a number of ratings were revised by Change No. Two to the *Manual of Qualifications for Advancement in Rating* (NavPers 18068B). The change was published in June, but the new material will not become effective until next year for the Navy-wide examinations for advancements in rating.

Many of the revisions resulted from the introduction into the Fleet of the Navy Maintenance and Material Management (3-M) System. Practical and knowledge factors of the system will be required for men in the ST, GM (but not GMT), FT, MT, ET, BR, AD, AT, AE, AM, PR, AQ, AX and AZ ratings.

The change also incorporated the new service rating FTB (Ballistic Missile Fire Control), in pay grades E-4 through E-7, and the extension of service ratings FTG and FTM through pay grade E-7. These additions to the rating structure were announced in advance of Change Two through BuPers Notice 1440 of 25 Nov 1966.

The change will also show the revised requirements for BTs. In the past, Navymen taking the examination for second class boilerman were required to be certified in boiler water and feed water testing and treating. Today, however, they do not have to meet this qualification until they compete for advancement to first class.

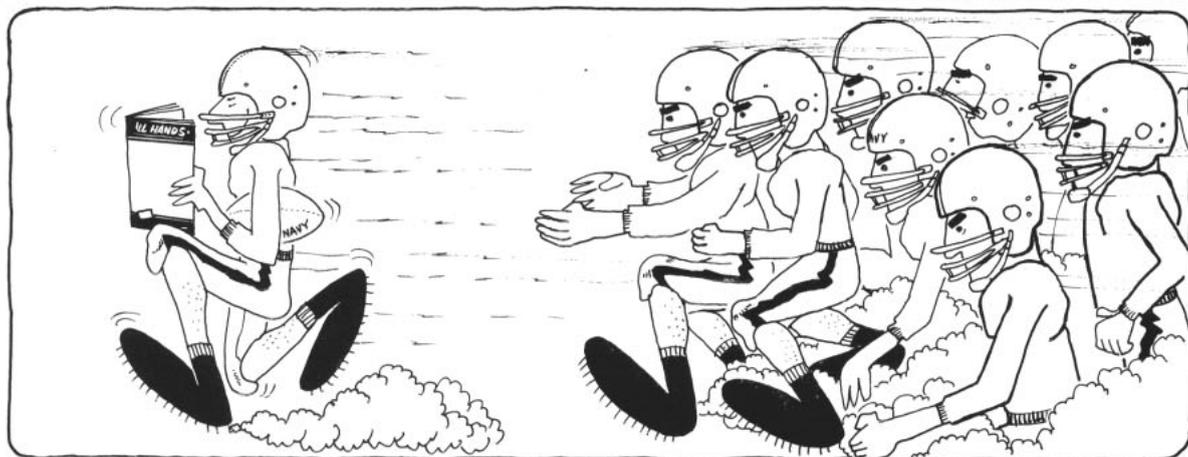
Occupational standards for the following ratings are revised as indicated:

Sonar Technician (ST)—Revised to eliminate the requirements for mine detection sonar, and also the speed requirement of six words per minute in sending and receiving international Morse code.

Missile Technician (MT)—The revisions reflect the fact that MTs are now handling missiles. A requirement for Boolean algebra is also included.

Boilermaker (BR)—Now includes knowledge of automatic combustion control.

Aviation Machinist's Mate (AD)—Now reflects the requirements for turbo-prop aircraft and other technological advances brought about by



DON'T TRY TO RUN a nine-man line with ALL HANDS. Pass your copy on to your teammates and become a winner.

the introduction of new aircraft.

Aviation Electrician's Mate (AE)—Now includes requirements imposed by the attitude reference system.

Aviation Fire Control Technician (AQ)—Reflects the increased use of complex aircraft armament control system computers.

Aviation Antisubmarine Warfare Technician (AX)—Reflects the increased use of complex computer systems.

Aviation Electronics Technician (AT)—Reflects increased use of complex computer systems.

Aircrew Survival Equipmentman (PR)—Reflects various changes in terminology, and new requirements concerned with oxygen and oxygen equipment.

Air Controlman (AC)—Revised to remove implications that ACs have any Aviation Electronics Technician (AT) responsibilities and includes the requirement for the control of air traffic by precision approach radar (PAR).

Electronics Technician (ET)—Eliminates separate listings of electronic equipment or terms used to define qualifications.

Construction Electrician (CE)—The qualifications have been revised and reworded, with the principal change being the updating of defensive tactics.

Commissaryman (CS)—The phrase "food service" has been substituted for "commissary" and "subsistence" in all instances where the advancement qualification item refers to general mess management.

Utilitiesman (UT)—Extensively reworded, the principal change is

the updating of defensive tactics.

Gunner's Mate (GM)—Revised to include responsibility for certain categories of small arms. Also, many items rendered obsolete by increased technological sophistication have been deleted from the rating.

Illustrator-Draftsman (DM)—Illustration duties have been emphasized and engineering aspects have been deemphasized.

Disbursing Clerk (DK)—Revised to reflect changes in disbursement procedures.

Aviation Support Equipment Technician (AS)—Special physical requirements are now necessary.

Data Systems Technician (DS)—Special physical requirements are now necessary.

Radarman (RD)—Special physical requirements are revised.

Radioman (RM)—Special physical requirements are revised.

Communications Yeoman (CYN)—In order to remove any ambiguity in the interpretation of the performance test instructions for RM and CYN, the instructions were revised to state specifically that CYNs should be tested only for teletypewriting. A note was also inserted in the CYN advancement qualifications to the effect that consideration will be given to qualified CYN3s who want to change their path of advancement to RM2.

Minor changes were made to the qualifications for the AM, AZ, AK, and DT ratings.

The scope of the military standards for all ratings was revised to include clarification of the use and application of the items used as advancement qualification.

DIRECTIVES IN BRIEF

This listing is intended to serve only for general information and as an index of current Alnavs, BuPers Instructions and BuPers Notices that apply to most ships and stations. Many instructions and notices are not of general interest and hence will not be carried in this section. Personnel interested in specific directives should consult Alnavs, Instructions and Notices for complete details.

Alnavs apply to all Navy and Marine Corps commands; BuPers Instructions and Notices apply to all ships and stations

Alnavs

No. 34—Announced removal of travel restrictions to Lebanon.

Instructions

No. 1120.33D—Invites applications from permanently commissioned USN officers for transfer between the unrestricted line and restricted line.

No. 1510.69E—Outlines the eligibility requirements and procedures whereby USN enlisted personnel may apply for the Navy Enlisted Scientific Education Program (NESEP).

Notices

No. 1560 (5 July)—Described the opportunities offered to naval personnel to continue their civilian education.

No. 1418 (7 July)—Outlined revision of pay grade E-8 and E-9 advancement procedures.

No. 1306 (13 July)—Announced the sea duty commencement cutoff dates which establish the eligibility of enlisted personnel for Seavey Segment C-67.

Here's Another Path of Opportunity to the Naval Academy

THERE IS NOW a new path of opportunity for enlisted personnel to enroll in the Naval Academy. A limited number of *direct appointments* are provided which do not require Preparatory School attendance.

As you probably know, the Secretary of the Navy may select 85 Regular Navymen or Marines each year for appointment to the Naval Academy. In the past, these appointments have been awarded only to enlisted graduates of the Naval Preparatory School. BuPers Notice 1531 of 3 Jul 1967 authorizes, on a trial basis, direct admission to the Academy of a few exceptionally well qualified candidates who have not attended the Naval Preparatory School.

In the former program—which is still in effect—an enlisted man may apply by 1 May of the year before the year in which he desires to enter the Naval Academy. If selected, he attends the Preparatory School from September through the following May, and if successful in competition, enters the Academy about 1 July.

The new program does not change the previous program, but offers an additional opportunity to enter the Academy. In the new plan, applications must be received in BuPers by 1 November of the year before the year in which the candidate desires to enter the Naval Academy. Applicants will receive various medical and scholastic tests, and if successful in the competition and exceptionally well qualified, will be permitted to enter the Academy about 1 July.

Candidates who are not successful in this competition, but who are qualified for admission to the Naval Preparatory School, will be offered the opportunity to attend the Preparatory School, in order to prepare and compete for appointment to the Academy the following year.

To be eligible for direct appointment, you must have a high school diploma or its equivalent, have completed at least 15 units of credit in college preparatory subjects, and have demonstrated an ability to do college-level work successfully. While not an absolute requirement, standing in the top 40 per cent of your high school class is of great

importance in determining qualification for admission. The great majority of midshipmen come from the top 20 per cent of their high school classes.

Your high school record should show completion of as many as possible of the following studies:

Mathematics—At least three years, but preferably four, including the elements of advanced algebra, geometry, and trigonometry.

English—Four years.

Foreign Language—Two years, preferably a modern language.

Sciences—One year of chemistry, one of physics.

Determination of your academic acceptability will ultimately be made by the Naval Academy.

In addition to these academic requirements, several general requirements also must be met. To be eligible for consideration, you must:

- Be at least 17 years old and not have passed your 21st birthday as of 1 July of the year you will enter the Naval Academy.

- Have a combined GCT-ARI score of not less than 118. No waivers will be granted.

- Be a citizen of the United States.

- Be single and never have been married.

- Meet medical and physical requirements for appointment to the Academy.

- Score acceptably on a preliminary scholastic examination.

Candidates who are selected for

the Naval Academy will be required to have a minimum of 24 months' obligated service as of 1 July of the year entering the Academy. This may be acquired by extension of enlistment or active duty agreement for periods of less than one year, if necessary.

If you have previously attended the Naval Preparatory School or other service academy preparatory school, you will normally be ineligible for consideration.

If you had been enrolled in a college and left that institution on probation with academic failures, or with a poor record, you must include in your letter of application a brief statement explaining the reason for your failure and telling why you are now capable of doing college level work.

It should be pointed out that your final medical eligibility will be determined by a formal examination after you have been designated a nominee, but you will save much time and effort by not applying if you are obviously not medically qualified. Visual acuity requirements are the most common cause of rejection. The normal requirement is for 20/20 unaided vision, and waivers will not be granted for visual acuity poorer than 20/40.

If you are selected for further consideration, you will be given a preliminary scholastic test by your command.

If your preliminary test results are favorable, and you appear qualified, you will be designated as a nominee. You will then be authorized to participate in College Entrance Examination Board tests, which are used as qualifying scholastic tests for the Academy, and to undergo a qualifying medical examination. Your commanding officer will make you available for these tests, if at all possible.

Each candidate will be advised of the action on his application about 15 May 1968. Successful candidates will be ordered to the Naval Academy several days before the convening of their class for an indoctrination period.

A major purpose of this period is to ensure that the men fully understand the rigors of Academy life, the plebe indoctrination system, and the

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"Sir, I don't know how to tell you this, but we've run out of strawberries."

demanding academic program, in order that any who are unwilling to accept the program may withdraw before taking the Oath as a midshipman.

Keep in mind that, if you are accepted for the Academy, you must make a \$300 deposit upon entry to cover initial costs of uniforms, etc. Also, candidates are required to pay the fees (\$12.50) for their College Entrance Examination Board tests. Also, you may not have a negative leave balance when entering.

Before you trot off to write your letter of application, you should know a few things about the Naval Academy. Not typical of other colleges, the Naval Academy offers the Bachelor of Science degree (no specific field) and the course of instruction includes the sciences, the humanities, and military and physical training. It forms a basis both for graduate education and for further professional development. It does not train medical officers, doctors, or lawyers.

P. O. McVay, ENS, USNR



"The first mistake is that you've got the service manual for the F-4 Tail assembly, not the UH-2A."

The way of life of a Naval Academy midshipman differs sharply in most respects from that of an enlisted man or of a civilian college student. A pronounced difference is the indoctrination system; another is the necessity of adjusting to the Academy honor system.

If you are accepted as a nominee

for admission to the Academy, you must realize that you commit yourself to a struggle in a competitive field with other enlisted applicants. Also, you should be aware that there are other avenues to becoming a midshipman, such as nomination by your Congressman—for which you should apply directly. It's best to try for more than one type of appointment—you increase your chances.

As you probably know, graduation from the Naval Academy carries with it an obligation to accept a commission in the Line of the Regular Navy and to serve for at least five years.

A midshipman's pay is \$151.95 per month, but most of this is withheld to pay for books, uniforms and living expenses. You will receive only a small portion of this money for extra personal expenses and leave. Because of this small allowance, it is impossible for you to provide any financial assistance to any member of your family. As a midshipman, no Q allotments are authorized. You

Check the Requirements and Pass the Word: NROTC Offers a Lot

FINAL PREPARATIONS are now being made for the 22nd annual competitive procedure to select men for enrollment into the Regular NROTC program in the fall of 1968.

If you are a high school senior or recent graduate, a male citizen of the United States, 17 years of age but not 21 by 31 Jun 1968, unmarried and have never been married, you are basically eligible to compete.

The qualifying examination, the Navy College Aptitude Test (NCAT), will be administered on 9 December. Applications to participate in the examination must be received by the Naval Examining Section of Educational Testing Service, Princeton, N. J., by 17 November. Examination centers are established at naval activities overseas as well as throughout the continental United States.

If you qualify, you will be scheduled for a medical examination and interviews. From those who are found qualified, about 1700 will attend college next fall in preparation for their naval careers.

The purpose of the Regular NROTC program is to educate and train well qualified young men to

complement the number of junior officers commissioned from the Naval Academy.

Selected candidates receive four years of government-subsidized education at 52 colleges and universities throughout the country. In addition to tuition and other educational expenses, the Navy furnishes books, uniforms, and a \$50 per month subsistence allowance.

NROTC midshipmen have a wide choice in their major fields of study but must complete 24 semester hours of naval science and participate in three summer training periods.

After receiving a baccalaureate degree, Regular NROTC graduates are commissioned in the Regular Navy or Marine Corps with the same rank, promotional opportunities and choices of duty assignments as their Naval Academy contemporaries.

Regular NROTC graduates must serve on active duty for a minimum of four years. If they resign their commissions at a later date, they agree to accept a commission in the Naval or Marine Corps Reserve, and may not resign this commission before the sixth anniversary of their original commissioning date.

In addition to the Regular NROTC program, there is also the Contract NROTC program available at each of the 52 participating colleges and universities plus the Massachusetts Institute of Technology.

Contract students are selected by commanding officers of NROTC units from the incoming freshman class. They take the same naval science courses as do Regular students and participate in one summer training period. They pay their own college expenses except for a subsistence allowance of \$50 per month during their junior and senior years.

Upon graduation they are commissioned as Reserve officers in the Navy or Marine Corps. Their active duty obligation is currently three years.

Even though the NROTC programs may not apply to you directly, your efforts can be of considerable value in promoting the programs by bringing them to the attention of potential applicants.

It is likely that there are several young men, parents, high schools, and service organizations in your community that would appreciate the benefit of your guidance as an experienced Navyman.

must remain unmarried until you have completed four years of study at the Naval Academy and receive your commission.

If you should fail in your try for direct appointment to the Academy, keep in mind that you may still be eligible to attend the Naval Preparatory School to compete for an Academy appointment the following year. Those candidates who are not selected for the Naval Academy, but who are eligible to attend the Naval Preparatory School, will be advised of their acceptance for the Preparatory School shortly after the results of the Naval Academy selections are announced. Orders to the Naval Preparatory School may be declined if the applicant decides he does not wish to attend.

During a candidate's stay at Preparatory School, he must demonstrate a continuing proficiency in high school and college mathematics, physics, and English subjects. Study hall is mandatory five evenings each week, and extra instruction or assistance is available for students who desire it.

Candidates at the Naval Preparatory School are tested periodically in academic subjects and physical aptitude, and are evaluated constantly for military aptitude and degree of dedication for a service career.

Although similar in spirit and common purpose, the Preparatory School differs in many respects from the Naval Academy. For instance, because of lack of an upper class, there are not the same pressing tensions as

at the Naval Academy. The Preparatory School should be thought of as a transition to midshipman life.

If a candidate is disenrolled for any reason from the Preparatory School, he loses his enlisted nomination to the Naval Academy, and is reassigned elsewhere.

While attending the Naval Preparatory School, a total of \$300 is withheld from each candidate's pay to be used as an entrance deposit to the Academy.

A sample letter of application for direct admission to the Academy is provided as an enclosure to BuPers Notice 1531. Don't forget, your application must be received by the Bureau (Pers B-66) not later than 1 Nov 1967, if you wish to attend the Academy next year.

Trouble Is What Is Found At End of Those Rainbows

Planning on a trip?

Some types are just fine but there are others, taken via LSD, pot, and what have you, that result in a peck of trouble. Bennies and goof balls also are out.

The latest change in Article 1270 of *Navy Regs* prohibits, except for authorized medical purposes, the introduction, use or possession of narcotic substances or depressant or stimulant drugs on board any U. S. Navy ship, craft or aircraft, or within

any naval station, and prohibits the use or possession of narcotic substances or depressant or stimulant drugs by persons in the naval service.

Those drugs designated by the Secretary of Health, Education and Welfare as habit-forming, as having a potential for abuse, or having a hallucinogenic effect are listed in BuPers Notice 6710 of 13 Jun 1967. LSD is included in the list.

The Notice points out that use of LSD (and similar drugs) is, in two

words, stupid and dangerous. Furthermore, use of LSD and related drugs is, in the words of the Notice, "inconsistent with the military responsibilities of every person in the naval service and is grounds for disciplinary action, cancellation of any security clearance held, and separation under other than honorable conditions."

The Notice has quite a few words to say on the subject of the dangers of using LSD:

While it is true that LSD itself is physically non-addictive, serious problems can be associated with its use. The LSD user may go through a stage of panic, during which he is likely to be severely confused, depressed, anxious or suspicious. First reaction may last from one to 12 hours—but symptoms may reappear in a month or two or as long as two years after taking the drug. There is no known method of predicting occurrence or sudden, unexpected recurrence of these dangerous effects long after use of the drug. It is not possible to determine in advance who is likely to suffer these effects. Contrary to the claim that LSD is a "consciousness-expanding" drug, it has been demonstrated that the drug decreases conscious functions, distorts time sense, decreases an individual's ability to select and

pay attention, impairs judgment and induces illusions and hallucinations.

Sight and hearing are distorted, not enhanced, as claimed. Sensations become intensified and perceptions are distorted under the influence of LSD.

As a result of widespread use of LSD since the spring of 1966, there has been a considerable increase in the number of patients seen in clinics, hospital emergency rooms and mental institutions because of its reactions.

These reactions are of three main types: Acute severe panic episodes during which suicide attempts, suicides or homicides have resulted; recurrence of symptoms without warning months after taking the drug; and prolonged psychosis.

The Notice makes an excellent

point when it asks the reader the following questions:

Would you feel secure in the knowledge that the helmsman of your ship, while the ship is steaming in a tight formation at high speed, has used LSD?

Suppose a member of an ammunition handling party experienced a sudden recurrence of LSD symptoms and thought he was playing ball instead of loading ammunition?

How about the throttleman who answers a backing bell with an ahead bell while getting underway or coming alongside?

Think of the countless situations in which you or one of your shipmates could cause death or serious injury to yourself and many others due to sudden uncontrollable actions brought about because of earlier use of LSD.

Latest Edition of NEC Manual IS Now on the Stands

THE LATEST revision of the *Manual of Navy Enlisted Classifications*, NavPers 15105M, has probably already reached your command. It contains a number of new NECs, which became effective on 1 Jul 1967. In addition, several NECs, have been eliminated from the new manual, and others have been revised.

The table below shows the new NECs, along with the ratings eligible. NECs which have been disestablished are TM-0726 (recoded 0000); TM-0727; ET-1526 (recoded 1522); RM-2332 (recoded RM-2333); 3371 (recoded 3391); EN-4316 (recoded 0000); SF-4917 (recoded SF-4923); SF-4918 (recoded SF-4923); SF-4919 (recoded SF-4922); DC-5025 (recoded 0000); TD-7543 (recoded 0000);

Lt. Melville C. Murray, SC, USNR



"Heel, blast you, heel, I say!"

9902 (recoded 9933).

The new manual will also reflect the following revisions:

• ET-1501. The definition of this NEC has been revised in the new

manual to clarify its intended use.

• RM-2304. Transmission speed has been changed to 18 words per minute.

• YN-2512. Shorthand speed has been raised to 100 words per minute.

• YN-2514. Shorthand speed has been reduced to 100 words per minute, and the requirement for six months as a flag officer writer added.

• SF-4915 and SF-4916. These NECs will be disestablished 1 Jul 1968. No new assignments will be made after 30 Jun 1967. Personnel will be examined to determine eligibility for SF-4921.

• RM-2332. Personnel not converted to RM-2333 will be recoded 0000. Proficiency pay is terminated for personnel filling RM-2333 billets who have not converted to RM-2333.

TORPEDOMAN'S MATE

TM-0749 Torpedo Mk 48, Torpedo Target Mk 27 and Ancillary Equipment Maintenance Technician TM

GUNNER'S MATE

GM-0871 3"/50 Rapid Fire Mount Single or Twin GMG

GM-0872 5"/38 Dual Purpose Mount Single or Twin GMG

GM-0874 6"/47 or 8"/55 Rapid Fire Turret GMG

GM-0875 6"/47 or 8"/55 Slow Fire Turret GMG

FIRE CONTROL TECHNICIAN

FT-1121 Mk 34 FTG

FT-1124 Mk 63 FTG

ELECTRONICS TECHNICIAN

ET-1512 AN/SPS-33 Computer/Tracker Group Maintenance ET

ET-1538 KY-28 ET, AT, RM

ET-1546 KY-3 ET, RM

DATA PROCESSING TECHNICIAN

DP-2714 IBM 704/709/7090/7094 Operator DP

DP-2715 UNIVAC 1004/1005 Operator DP

DP-2721 IBM 704/709/7090/7094 Programmer DP

DP-2722 UNIVAC 1004/1005 Programmer DP

ENGINEMAN

EN-4317 Fairbanks—Morse FM 38D81/B, Diesel Engine Technician EN

EN-4319 General Motors, GM 16-278A Diesel Engine Technician EN

EN-4321 LARC-V Mechanic EN

SHIPFITTER

SF-4921 Radiographer, X-ray and Gamma SF, ML, MR, BR

SF-4922 Nondestructive Testing Operator SF, ML, MR, BR

SF-4923 Nondestructive Testing Inspector SF, ML, MR, BR

SF-4924 Nondestructive Testing Examiner (Conventional) SF, ML, MR, BR

SF-4925 Nondestructive Testing Examiner (Silbraze) SF, ML, MR, BR

SF-4926 Nondestructive Testing Examiner (Nuclear) SF, ML, MR, BR

ENGINEERING AID

EA-5515 Construction Planner and Estimator Specialist EA, BU, CE, SW, UT

AVIATION ELECTRONICS TECHNICIAN

AT-6604 RA-5C PECM Systems AT

AT-6618 RA-5C Digital Data System Repair Technician AT, AQ

AT-6656 Side Looking Radar Maintenance Technician (AN/APD-7) AT

AVIATION ELECTRICIAN'S MATE

AE-7115 F-4J Attitude Reference Bombing Computer Set Technician (AN/AJB-7) AE

AVIATION FIRE CONTROL TECHNICIAN

AQ-7965 A6A Weapons System Specialist AQ, AT

PHOTOGRAPHER'S MATE

PH-8196 Still Picture Camera Shop Maintenceman PH, AT

PH-8197 Panoramic Camera Repair Shop Maintenceman PH, AT

SPECIAL SERIES

9513 3M System Data Analyst Group IX (except

9534 Patrol Torpedo Fast (PTF) aviation ratings)

ADVANCED ELECTRONICS FIELD (AEF) TRAINING PROGRAM

The following special series NECs identify personnel recruited, or who have volunteered for, the Advanced Electronics Field Training Program. They are required to have a minimum of six years' active obligated service from the date of enlistment. These NECs will be assigned to personnel only as secondary NECs, when they enter the appropriate AEF program training path, and will be retained until completion of or disenrollment from the selected specialized training.

9904 Sonar Technician AEF Trainee

9909 Gunner's Mate AEF Trainee

9911 Fire Control Technician AEF Trainee

9915 Electronics Technician AEF Trainee

9916 Data Systems Technician AEF Trainee

9924 Communications Technician (M Branch) AEF Trainee

9933 Polaris AEF Trainee

★ ★ ★ ★ TODAY'S NAVY ★ ★ ★ ★

New Construction

The precommissioning units of six Navy ships recently became full-fledged crews, as their vessels were commissioned into the Fleet. Four ships also have been launched in the past few months.

The Cruiser-Destroyer force received the lion's share of the new ships, although most type commands had the chance to give their speakers' platforms a workout.

Commissioned were:

- The combat stores ship *uss Niagara Falls* (AFS 3), at Long Beach, Calif. The third ship of her class, she will be assigned to the Pacific Fleet.

She simultaneously will serve as store supply ship, and general stores issue ship, supplying the Fleet with fresh food, general stores, and technical spare parts.

Niagara Falls will be capable of replenishing the Fleet by modernized highline methods, and by helicopters in vertrep. She is fitted with a helicopter flight deck, hangar and repair facilities.

- The guided missile frigate *uss Sterett* (DLG 31), at Bremerton, Wash.

Sterett is named for Lieutenant Andrew Sterett (1760-1807) who commanded the schooner *Enterprise* against French privateers and Tri-

politan pirates in the Mediterranean. Two previous destroyers, DD 27 and DD 407, were named for him.

The ship is of the *Belknap* (DLG 26) class. She is 547 feet long, has a beam of 54 feet, and displaces 7900 tons fully loaded. Her armament includes surface-to-air *Terrier* missiles, antisubmarine rockets (*Asroc*), 5-inch/54-caliber, and 3-inch/50-caliber guns.

- The guided missile escort ship *uss Talbot* (DEG 4), at Boston, Mass. *Talbot* is the second U. S. Navy ship to be named in honor of Captain Silas Talbot (1751-1813), who commanded the frigate *Constitution* from 1799 to 1801.

The ship is 415 feet long, with a beam of 44 feet. She has a full-load displacement of 3400 tons.

Talbot is designed for antisubmarine operations. She is armed with a *Tartar* guided missile launcher, one 5-inch/38-caliber gun, *Asroc*, and antisubmarine torpedoes.

- The amphibious transport dock *uss Cleveland* (LPD 7), at Norfolk, Va. Named for the city of Cleveland, Ohio, she is 570 feet long, has a beam of 84 feet, and a full-load displacement of 16,900 tons.

Cleveland is designed to carry both combat troops and their equipment and to operate transport helicopters and landing craft.

- The nuclear powered attack submarine *uss Ray* (SSN 653), at Newport News, Va. Like others of her class, *Ray* is 292 feet long and has a beam of 31 feet. Her standard displacement is 4000 tons.

She is armed with *Subroc* and also has four 21-inch torpedo tubes amidships. Ten officers and 85 enlisted men make up her crew.

- The guided missile frigate *uss Horne* (DLG 30), at San Francisco, Calif.

Admiral Frederick J. Horne, for whom the ship is named, served more than 50 years on active duty, and was Vice Chief of Naval Operations from March 1942 to January 1946.

Horne is 547 feet long and has a beam of 54 feet. Her full-load displacement is 7900 tons. She is equipped with *Terrier* missiles, *Asroc*,

one 5-inch gun, two 3-inch guns, and antisubmarine torpedoes. Her crew consists of 31 officers and 369 enlisted men.

Among the ships receiving the champagne treatment in recent months, two were submarines, and two were destroyers.

Launched were:

- The nuclear powered attack submarines *Hammerhead* (SSN 663) and *Tautog* (SSN 639). *Hammerhead* was christened at Newport News, Va., *Tautog* at Pascagoula, Miss.

The subs are 292 feet long, have a beam of 31 feet, and a standard displacement of 4000 tons. They are armed with *Subroc* and four 21-inch torpedo tubes amidships. Approximately 95 men make up each crew.

- The escort ship *Hepburn* (DE 1055), at San Pedro, Calif.

Hepburn is 438 feet long, has a beam of 47 feet, and a full-load displacement of 4000 tons. When *Hepburn* joins the Fleet she will carry one 5-inch/54-caliber mount forward, and will have launchers for *Asroc* and antisubmarine torpedoes.

- The escort ship *Roark* (DE 1053), at Seattle, Wash. The ship is named for Lieutenant William M. Roark, usn, who was shot down while on an armed reconnaissance



USS Sterett (DLG 31)



USS Ray (SSN 653)



NEWLY COMMISSIONED—Guided missile escort *USS Talbot* (DEG 4) is designed for antisubmarine warfare and armed with Tartar missiles. Right: *USS Niagara Falls* (AFS 3) will supply food, general stores and technical parts.

mission over North Vietnam in April 1965. He was awarded the Distinguished Flying Cross posthumously for his heroism during the mission.

Roark will be armed with a 5-inch/54-caliber gun, *Asroc*, and antisubmarine torpedo launchers.

Going for Thirty, as CPO

Most Navymen would be well satisfied with a 30-year career, but Senior Chief Boatswain's Mate Dale D. Borron is striving for the record achievement of serving for 30 years as a chief petty officer.

Senior Chief Borron was advanced to CPO on 1 Sep 1944 on board *uss Lambertson* (DMS 2) at the age of 24, and was one of the younger chief boatswain's mates in the Navy.

Senior Chief Borron was reenlisted for six years on 31 May 1967 at the U. S. Naval Amphibious Base, Coronado, Calif., where he is now serving with Assault Craft Division 11. The reenlistment oath was administered by Captain H. W. Baker, commanding officer of the Amphibious Base, who was the executive officer of *Lamberton* when Borron was advanced to chief petty officer.

Chief Borron has also served aboard *uss Firedrake* (AE 14), *Henrico* (APA 45), *LST 855*, NAS Norfolk, Va., NavSta Guam, Naval Amphibious Base Coronado, LCU Division 11 and ComNavAirPac. He was awarded the Secretary of the Navy Commendation for Achievement for performance of duty as officer in charge of *LCU 1476* and *LCU 1624* in Vietnam, and wears seven Good Conduct awards and medals for service in World War II, Korea and Vietnam.

Senior Chief Borron is married to the former Dorothy Hall of

Chandler, Okla. They have two daughters, Diana and Gina, and make their home in Imperial Beach, Calif.

Less Kick for Skyraiders

A new type of ejection system has been developed for the propeller driven A-1 *Skyraider* aircraft. Most *Skyraiders* will be fitted with the safety device by late this summer.

The ejection system uses a tractor rocket to pull the pilot clear, leaving the seat in the cockpit. At present, the only means of escape from a combat-damaged A-1 is to bail out over the side, a method seldom feasible at low altitudes.

Sled-testing of the system was completed earlier this year.

The A-1 attack aircraft was designed and built late in World War II. It has since been used extensively in Korea, and is now operating in Southeast Asia. It cruises at 200 knots and can carry more than 8000 pounds of ordnance.

Intrepid Switch Hitter

The Mets could use an outstanding 24-year old switchhitter, but *uss Intrepid* (CVS 11) has a lifetime contract with the Fleet.

Intrepid is designated an antisubmarine warfare carrier, but during her combat tour in the South China Sea, her mission was switched to limited attack.

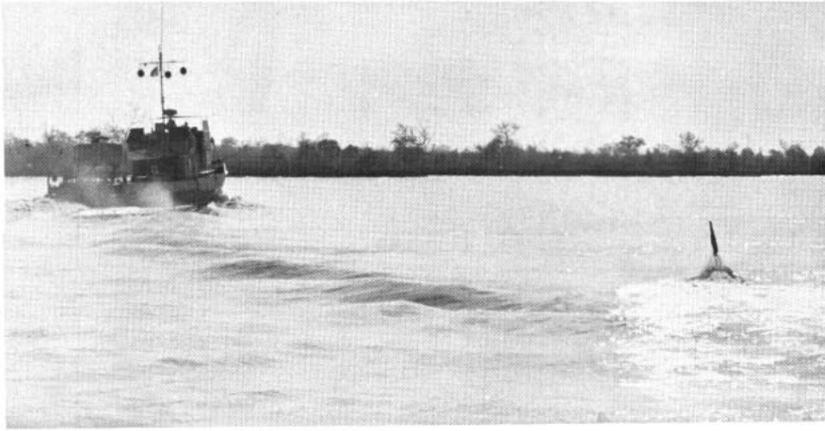
Her performance off Vietnam, however, was anything but limited. In fact, her combat record was one of the major factors which brought her a third consecutive Battle Efficiency "E". A special category had to be designated for the award, but then the "Fighting I" is special.

Intrepid has won six efficiency awards in five years, at least one in every possible category in which a carrier may participate.

Intrepid has proved she can operate effectively as an antisubmarine warfare carrier, and as an attack carrier, steaming alongside the newest and largest CVAs in the Fleet.



SMALLEST FLIGHT DECK—A Huey helicopter operates from portable flight deck aboard this troop carrier of Mobile Riverine Force in Mekong Delta. The innovation expands the force's capabilities.—Photo by D. Shinton, PH2, USN.



SWEEPING THE RIVER—A Navy minesweeping boat drags its float sweeping gear behind as it insures a clear channel for shipping on the Long Tau River. Rt: Two MSB crewmen hoist gear aboard their craft after a sweeping day.



Ozbourn Celebrates

When the Seventh Fleet destroyer *uss Ozbourn* (DD 846) passed her 21st birthday, she celebrated the occasion in Buckner Bay, Okinawa, reportedly toasting the event with a big drink of NSFO.

Ozbourn's a Back Bay type. She was commissioned at Boston way back in March 1946. In August of that year she steamed through the Panama Canal to her home port of San Diego, and a few months later she was on her way for her first tour of the Far East. There were to be many more.

During this tour *Ozbourn* helped save a distressed Chinese oil tanker by attaching a cable and towing it to Formosa.

Before that tour of the Pacific was over, *Ozbourn* was to come to the aid of the crew of another troubled vessel. A foreign merchant ship ran aground and broke in half. *Ozbourn* picked up the crew and took them to Yokosuka, Japan.

In April 1950 *Ozbourn* joined *uss Norton Sound* (AVM 1) to conduct the first guided missile tests at sea. *Ozbourn* acted as observing ship during the tests.

When the Korean conflict erupted, *Ozbourn* joined Task Force 77. She participated in the invasion of Inchon and conducted air operations off the Korean coast, where she twice won the Korean Presidential Citation.

In February 1951 she received two direct hits from shore batteries off North Korea. The same day her crewmen rescued a downed *uss Valley Forge* (CV 45) flyer, floating in an enemy mine field.

Ozbourn returned to San Diego for repairs, then departed again for Korea. She steamed with Task Force 95 this time, and at Wonsan, blasted communist gun emplacements, railroad cars, trucks, and sampans, with her five-inchers.

In July 1951, *Ozbourn* again played rescue ship, this time saving 18 men from the carrier *uss Boxer* (CV 21). On the following day the destroyer rescued three downed pilots from the carrier *uss Essex*.

In February 1955 *Ozbourn* played an important role in the evacuation of Chinese Nationalist forces from the Tachen Islands off the coast of China. She followed the minesweepers in on the first day, and remained within easy firing range of unfriendly islands throughout the operation.

In December 1955, *Ozbourn* was en route to Yokosuka when she was

diverted to search for the survivors of a Japanese fishing vessel sunk in a typhoon. *Ozbourn* was herself severely damaged by the heavy weather, but managed to save the three survivors.

Ozbourn spent the next few years commuting between San Diego and the Far East, with short side trips to Portland for the Rose Festival and to Seattle for the Sea Fair.

In 1961, the destroyer received FRAM conversion, and in 1962 changed her home port to Long Beach.

Ozbourn participated in the Fleet exercises conducted for the President in 1963, during which the destroyer was chosen to demonstrate the capabilities of *Asroc*.

The following years brought more Far East tours for *Ozbourn*, with Fleet exercises in between. She is currently serving with the Seventh Fleet in WestPac.

Alligator Hide

Navy and Marine Corps Units in California assaulted the beaches of Camp Pendleton last May during Operation Alligator Hide. The exercise was the largest conducted in the area since 1965.

The operating force consisted of 48 ships and units from Long Beach and San Diego and Marines of the Fifth Marine Expeditionary Brigade. A total of about 15,000 men were involved.

Separate landing forces hit Camp Pendleton beaches at locations about 17 miles apart.

According to the rules of the exercise, the landing force was rushing to the aid of the friendly country Mateo which had requested aid.



NAVY SEABEE TEAM GRADUATE Walter Cresco, CM1, receives certificate from CAPT Greer A. Busbee, Jr. Teams go into friendly countries to teach and assist people to build public facilities and roads.

Five Medals

Five military decorations were awarded recently to a naval officer during a single ceremony at Can Tho, Vietnam.

Lieutenant Commander Henry C. Mustin, now serving as Aide to the Commander in Chief Pacific, in Hawaii, received two Bronze Stars with Combat "V", the Navy Commendation Medal, the Secretary of the Navy Commendation for Achievement and, from the South Vietnamese government, the Republic of Vietnam Cross of Gallantry. He previously served as Chief of Staff to Commander Delta River Patrol Group.

Except for the SecNav Commendation, the citations credit LCDR Mustin with organizing and leading combat air and river operations in the Mekong Delta. He gained first-hand knowledge of the problems related to river fighting by leading many river patrol boat operations under intense enemy fire, and then used that knowledge to develop tactical concepts for river patrol opera-



ONE OR TWO—Newly appointed Warrant Officer Thomas Gregory salutes two chiefs as he steps from the door of the Indianapolis Recruiting Station. Gregory settled any controversy by giving both of the chiefs a dollar.

tions. This, according to the citations, led to major disruptions of Viet Cong activity in the Delta. It was for this reason the lieutenant commander also received the Cross of Gallantry from the South Vietnamese.

The SecNav Commendation for Achievement medal was presented to

the Vietnam veteran for developing procedures for the operation of guided missile ships. These procedures, which he developed during an assignment before he reported to Vietnam, have since been adapted for use in the Atlantic Fleet's Cruiser-Destroyer Force.

Taking a Muster of the Fleet of FBM Submarines

WITH THE commission of *Will Rogers* (SSBN 659) on 1 April, all 41 of the programmed Fleet ballistic missile submarines have joined the Fleet.

There have been three classes of *Polaris* submarines built since the beginning of the program. They are:

• *George Washington* (SSBN 598)—This class, of which five were built, had an *Albacore* hull and were, in fact, designed to be nuclear

attack submarines. A 130-foot missile section was added, enabling them to accommodate 16 *Polaris* missiles. They are 380 feet long, with a 33-foot beam, and displace 5900 tons on the surface.

• *Ethan Allen* (SSBN 608)—Built specifically to carry *Polaris* missiles, these submarines are larger than the 598 class, with an improved hull design. Displacing 6900 tons standard, they are 410 feet long, 33 feet at the beam. Five of

this class of *Polaris*-carrying submarines were built.

• *Lafayette* (SSBN 616)—The remaining 31 FBMs are of this class, the largest (more than 8000 submerged displacement tons) underseas craft ever built. They are 425 feet long and have a beam of 33 feet.

For the record, here's a list of the 41 *Polaris*-firing submarines, with their dates of launching and commissioning.

598	George Washington	9 Jun 1959	30 Dec 1959	629	Daniel Boone	22 Jun 1963	23 Apr 1964
599	Patrick Henry	22 Sep 1959	9 Apr 1960	630	John C. Calhoun	22 Jun 1963	15 Sep 1964
600	Theodore Roosevelt	3 Oct 1959	13 Feb 1961	631	Ulysses S. Grant	2 Nov 1963	17 Jul 1964
601	Robert E. Lee	18 Dec 1959	16 Sep 1960	632	Von Steuben	18 Oct 1963	30 Sep 1964
602	Abraham Lincoln	14 May 1960	11 Mar 1961	633	Casimir Pulaski	1 Feb 1964	14 Aug 1964
608	Ethan Allen	22 Nov 1960	8 Aug 1961	634	Stonewall Jackson	30 Nov 1963	26 Aug 1964
609	Sam Houston	2 Feb 1961	6 Mar 1962	635	Sam Rayburn	20 Dec 1963	2 Dec 1964
610	Thomas A. Edison	15 Jun 1961	10 Mar 1962	636	Nathanael Greene	12 May 1964	19 Dec 1964
611	John Marshall	15 Jul 1961	21 May 1962	640	Benjamin Franklin	5 Dec 1964	22 Oct 1965
616	Lafayette	8 May 1962	23 Apr 1963	641	Simon Bolivar	22 Aug 1964	29 Oct 1965
617	Alexander Hamilton	18 Aug 1962	23 Jun 1963				
618	Thomas Jefferson	24 Feb 1962	4 Jan 1963	642	Kamehameha	16 Jan 1965	10 Dec 1965
619	Andrew Jackson	15 Sep 1962	3 Jul 1963	643	George Bancroft	20 Mar 1965	22 Jan 1966
620	John Adams	12 Jan 1963	12 May 1964	644	Lewis and Clark	21 Nov 1964	22 Dec 1965
622	James Monroe	4 Aug 1962	7 Dec 1963	645	James K. Polk	22 May 1965	16 Apr 1966
623	Nathan Hale	12 Jan 1963	23 Nov 1963	654	George C. Marshall	21 May 1965	29 Apr 1966
624	Woodrow Wilson	22 Feb 1963	27 Dec 1963	655	Henry L. Stimson	13 Nov 1965	20 Aug 1966
625	Henry Clay	30 Nov 1962	20 Feb 1964	656	George Washington Carver	14 Aug 1965	15 Jun 1966
626	Daniel Webster	27 Apr 1963	9 Apr 1964	657	Francis Scott Key	23 Apr 1966	3 Dec 1966
627	James Madison	15 Mar 1963	28 Jul 1964	658	Mariano G. Vallejo	23 Oct 1965	12 Dec 1966
628	Tecumseh	22 Jun 1963	29 May 1964	659	Will Rogers	21 Jul 1966	1 Apr 1967

FROM THE SIDELINES

A POWER LIFTER may sound like a machine used on a construction project to you, but not to Airman Steven L. Crandall of USS *Randolph* (CVS 15).

It's a sport to Airman Crandall and one which requires a great deal of stamina and training. Weightlifting is the more common name of the sport, and Crandall has been successful at it. He's got a suitcase full of medals and trophies to prove it.

His most recent wins include a second place trophy in the Arizona Weightlifting Championship and first place in the Eastern Power Lifting Championship.

Weightlifting requires top physical fitness and conditioning. Crandall has always had trouble adding pounds to his 5-foot, 5½-inch, 165-pound frame. In order to keep his weight at about 165 lbs., he adds protein power to the six glasses of milk he consumes at each meal. That, coupled with a three-hour workout six nights a week has given him the stamina and physique required to be tops in his sport.

He is currently shooting for the American Bench Press record for his weight class. The current record is a lift of 359½ lbs, and Crandall need only add 10 more pounds to his top lift to shatter that record.

Crandall has dead-lifted 450 lbs (from floor to the waist with shoulders back, standing straight upward). He also won the Arizona State title for sit-ups on a 45-degree incline with a total of 54.

Crandall plans to devote more time to training in the near future to improve his weightlifting capabilities. He is already well on his way to his weightlifting goal, to become the best power lifter in the United States.

Airman Crandall is certainly one sailor who won't have any trouble passing those quarterly physical fitness requirements.

★ ★ ★

MOST NAVYMEN bring back souvenirs from foreign ports and duty stations. First place trophy of the Japan Public Course Amateur Golf Championship will be in the seabag of Seaman Scott R. Crone when he returns to the States.

The seaman from the Naval Air Station at Atsugi defeated 140 amateur golfers on the 6900-yard, par 72 Mitsukaido Golf Course where the tournament was played—50 miles from Tokyo.

Crone put together an excellent 36-hole score of 156 to finish ahead of two Japanese amateurs who were close behind with scores of 158 and 159 for second and third place. Crone negotiated the course with a 77 for the first 18, and then carded a 79 for the final 18 holes, ending the match with a birdie on the 36th hole.

Three other Atsugians also played in the tournament, and the foursome from the naval station were the only Americans entered in the event. The others were YNCS Tom Adkins who missed the cutoff on the first day of the tournament, Lieutenant Gerald Meier who finished 23rd, and George Najarian, Atsugi athletic director, who shot a 164 for eighth place in the tournament.

The golf championship was open to golfers with a 10 handicap or less. Scott Crone is a three handicap player.

Crone's victory brought him an invitation to attend the Japan Amateur Championship in Abiko which is for golfers with a four handicap and below.

They Flew Through the Air

The meet was billed as the Navy's East Coast Track and Field Competition, but it also included participants from the Coast Guard, and the Marine Corps.

The track and field competition, the first such Navy meet on the East Coast, was held in Norfolk at the athletic field of Old Dominion College. The cindermen were dominated by a pair of long-distance runners from a Navy frogman team, a flashy Coast Guardsman and a husky Marine captain.

Also in the winner's circle was Radioman 2nd Class Al Clark from the Atlantic Fleet Submarine Force Headquarters. Clark picked up first-place medals in the long jump (20 feet, three-⅛ inches), the high jump (six feet, two-¼ inches) and the discus (138 feet, 11 inches). Clark also garnered second-place medals in the javelin and shot put competition.

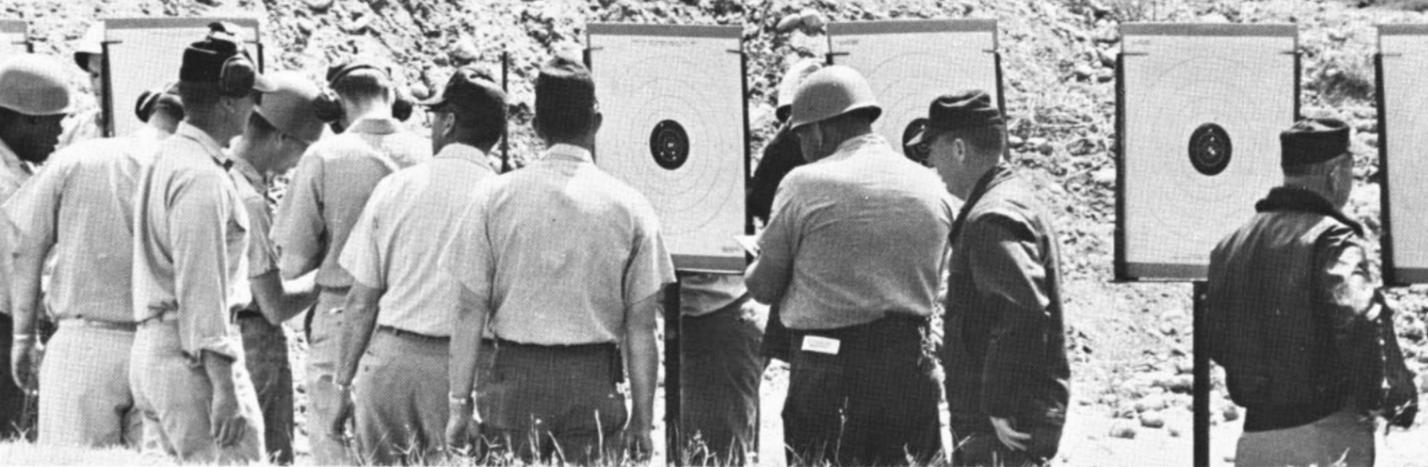
A team of long distance runners from UDT-21 at Little Creek scored honors in the 5000-meter run and the 10,000-meter run. SM3 J. Ramos scored an easy victory in the 5000-meter event with a time of 17 minutes, 14.5 seconds. Another frogman from UDT-21, Lieutenant (jg) Mike J. Kennedy won the 10,000-meter run by more than a lap with a time of 37 minutes, 59.6 seconds.

The lone Coast Guardsman competing against more than 100 sailors and Marines was seaman Steve P. Lamb from the Coast Guard Station at Yorktown, Va. He flashed to victory in the 100-meter and 200-meter dash, posting times of 11 seconds and 22.7 seconds, respectively.

Winner's laurels also went to Marine Captain John R. Ahearn of the Marine Detachment at Atlantic Fleet Headquarters. Ahearn competed in the javelin throw, and his toss of 216 feet, two inches, was the winner.

Five athletes qualified at the competition for a chance to participate in the Inter-Service Track and Field Meet at Quantico. They were Steve Lamb of the Coast Guard; SN J. S. Chase of the Pensacola team who ran the 800-meter run in two minutes, one-half second; James Jones who finished second in both the 100- and 200-meter runs; LTJG Eric Alexander of Sanford; and javelin thrower CAPT John Ahearn.

The track and field meet was sponsored by the Commander in Chief of the U. S. Atlantic Fleet.



ADDING THEM UP—After one round of firing, the shooters go down-range and check scores hoping that they have become the All-Navy champion. *Below right:* Shooter's face indicates reaction to one of his opponent's rounds.

Navy's Big Guns

STRAIT SHOOTERS from throughout the Navy met at the San Diego Naval Training Center for the All-Navy Rifle and Pistol Championships, and when the firing and scoring ended, Donald L. Hamilton, ADR1, USN, became the over-all rifle and pistol champion.

Hamilton, stationed at NARTC Andrews Air Force Base, won the title with a combined score of 1149-50. The current national pistol champion scored 571-33v in rifle competition and 578-17x in the pistol event. His individual pistol score also captured the All-Navy crown in that competition.

Second place winner in over-all competition was Don Poorboy, AG1, USN, who is on the staff of ComNavMarianas, with a total of 1141-53. C. A. Boatright, BM1, USN, of the Small Arms Training Center at San Diego won his first major rifle marksmanship award when he took the All-Navy competition using the M-1 Garand service rifle to fire a 594-39v. Close behind Boatright was D. F. Morine, EOCM, USN, of Port Hueneme who scored 591-57.

Second place pistol honors were won by J. L. Shreves, EO2, USN, of SATU at San Diego with a score of 561-14x.

The Pacific Fleet won both rifle and pistol events over the Atlantic team. In the rifle competition, the team scored 1435-85v to Atlantic Fleet's 1426-73v. The pistol team hit 1108-28x to outshoot Atlantic Fleet's 1102-35x.

Top shooters in individual categories were chosen for the All-Navy rifle and pistol team. All-Navy rifle team members are: Coach, H. K. Goodman, PNC; Captain, R. J. Legler, TD2; D. D. Vaughn, ADJ1; W. A. Hopkins, BULCN; G. C. Inman, ATC; D. F. Morine, EOCM; W. R. Davis, IC1; and L. A. Osmak, DT1.

All-Navy pistol team members are: Coach, A. C. Krause, EMI; Captain, T. L. Keigley, HMI; H. B. Bowlin, SFC; W. J. Kennedy, TDC; J. J. Galica, AMEC; Lieutenant J. T. Natter; D. R. Lamber, ADR3; and H. B. Dubus, STCS.

—Story and Photos by
James Johnston, JO1, USN.

STRAIT SHOOTERS of the Pacific Coast team take aim on the firing line. *Right:* Pistol triggers are checked to insure that pull is not less than four pounds. *Above, right:* Donald Hamilton, ADR1, with winner's trophy.



LETTERS TO THE EDITOR

Duty Options

SIR: In a recent issue of ALL HANDS, you answered a Letter to the Editor concerning duty options as reenlistment incentives.

Your reply cited BuPers Inst 1306.73A, which has since been incorporated into Change 11 to Chapter 27 of the *Enlisted Transfer Manual* (NavPers 15909).

You said that both Reservists on active duty and Regular Navymen can exercise their duty option providing they are serving their first enlistment.

This statement seems to conflict with actual practice. A few months before I read this, and before Change 11 was incorporated into the *Transfer Manual*, a Reservist friend of mine serving two years on active duty requested an inter-fleet transfer.

The Bureau of Naval Personnel disapproved his request, stating that U.S. Naval Reservists were ineligible for reenlistment incentives.

Was BuPers correct in its action or was ALL HANDS correct when it said Reservist or Regular Navy status was immaterial to exercising a duty option during a first enlistment?—J. E. R., PN2, USN.

● *You didn't give the date of your friend's request but we suspect that*

Welcome Aboard

SIR: I recently graduated from Buena Vista College, which is located at Storm Lake, Iowa. I anticipate fulfilling my military obligation in the near future.

I'm fairly sure I'll choose the Navy's submarine force. Can you tell me how I should go about joining the silent service?—R. V.

● *With pleasure. Your first step will be to apply for your commission under the Naval Officer Candidate School Program, which is open to young college grads. If you are selected, you will attend an 18-week indoctrination training course at the Officer Candidate School in Newport, R. I.*

If you are given an 1105 designator (which means unrestricted line) while in OCS, you will be free to apply for submarine duty.

Whether or not you are granted your wish will depend upon your qualifications and, more important, the needs of the naval service. There are, in other words, no guarantees—but don't forget, good men are always needed. As usual, it will be mostly up to you.—Ed.

This section is open to unofficial communications from within the naval service on matters of general interest. However, it is not intended to conflict in any way with Navy Regulations regarding the forwarding of official mail through channels, nor is it to substitute for the policy of obtaining information from local commands in all possible instances. Do not send postage or return envelopes. Sign full name and address. Address letter to Editor, ALL HANDS, Pers G15, Bureau of Naval Personnel, Navy Dept., Washington, D.C. 20370.

timing is at fault in the seeming variance between our words and Bureau action.

Before BuPers Inst 1306.73A was incorporated into Change 11 to Chapter 27 of the Enlisted Transfer Manual, Naval Reservists were not eligible to participate in the Reenlistment Incentive Program. Exercising a duty option, therefore, was out of the question.

After Change 11 became effective, however, Reservists were included in the Program provided they were serving their first tour of active duty and agreed to enlist in the Regular Navy for six years.—Ed.

NavCad Program Closed

SIR: I would like some information on the NavCad Program. At present, the program officially exists but no applications are being accepted.

I have had slightly less than two years of college work at the University of Minnesota. My flight aptitude rating is six and my aviation qualification test score is seven. I have had some flying experience at the Minnesota University flight facilities and I like to fly.

I am 22 years old and am on active duty. I have 20/20 vision and am in prime physical condition.

I believe I possess the qualifications for the NavCad Program except for the two years of college for which there are (or perhaps I should say were) alternatives.

Does the Navy plan to discontinue this program altogether or will it be reopened some time in the future. What are my chances of becoming a NavCad?—D. T. D., AN, USN.

● *We hate to be the bearer of bad news but your chances of becoming a Naval Aviation Cadet at this time are zero. The Navy has been receiving more than enough Aviation Officer Candidate (AOC) applications to fill its requirements and the NavCad Program was closed in December 1965.*

The AOC Program requires, among other things, that applicants possess a

baccalaureate degree. Unless the flow of AOC applicants with college degrees is reduced, it is unlikely that the non-baccalaureate NavCad Program will be reopened.

The test scores you mentioned in your letter exceed the minimum AOC requirements but you don't have the necessary college degree. At the present time, no substitute for this requirement can be made and no waivers are being granted.

These difficulties notwithstanding, there is a silver lining to an otherwise dark cloud. You apparently aren't far from obtaining a baccalaureate. Perhaps you could remove this stumbling block to AOC eligibility by taking the courses you need to obtain a college degree.

You gave your age as being 22. You have until you are 27 and one-half years old to apply for the NAOC Program.—Ed.

Great Grandfather Was A Sailor

SIR: I've been given a set of discharge papers—my great-grandfather's—from the Union Navy. They are dated 31 May 1865, and are rather elaborate in design.

Except for the information written on these papers, I know little about my ancestor, Andrew Kirschner. His discharge document gives the following account of his naval activities:

1. He enlisted in Cincinnati, Ohio, on 15 Aug 1864, on board the receiving ship *Crampus* to serve one year or during the war.

2. He was transferred to U. S. flag-ship *Black Hawk* on 19 Aug 1864, which was under the command of Lieutenant Commander K. Randolph Breese, and Acting Master James Fitzpatrick.

3. *Black Hawk* was attached to the Mississippi Squadron under Admiral David D. Porter. Before the flagship was burned on 22 Apr 1865, she was actively engaged on the Mississippi and its tributaries where she protected transports, destroyed batteries and fought guerrilla bands.

All this information is written on the document in a crescent-shaped pattern set against a monument which was proposed to be built as a tribute to "Those Brave Boys In Blue."

Can you give me any lead as to where I might find more information about my great-grandfather's life before, during or after the war?—D. S. Q., EM1(SS), USN.

● *The document referred to in your*

letter contains far more information concerning the naval service of Andrew Kirschner than could be obtained from the available records (that is, without going into extensive research).

However, the record of service has been verified as being correct. In addition, we were able to learn that Mr. Kirschner served as a musician and at the time of his enlistment gave his age as 22, his place of birth as Germany.

His ship, Black Hawk, was a 902-ton, 260-foot side-wheel steamer, built in 1848 at New Albany, Ind. The Navy bought her on 24 Nov 1862 and placed her into commission on 6 December that year. She had been called Uncle Sam and New Uncle Sam until 13 Dec 1862 when she was renamed Black Hawk.

It is possible that your great-grandfather spent his nine and one-half months' naval service on board the river flagship, except for the four days he was aboard Grampus. He may have been in Black Hawk when she accidentally burned and sank three miles above Cairo, Ill.

Although she fought no major battles in her last year on the Mississippi, Black Hawk's guns helped the Union Forces to keep control over the river supply routes. Her armament consisted of four 32-pound smooth bore guns, two 30-pound muzzle loading rifles, one 12-pound muzzle loading rifle, and one 12-pound smooth bore gun.

Among Black Hawk's engagements were: Attack on Vicksburg, Miss. (December 1862); capture of Fort Hindman, Ark. (January 1863); attack on Haines Bluff, Miss. (April-May 1863); siege of Vicksburg (May-July 1863); and the Red River Expedition (March-May 1864).

You may possibly obtain more personal information about your great-grandfather by writing to the National Archives and Records Service, Military Records Branch, National Archives, Washington, D. C. 20408. There is a nominal fee for this service. During our check we were referred to pension jacket No. NWC-4478, which is listed under the name of your ancestor's widow, Mrs. Philmena Kirschner.—Ed.

Change in Rating for CYN

SIR: Can you point out the normal path of advancement for a communications yeoman? I would particularly like to know if a CYN is authorized to take an RM2 examination on the recommendation of his commanding officer or must he go up rate for rate?

For example, does a CYN3 have to take an RM3 exam or can he take the RM2 test?—C. M. B., YN1, usn.

● The next rung on the advancement ladder for a CYN3 is to YN2. From there, he proceeds, as might be expected, to YN1 and YNC. At this



NEW FACILITY—This artist's conception is of new 360-man enlisted men's quarters to be constructed at National Naval Medical Center in Bethesda.

point, he can advance either to YNCS and YNCM or take the path leading to a warrant and to an LDO commission.

In the case you mentioned, if the man wants to take the RM2 examination rather than the YN2 test, he may do so. He must, however, request permission from the Chief of Naval Personnel (Attn: Pers-B223)—via his commanding officer.

The Manual of Advancement in Rate or Rating (NavPers 15989) specifies that the request must be received at BuPers by 15 June or 15 December, depending on whether the man takes the August or February examination.

Although it may be of no immediate interest to the man for whom you are making your inquiry, it might be well to mention here that changes in rating for men in pay grades E-7 through E-9 are not normally approved.—Ed.

Nicholas Still Going Strong

SIR: In the January issue of ALL HANDS, you had an article about the oldest destroyer in the Navy, USS Nicholas (DD 449).

Your article seemed to imply that Nicholas' career ended with the Korean war. This just ain't so. The career of "The Road Runner" is far from ended.

This letter is being written while the ship is steaming off the coast of Vietnam. Tomorrow we might have plane guard duty, or possibly a shore bombardment assignment. We might be scheduled for ASW exercises, or a helo refueling. As you can see, DD 449 isn't quite ready for the graveyard. She is always ready.

Nicholas' Engineering Officer, Lieutenant W. E. Small, recently put the finishing touches to our Engineering

"E" with hashmark with his trusty brush and bucket of paint. This is in addition to the hashmark we wear on our Gunnery "E". Who says we're dead?—V. A. R., MMCS, usn.

● It appears we owe Nicholas an apology all the way 'round. Indeed, she has neither gone to the graveyard, nor was she brought back to active duty in 1961. That date in the article should have read 1951, the year she was placed back into commission, according to her present history.

We wish to thank you for providing us with the additional information of Nicholas' current role off Vietnam. Also, congratulations to the crew on earning those hashmarks for their Engineering and Gunnery "E"s.—Ed.

Transfer to Fleet Reserve

SIR: I hold a temporary commission as a limited duty officer. Before I was commissioned, I was a CPO.

This year I intend to revert to my enlisted pay grade and transfer to the Fleet Reserve. Must I revert to CPO, or is there a way I could be advanced to senior or master chief?—P. J. W., LT, usn.

● You must revert to CPO. Current directives do not permit advancement to pay grades E-8 and E-9 for men serving in a commissioned status. Such authorization, however, may be pending—the idea has been suggested but is still under consideration.

Incidentally, while it is not presently possible to advance to E-8 or E-9 while in a commissioned status, advancement to CPO is possible. Men serving as first class petty officer when they are commissioned may be administratively advanced to chief after serving three years from their date of advancement to first class and after serving eight years in the Navy.—Ed.



EAGLE BOATS such as the above (PE 57) were still being used at the beginning of World War II as training ships and patrol vessels. They carried 65 men.

Broken Service

SIR: A friend of mine, with broken service, recently returned to active duty. Within six months he had changed his rate from seaman to fireman and was advanced to third class petty officer.

I, too, have broken service, except that I now have a total of 15 months' active duty as a second class. Still, I've been told that I must have two years' continuous active duty service to be eligible for the E-6 exam.

How is it that my friend can return to active duty and be promoted within six months, whereas I must wait two years from the time I reenlisted before I can take the first class exam?—R. D. C., EM2, USN.

● You have brought up a good question. The answer should be of value to many broken-service Navy-men.

First of all, let's refer to the new Manual of Advancement in Rate or Rating (NavPers 15989). It states that under a broken service reenlistment, time in rate (TIR) commences on the date of reenlistment for those individuals who are accepted with the same rate and rating they held at the time of their discharge or release to inactive duty.

If you, however, had reenlisted as an E-4 instead of an E-5, a provision within the Manual would have made it possible for you to have participated in the next E-5 exam (within your rating) administered after your reenlistment.

Since your friend changed his rating from seaman to fireman, he was not competing for the next higher pay

grade in the rating held at the time of his discharge. Therefore, he was able to advance from E-3 to E-4 within six months.

Nevertheless, you are required to wait the full two years before taking the E-6 exam.—ED.

Wintering-Over Clasp

SIR: Is a man authorized to wear a gold star or other device on his suspension ribbon on the Antarctica Service Medal or its ribbon bar to signify that he has made more than one trip to Antarctica?

I served there for four years beginning in May 1958, and two years beginning March 1964. So far as I know, however, there is no way to show that I served more than one tour. Right?—E. L. S., YN1, USN.

● Right, up to a point. You are correct in your assumption concerning awards for more than one trip to the Antarctic. Regulations contained in SecNav Inst 1650.1C, Art. 531.23, provide that no more than one Antarctica Service Medal may be issued, and no more than one clasp or one disc may be worn.

However, wintering-over awards are slightly different and, in this respect, may indicate that you did spend more than one tour in the frozen south.

If you spend a winter in the Antarctic, you are entitled to wear a Wintering-Over Clasp on the ribbon of your Antarctica Service Medal. A bronze clasp is awarded for spending one winter on the ice; a gold clasp for two winters; a silver clasp for three winters. Only one clasp is authorized at a time.

Happy shivering.—ED.

Eagle Boats Proved Their Worth

SIR: If I remember correctly, back in the '40s the Navy had a type of ship called the Eagle Boat—something like a destroyer escort, only smaller. I vaguely recall they were used in submarine training.

For my own purposes the memory serves well enough. But I have a friend (a retired QM1) who doesn't believe there ever were such ships. Will you set him straight?—W. C. M., TMC (SS), USN.

● Your memory is good. There were eagle boats.

The eagle boat program began late in World War I, when the Navy let contracts for 112 hulls. When the Armistice was signed, however, 52 of the contracts were canceled.

The eagle boats were 201 feet in length, 26 feet in width, displaced 700 tons and had a top speed of about 17 knots. They carried a complement of 65 men, had square sterns and generally box-like lines, and were not noted for their seaworthiness.

The boats had one screw, were propelled by geared turbines which developed about 2500 horsepower. Earlier models were armed with single 3-inch/50 caliber guns while the later ones carried 4-inch/50s. All were equipped with depth charges.

In 1920 USS Eagle (PE 25) capsized in the Delaware River after being struck by a sudden squall. Nine of the crew were killed.

By the beginning of World War II only eight eagle boats remained in commission as training ships and coastal patrol vessels; none were assigned duty outside the continental waters.

They were used as sonar training school ships in Key West, and on the West Coast, and as target-towing vessels for aerial bombing practice.

While on a towing assignment, USS PE 56 was lost near the harbor entrance of Portland, Maine, when a terrific explosion split her amidships, killing all but 13 of her 62-man crew.

The seven remaining eagle boats were decommissioned soon after the end of World War II.—ED.

Sea Story for Zane

SIR: My father served in the Navy from 1928 to 1932 on board the destroyer USS Zane (DD 337). Whatever became of this old four-stacker? I believe she was still steaming during the Second World War.—J. C. H., LTJG.

● Indeed she did steam during World War II. In fact she performed three roles during her 25 years' service in the Navy.

Naval history files tell us Zane was built as DD 337, a flush-deck, four-pipe destroyer, during 1921 at the San Francisco Mare Island Navy Yard.

She remained a member of the four-piper fleet until just before WW II when she and 17 other flush-deckers were converted to fast minesweepers. Zane then became DMS 14.

She was at Pearl Harbor the morning of 7 Dec 1941, and was among the undamaged ships which managed to clear the channel during the attack.

As a minesweeper, Zane spent most of the next four years in the forefront of major naval operations. She chalked up six battle stars on her Asiatic-Pacific Area Service Medal for action at Pearl Harbor and in such operations as Guadalcanal, Tulagi, New Georgia, Rendova, Kwajalein, Majuro, Eniwetok, Saipan, Bonins and Guam. She also earned the Navy Unit Commendation for service in the Solomons.

Zane was given many dangerous assignments during the war. On one of them she was nearly sunk while en route to Tulagi from Guadalcanal with a load of aviation gasoline.

She was carrying 175 drums of fuel on deck when three Japanese destroyers spotted her clearing the channel. The enemy decided to give chase.

First range between the ships was 30,000 yards, but the pursuers steadily closed the gap. Zane's engines just couldn't outrun the enemy, even though she was steaming at about 28 knots. When the distance between the ships was 13,500 yards, the Japanese opened fire.

Shells landed within 1000 yards of Zane as she maneuvered defensively.

Then, after a chase of 20 minutes, the enemy began lobbing shells both 100 yards ahead and 100 yards astern of Zane. Luckily, the shells were bombardment projectiles instead of high explosives. High explosive shells might have torn the small minesweeper to pieces by underwater concussion, if not from direct hits. One enemy shell did score a direct hit on Zane's No. One three-inch 50-caliber gun. The shell killed three crewmen instantly. Other shells cut away rigging, antennas, and every halyard except the one to the gaff from which the National Ensign was flown.

Just when it seemed the enemy would blast Zane from the water, U. S. dive bombers arrived and attacked the Japanese destroyers with deadly results. One DD exploded and sank. Another was left burning, while the third appeared dead in the water.

Although one of her main guns was out of commission, the minesweeper continued to operate in the forward area until January 1943, when she was sent to Sydney, Australia for an overhaul.

Four months before the end of WW II, Zane's designation was changed to AG 109. In her new status as a miscellaneous auxiliary, she became a

target-towing ship in San Pedro Bay, Philippines.

Late in October of 1945, Zane headed homeward for the first time since the outbreak of the war. She first arrived in San Diego. Then, moving to Norfolk, she was decommissioned on 14 Dec 1945, and sold in October 1946.—Ed.

Choose One or the Other

SIR: Can I wear the Armed Forces Expeditionary Medal which I earned for service in Vietnam before 4 Jul 1965 as well as the Vietnam Service Medal for which I qualified after that date?

I am aware that regulations prohibit wearing both medals for service between 1 Jul 1958 and 4 Jul 1965. However, since the Vietnam Service Medal is awarded for duty after 4 Jul 1965, it seems I could legitimately wear both decorations if I have service in both time frames.—G. H. L., LT, USN.

• Sorry, but you must choose one medal or the other—even though you had Vietnamese service both before and after 4 Jul 1965. Executive Order 11231 prohibits issuing both awards to an individual for service in Vietnam.

Here are some other rules concerning the Armed Forces Expeditionary Medal and the Vietnam Service Medal which may be of interest to you:

Anyone who actually received the Armed Forces Expeditionary Medal before 4 Jul 1965 may either retain it or be issued the Vietnam Service Medal in its place. If the Vietnam Service Medal is chosen, the Expeditionary Medal must be surrendered.

Those who served in Vietnam after 4 Jul 1965 do not have this option. They are awarded the Vietnam Service Medal, period. If they had earned the AFEM before 4 Jul 1965, they must surrender it. No individual may have both medals for service in Vietnam, no matter when they served there.

The Vietnam Service Medal can be issued only once. Bronze stars which are worn on the Service Medal ribbon indicate campaigns in which the wearer

Time In Rate Waivers

SIR: Is it possible for me to receive a waiver of time in rate so that I might participate in the upcoming advancement in rate exams for E-7? I will have two years in rate as an E-6.—J. R. S., ET1, USN.

• Possible, but highly unlikely. In fairness to other well qualified personnel who must fulfill the established time-in-rate requirement, a waiver of 12 months in pay grade is not normally approved.

The procedures to request waivers of time in rate may be found in the Manual of Advancement in Rate or Rating (NavPers 15989), para. 302.13.—Ed.

participated after 15 Mar 1962 (the beginning date of the first campaign). Anyone who saw service in Vietnam before this date is entitled to wear only the ribbon without stars.

Stars on the AFEM have a different meaning. They signify the wearer earned the medal at some other time and in some other place, such as Lebanon, Taiwan or Cuba.

It is permissible for a Navyman to wear BOTH the Vietnam Service Medal and the Armed Forces Expeditionary Medal PROVIDED the latter was for service in Berlin, Lebanon, Quemoy-Matsu, Taiwan, Congo, Cuba, or Dominican Republic, and he elects to be awarded the Vietnam Service Medal rather than a star on the AFEM for service in the Vietnam theater.—Ed.

Ranger Was No Ghost

SIR: We have been told that USS Ranger (CV 4) was unable to moor at Ford Island in 1948 because she drew more than 40 feet and the water wasn't deep enough. Is this true?—The Crew of USS Hank (DD 702).

• Your informant is correct in stating that Ranger couldn't moor at Ford Island in 1948. However, his reasoning (not the water at Ford Island) strikes us as being a bit shallow for, according to our information, Ranger was sold in January 1947. Unless you believe in ghosts, it is highly unlikely that Ranger was moored at Ford Island or anywhere else the following year.

We don't know the depth of the water at Ford Island in 1948 but, since other and larger ships have moored in that vicinity, we doubt that Ranger's draft would have excluded her.

Here are a few statistics to reinforce our supposition. Ranger had a limiting draft of 25 feet. With an emergency load, she operated close to or slightly over this at approximately 21,000 tons. This is a far cry from the 40-foot draft mentioned by your informant.—Ed.

Can't Have It Both Ways

SIR: I am eligible to wear the Vietnam Service Medal and the Vietnam Campaign Medal for having served aboard USS Guadalupe (AO 32) in Southeast Asia from 12 February to 20 Sep 1966.

Am I also eligible to wear the Armed Forces Expeditionary Medal?—T. A. L., PNSN, USN.

• Only if the AFEM was earned for service in some other authorized area, such as Lebanon, Congo, Taiwan, etc.

The rules state that individuals serving in Vietnam after 4 Jul 1965 must receive the Vietnam Service Medal. Under no circumstances will both the AFEM (Vietnam) and the Vietnam Service Medal be issued for duty performed in Vietnam.—Ed.

Ship Reunions

News of reunions of ships and organizations will be carried in this column from time to time. In planning a reunion, best results will be obtained by notifying the Editor, ALL HANDS MAGAZINE, Pers G15, Bureau of Naval Personnel, Navy Department, Washington, D. C. 20370, four months in advance.

● *42nd Seabees*—Members of the 42nd Seabees Battalion will hold their annual reunion on 14 October at the Waldorf-Astoria Hotel in New York City. Details may be obtained from George Rapp, 42-37 Union St., Flushing, N. Y. 11355.

● *uss Gilmer (DD 233)*—A reunion for all hands who served aboard during WW II will be held in Milwaukee 28 October. Also Naval

Reservists who were aboard SC 412 that left Milwaukee for the East Coast in 1940. Contact may be made with F. A. Prebezich, 7020 N. 98th St., Milwaukee, Wis. 53224.

● *uss Northampton (CA 26)*—Those who served aboard between 1930 and 1942 and are interested in a reunion contact S. T. Kinard, 1537 Chowkeebin Nene, Tallahassee, Fla. 32301. Time and place to be set.

V-5 Trainees—I am interested in a possible 25th anniversary reunion of a group of Navy V-5 trainees who enlisted in the Detroit area on the anniversary of Pearl Harbor and shipped out together. The majority went on to Iowa Preflight, 28th Battalion, Companies G and H. Contact Ted Kashmerick, 8821 Suncrest Drive, Utica, Mich. 48087.

Certification of Orders

SIR: On frequent occasions, enlisted men in receipt of permanent change of station orders find it necessary to furnish certified copies of their orders—when they apply for the movement of their household goods, for instance.

Who is authorized to certify the copies?

I have heard that only a commissioned officer may certify the copies of PCS orders, but I seem to remember (perhaps sometime between 1963 and 1965) either a directive or a Manual change which stipulated that a second class petty officer or above could certify his own orders.

Which is correct?—T. J. M., YNCS, USN.

● *Neither.*

Despite an apparently widespread

belief that copies must bear the certification of a commissioned officer, the fact remains that no law, regulation or order requires it. Copies of orders may be certified by any responsible individual, including the Navyman to whom they pertain, be he seaman or admiral.

The subject is not covered in any official Navy publication at this time because there are no special requirements for personnel certifying copies of PCS orders to be true copies.

It might be mentioned that your letter has invited attention to the desirability of having the certification requirements set forth in writing. If it is decided that the rules should be officially defined, steps will be taken to do so.

We'll let you know.—Ed.

Commemorative Stamps

SIR: I recently read that four new commemorative postage stamps would soon be issued. I was dismayed to learn that none will honor the Navy.

In view of the great job the Navy is doing these days, I think it is a more appropriate subject for a commemorative issue than some of those which have been selected. Is anyone promoting the Navy in this respect?—F. H. L., CAPT., USNR(Ret).

● *The Citizen's Stamp Advisory Committee which selects subjects for commemorative issues undoubtedly would agree with you concerning the Navy's merits. There are, however, other organizations and events which the Committee feels also deserve commemoration and the Committee must decide which of these warrant selection for the 15 commemorative stamps issued each year. When you consider there are thousands of ideas submitted annually and only 15 can be selected, the Navy probably gets its share.*

However, if you have a suggestion concerning a naval subject which you think is suitable for a commemorative stamp, you may submit your nomination to Postmaster General, Post Office Department, Washington, D. C. 20260.

As a possible guide in your nomination, here are a few suggestions which the Committee has recently rejected as subjects for Navy commemorative issues: The 100th Anniversary of the Navy Civil Engineer Corps; the 25th Anniversary of the U. S. Naval Construction Battalions; the 200,000th Arrested Landing on uss Lexington; the Commissioning of the U. S. Naval Communications Station at North West Cape, Australia.

Good luck.—Ed.



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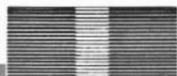
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HEROES and LEADERS



DISTINGUISHED SERVICE MEDAL

"For exceptionally meritorious service to the Government of the United States in a duty of great responsibility . . ."

- ★ ASHWORTH, Frederick L., Vice Admiral, USN, for exceptionally meritorious service to the government of the United States as Commander, Sixth Fleet, from May 1966 to March 1967.
- ★ JACKSON, Andrew Mc Burney, Jr., Vice Admiral, USN, for exceptionally meritorious service to the government of the United States as Assistant Chief of Naval Operations (Plans and Policy) from 2 Jan 1963 to 12 Jul 1964, and as Deputy Chief of Naval Operations (Plans and Policy) from 13 Jul 1964 to 17 Apr 1967.



LEGION OF MERIT

"For exceptionally meritorious conduct in the performance of outstanding service to the government of the United States . . ."

- ★ ANDERSON, Gustave T., Captain, Medical Corps, USN, for exceptionally meritorious service from 18 Oct 1965 to 30 Jan 1967 as medical consultant in Vietnam and as project officer in the Bureau of Medicine and Surgery.
- ★ ANDERSON, Nelson R., Captain, Civil Engineer Corps, USN, as Commander 30th Naval Construction Regiment in the Republic of Vietnam from 1 Sep 1965 to 12 Sep 1966.
- ★ ARNOLD, Homer S., Captain, Medical Corps, USN, as Senior Surgeon and Commanding Officer, Company C, First Medical Battalion from 23 Jul to 23 Oct 1965, and subsequently as Division Surgeon, Third Marine Division, from 24 Oct 1965 to 23 May 1966. The Combat Distinguishing Device is authorized.

- Gold Star in lieu of Second Award
- ★ BAUMBERGER, Walter H., Rear Admiral, USN, from May 1965 to March 1967 as Commander Cruiser-Destroyer Force, U. S. Pacific Fleet.
 - ★ BECKER, Glynn R., Lieutenant Commander, USN, while serving with friendly foreign forces engaged in armed conflict against the communist insurgent forces in the Republic of Vietnam from 18 May 1965 to 16 Jun 1966. The Combat Distinguishing Device is authorized.
 - ★ BIRD, Horace V., Rear Admiral, USN, from 9 Nov 1964 to 18 May 1967 as Commander Naval Forces Marianas, as representative of the Commander in Chief Pacific in the Mariana-Bonin Islands, and as Commander Task Forces 34 and 94.
 - ★ BROWN, Clifford L., Captain, USN, from

21 Jul 1964 to 28 Apr 1966 as Fleet Logistics Officer on the staff of Commander in Chief U. S. Pacific Fleet.

Gold Star in lieu of Fourth Award
 ★ CALVERT, James F., Rear Admiral, USN, as director, Politico-Military Policy Division, Office of the Chief of Naval Operations from August 1965 to May 1967.

★ CHRISTENSEN, Cyrus R., Lieutenant Commander, USN, from 1 Apr 1965 to 25 Feb 1966 while serving as Senior Naval Advisor to Coastal Groups 21, 22, 23 and 24 engaged in armed conflict against the communist insurgent guerrilla forces in Vietnam. The Combat Distinguishing Device is authorized.

★ COMPTON, Oliver D., Captain, USN, from August 1964 to February 1966 while serving in a managerial capacity in connection with the Navy's provision of expendable conventional munitions to combat forces in Southeast Asia.

★ DAILEY, Elmer W., Jr., Captain, USN, as director, communications-electronics, J-6, Headquarters, United States Southern Command, Quarry Heights, Canal Zone from January 1966 to April 1967.

★ DUFFNER, Gerald J., Captain, Medical Corps, USN, from 7 May 1963 to 28 Oct 1966 as Fleet Medical Officer on the staff of the Commander in Chief United States Atlantic Fleet.

★ FAIR, John W., Captain, USN, as Commanding Officer, USS Intrepid (CVS 11) from 15 July to 13 Oct 1966, and as commander Task Group 77.5, in connection with combat operations in Southeast Asia.

★ FITZWATER, Harry E., Jr., Captain, USN, as Chief of Missiles and Space Branch, Joint Reconnaissance Center, Operations Directorate, Organization of the Joint Chiefs of Staff from 4 June 1963 to 31 Mar 1966.

★ FOX, Elmer L., Captain, USN, as Commander Task Unit 77.01 and Task Force 77, on the afternoon of 1 Jul 1966. As the on-scene commander when three unidentified high-speed surface contacts were detected and sunk and 19 prisoners taken.

★ GANNON, John W., Rear Admiral, USN, from 19 Oct 1964 to 30 Nov 1966 as Commander Fleet Air Wings, U. S. Pacific Fleet and Commander Fleet Air, Moffett.

★ GEIS, Lawrence R., Rear Admiral, USN, as Chief, United States Naval Mission to Brazil and as Chief, United States Navy Section, United States Military Group, Brazil, from May 1965 to April 1967.

★ GOODFELLOW, Alexander S., Jr., Rear Admiral, USN, from 18 Aug 1966 to 18 Jan 1967 as commander Task Group 70.8, while the Seventh Fleet was actively engaged in combat operations in support of the Republic of Vietnam.

★ GRANTHAM, Delbert D., Commander, USN, as both Deputy Chief and Assistant Chief of

Staff for Plans and Operations, Naval Advisory Group, Military Assistance Command, Vietnam, from 4 Jun 1964 to 23 Sep 1965.

Gold Star in Lieu of Second Award
 ★ GRAYBIEL, Ashton, Captain, Medical Corps, USN, as Director of Research at the U. S. Naval Aerospace Medical Institute, Pensacola, Fla., from 1 Jan 1960 to 30 Jun 1966.

★ HAHN, Thomas F., Commander, USNR, as Head, Naval Security Group Department, U. S. Naval Communications Station, Philippines from 22 Jun 1964 to 15 Apr 1965.

★ HALLGARTEN, Kurt, Commander, USNR, from January 1964 to January 1967 as head of the Regulations Branch of the Administrative Law Division in the Office of the Judge Advocate General.

★ HARLFINGER, Frederick J., II, Rear Admiral, USN, from 24 Jan 1964 to 26 Jan 1967 as Assistant Director for Collection, Defense Intelligence Agency.

★ HARRIS, Leroy E., Captain, USN, from 7 Jul 1965 to 30 Sep 1966 as Chief, General War Division and Deputy Chief of the Joint War Games Agency.

★ HERING, Alexander C., Captain, Medical Corps, USN, as senior medical officer of the Naval Station Hospital, Headquarters Support Activity, Saigon, from 25 Feb 1965 to 30 Mar 1966.

★ HODGSON, Gordon S., Captain, USN, as Operations Officer for Commander Carrier Division Five from 19 Jul 1964 to 25 Oct 1965, during which time he was responsible for coordination, planning, and execution of the CVA Aug 1964 reprisal strikes in the Gulf of Tonkin.

★ HOLZAPFEL, Valentine G., Captain, USN, from April 1964 to January 1967 as Assistant Chief, Special Projects Division, Policy Planning Staff, Office of the Assistant Secretary of Defense (International Security Affairs).

★ HOUSE, William H., Captain, USN, as Chief of Staff for Commander Carrier Division Nine from 2 Jul 1965 to 15 Jan 1966.

★ HUGHES, William C., Rear Admiral, USNR, from July 1963 to April 1966 as Assistant Chief for Naval Reserve and Naval District Affairs, and as Senior Member, Naval Reserve Officer Mobilization Disposition Board.

★ IVISON, Sterling H., Jr., Captain, USN, from 22 Jun 1964 to 15 Oct 1966 as Director of the Programming and Finance Division, under the Deputy Chief of Naval Material Command (Programs and Financial Management), Headquarters Naval Material Command.

★ KRICKENBERGER, Custer F., Jr., Captain, Civil Engineer Corps, USN, from July 1965 to April 1967 as logistics installations and facilities officer on the staff of Commander in Chief U. S. Pacific Fleet.

★ KUEHL, Howard F., Rear Admiral, Supply

Corps, USN, from 2 Feb 1962 to 1 Jun 1966 as Commanding Officer, Navy Aviation Supply Office, Philadelphia, Pa.

★ LAWRENCE, Gregory E., Commander, USN, from 15 Feb 1965 to 30 Jan 1967 as Chief, Support Activity, United States Military Assistance Command, Thailand.

★ LEVENTHAL, Robert S., Commander, Supply Corps, USN, from 2 Aug 1965 to 1 Jun 1966 while serving as the first supply and fiscal officer, U. S. Naval Support Activity, Da Nang, Republic of Vietnam. He was responsible for the preparation and implementation of plans for the military logistic support of all U. S. forces in the I Corps tactical area of Vietnam.

★ LOOMIS, Raymond W., Commander, Civil Engineer Corps, USN, for meritorious service from July 1964 to January 1967 as Director, Naval Construction Forces Division, Naval Facilities Engineering Command.

★ MADDOCKS, William J., Captain, USN, for meritorious service from September 1965 to March 1966 as Commander Amphibious Squadron Five, while deployed as a unit of the United States Seventh Fleet Amphibious Force.

Gold Star in lieu of Second Award

★ MADDOCKS, William J., Captain, USN, for meritorious service from 28 July to 1 Nov 1966 as Commander Amphibious Ready Group, U. S. Seventh Fleet, while deployed as a unit of the U. S. Seventh Fleet Amphibious Force. He was responsible for planning and executing three amphibious assaults in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ MATTER, Alfred R., Rear Admiral, USN, for meritorious service from July 1964 to May 1967 as Commander Fleet Air Wings, U. S. Atlantic Fleet.

★ MARTINSEN, Norman M., Captain, Civil Engineer Corps, USN, for meritorious service from July 1962 to January 1967 as Assistant Chief of the Bureau of Yards and Docks for Operations and Maintenance, as Director of Facilities Management, and as Deputy Commander for Management, Naval Facilities Engineering Command.

Gold Star in lieu of Third Award

★ MC CAIN, John S., Jr., Vice Admiral, USN, for meritorious service during the period July 1965 to April 1967 as Vice Chairman, U. S. Delegation, United Nations Military Staff Committee and Commander, Eastern Sea Frontier.

★ MC CLENDON, William R., Captain, USN, for meritorious service as commanding officer of USS Bon Homme Richard (CVA 31) from 12 May to 9 Dec 1965 in the Southeast Asia area during which time the ship launched a series of highly effective air strikes against Viet Cong.

★ MC KEE, John R., Captain, USN, posthumously, for meritorious service from June 1964 through August 1966 as a staff operations officer in the Operations Directorate, Joint Staff, Organization of the Joint Chiefs of Staff.

★ MILLER, Jim D., Captain, USN, for meritorious service from April 1964 through May 1967 as an operations staff officer in the Operations Directorate, Joint Staff, Organization of the Joint Chiefs of Staff.

★ MONROE, Henry S., Rear Admiral, USN, for meritorious service from October 1964 to March 1967 as Commander Amphibious Training Command, U. S. Pacific Fleet.

★ MUSE, George R., Rear Admiral, USN, from 7 Sep 1965 to 9 Sep 1966, while serving as Chief of Staff and Aide to Commander Cruiser-Destroyer Force, U. S. Pacific Fleet.

★ PEET, Raymond E., Captain, USN, for meritorious service as military assistant to the Secretary and Deputy Secretary of Defense, and later as military assistant to the Principal Deputy Assistant Secretary of Defense, International Security Affairs from 8 Jul 1965 to 1 Sep 1966.

★ PHILLIPS, Charles K., Captain, Supply Corps, USN, for meritorious service from 10 Aug 1964 to 15 Jun 1966 as faculty member, Resident School and as Director, Resident School, Industrial College of the Armed Forces.

★ ROOD, George H., Captain, USN, for meritorious service as Commander Task Group 4.9 during Hurricane Inez relief operations from 1 to 6 Oct 1966.

Gold Star in lieu of Second Award

★ RUCKNER, Edward A., Rear Admiral, USN, for meritorious service from June 1965 to April 1967 as Commander Cruiser-Destroyer Force U. S. Atlantic Fleet.

★ TALBOT, Wallace L., Jr., Captain, USN, for meritorious service from 11 Aug 1964 to 10 Apr 1966 as Assistant Chief of Staff for logistics on the staff of Commander in Chief U. S. Pacific Fleet.

★ THOMPSON, Edwin H., Commander, Supply Corps, USN, for meritorious service from 28 Mar 1964 to 15 Nov 1965 as logistics officer, Naval Advisory Group, U. S. Military Assistance Command, Vietnam. The Combat Distinguishing Device is authorized.

★ WELHAM, Walter, Rear Admiral, Medical Corps, USN, for meritorious service as Fleet Medical Officer on the staff of Commander in Chief, U. S. Pacific Fleet, with additional duty as staff medical officer on the staff of Commander in Chief, Pacific, from 3 Oct 1964 to 16 Sep 1966.

★ SHAMER, Frank N., Captain, USN, for meritorious service from June 1965 to April 1967 as Chief of Staff to Commander Mine Force, U. S. Pacific Fleet.

★ SMITH, William C., Lieutenant Commander, USN, for meritorious service from 30 June to 26 Oct 1966 as a pilot in Attack Squadron 163 embarked in USS Oriskany (CVA 34).

★ STONE, Frank B., Captain, USN, for meritorious service as commanding officer, USS Hancock (CVA 19) and Commander Task Group 77.7 from 29 January to 11 May 1965. The Combat Distinguishing Device is authorized.

★ TURNER, Charles W., Captain, Civil Engineer Corps, USN, for meritorious service from 18 Jul 1963 to 28 Feb 1967, as a military staff assistant to the Assistant Director of Command and Control in the Office of the Director of Defense Research and Engineering.

★ WALSH, Francis R., Jr., Commander, USN,

for meritorious service as a project officer from August through November 1966. He directly supervised the preparation and implementation of the project test and evaluation effort.

★ WARNER, Arthur H., Jr., Captain, USN, for meritorious service from 10 Dec 1964 to 31 Jan 1967 as Deputy Naval Representative of the U. S. Chiefs of Staff on the Military Staff Committee and the United States Mission to the United Nations.

★ WEATHERWAX, Hazlett R., Rear Admiral, USN, for meritorious service from June 1964 to June 1966 as Director of Pan American Affairs, Office of the Chief of Naval Operations; as a representative of the Navy Department while serving as Chairman and U. S. Navy Member of the U. S. Delegation to the Inter-American Defense Board; and as a member of the joint Brazilian-U.S. Defense Commission, the joint Mexican-U.S. Defense Commission, and the Permanent Board on Defense of Canada and the U.S.

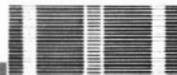
★ WELCH, David F., Captain, USN, for meritorious service from 28 Apr 1965 to 27 Mar 1966 while serving as Deputy Assistant Chief of Staff, J3 and Chief, Operational Plans and Requirements Division, Office of the Assistant Chief of Staff, J3, U. S. Military Assistance Command, Vietnam.

★ WERTH, James M., Captain, USN, for meritorious service in successive positions of extreme responsibility from June 1965 to August 1966 as, initially, Deputy Assistant Chief of Staff, J4, and commencing in December 1965, as Deputy for Special Projects, Assistant Chief of Staff, J4, U. S. Military Assistance Command, Vietnam.

★ WESCHLER, Thomas R., Rear Admiral, USN, for meritorious service from 15 Oct 1965 to 5 Jan 1966 as Commander Amphibious Ready Group, U. S. Seventh Fleet, while deployed as a unit of the U. S. Seventh Fleet Amphibious Force.

★ WILSON, Almon C., Commander, Medical Corps, USN, for meritorious service from July 1965 to June 1966 as commanding officer of the Third Medical Battalion in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ WULFMAN, William A., Captain, Medical Corps, USN, for meritorious service from 23 May 1965 to 15 Jun 1966 as Division Surgeon, Third Marine Division and, subsequently, as Force Surgeon, Third Marine Amphibious Force/Naval Component Command in connection with operations against insurgent communist forces in the Republic of Vietnam. The Combat Distinguishing Device is authorized.



DISTINGUISHED FLYING CROSS

"For heroism or extraordinary achievement in aerial flight . . ."

DFC
★ BEENE, James A., Lieutenant (jg), USNR, for heroism and achievement in aerial flight while serving in Southeast Asia.

★ BIRDWELL, Carl, Jr., Commander, USN, for heroism and achievement while leading a 27-

plane strike group against military installations near Dong Hoi, North Vietnam, on 7 Feb 1965.

Gold Star in lieu of Second Award

★ BIRDWELL, Carl, Jr., Commander, USN, for heroism and achievement on 1 May 1966 as the leader of an aircraft strike against a surface-to-air missile site in North Vietnam.

Gold Star in lieu of Third Award

★ BIRDWELL, Carl, Jr., Commander, USN, for heroism and achievement in aerial flight on 22 May 1966 as commanding officer of Attack Squadron 216, while leading a 24-plane strike on the heavily defended military complex of Vinh, North Vietnam.

Gold Star in lieu of Fourth Award

★ BIRDWELL, Carl, Jr., Commander, USN, for heroism and achievement on 15 Jun 1966 while engaged in combat operations in Southeast Asia. He led a jet aircraft strike against a missile site which previously had fired two surface-to-air missiles at his aircraft.

★ BLACK, Cole, Lieutenant Commander, USN, for heroism and extraordinary achievement in aerial flight.

Gold Star in lieu of Second Award

★ BLACK, Cole, Lieutenant Commander, USN, for heroism and extraordinary achievement in aerial flight.

★ BOOSE, Eldon R., Lieutenant (jg), USNR, for heroism and achievement on 1 Nov 1965 as wingman of a section of propeller-driven aircraft during an air rescue mission within the enemy island territories of North Vietnam.

Gold Star in lieu of Second Award

★ BOWERS, William W., Commander, USN, for achievement in aerial flight as strike leader of a 10-plane coordinated attack on 12 Sep 1965 against the Vinh Barracks Central/Northeast, Vinh, North Vietnam.

Gold Star in lieu of Third Award

★ BOWERS, William W., Commander, USN, for achievement while leading a division of five aircraft on 31 Oct 1965 in a 20-plane strike on the Kep highway bridge in North Vietnam.

★ BRAND, Walter N., III, Lieutenant, USNR, for heroism and achievement on 4 Apr 1966 as flight leader of three A4C aircraft in a successful night attack on the railroad marshalling yards near Vinh, North Vietnam.

★ BROWN, Lorin W., Lieutenant, USN, for heroism and achievement on 29 May 1966 while maneuvering his aircraft through intensified enemy fire in an attack on the Dien Chau railway bridges on the Song Bang River on 29 May 1966.

★ CASSIMAN, Paul A., Lieutenant, USN, for heroism and achievement on 20 Mar 1966 as wingman in a successful search and rescue mission for a downed pilot in North Vietnam.

★ CHATHAM, Walter L., Lieutenant Commander, USN, for heroism and achievement as the division leader of a flight of A4C aircraft participating in a strike on the Nam Dinh railroad repair facility and storage area in North Vietnam.

★ COAKLEY, William F., Lieutenant Commander, USN, posthumously, for achievement on 7 Jul 1966 as section leader on the initial attacking wave of aircraft against enemy PT boats south of Hon Gay, North Vietnam.

★ CROW, Edwin M., Commander, USN, for heroism and achievement on 3 Jun 1966 as strike leader of a flight of 18 aircraft in a successful strike on the Thai Binh supply-storage area and boat construction facility near Hanoi.

★ DAULTON, James T., Lieutenant Commander, USN, for heroism and achievement on 29 May 1966 as section leader in a Bullpup missile strike on the Dien Chau and Qui Vinh railroad bridges.

★ DAVIS, John B., Lieutenant Commander, USN, for heroism and achievement while conducting the first successful strike against a mobile surface-to-air missile site in North Vietnam on 17 Oct 1965.

★ DEMKO, Martin E., II, Lieutenant (jg), USN, during combat operations in Southeast Asia as the pilot in command of Rescue Combat Air Patrol.

★ DOLNY, William J., Lieutenant (jg), USNR, for heroism and achievement during a search and rescue flight over North Vietnam on 31 Oct 1965.

★ DONNELLY, Verne G., Lieutenant Commander, USN, for heroism and achievement as leader of the second attack element against the Lu Phong Army Barracks near the Hon Gay Naval Base in North Vietnam on 22 May 1966.

★ ETTINGER, Harry E., Jr., Commander, USN, for heroism and achievement on 28 Jul 1965 as strike leader and coordinator for a mission against North Vietnam.

Gold Star in lieu of Second Award

★ ETTINGER, Harry E., Jr., Commander, USN, for heroism and achievement on 20 Sep 1965 during the rescue of a downed U. S. Navy pilot near Vietnam.

★ FAIR, John W., Captain, USN, for heroism and achievement from 10 Nov 1944 to 1 Mar 1945 as a pilot and section leader for the Air Group and Fighter Squadrons Commanders. Captain (then Lieutenant) Fair conducted fighter sweeps; rescue combat air patrols; fighter escort; and other attacks against heavily defended enemy-held territory in the Philippines, French Indo-China, Iwo Jima, the Ryukyu Islands, Formosa and the home islands of Japan.

★ FLICK, John P., Lieutenant Commander, USN, for heroism and achievement on 5 May 1966 as a pilot during action against hostile forces in North Vietnam.

Gold Star in lieu of Second Award

★ FLICK, John P., Lieutenant Commander, USN, for heroism and achievement on 30 Jun 1966 while engaged as leader of the second division of the attack element of A4 aircraft in an important strike against the Bac Giang petroleum storage area twenty miles northeast of Hanoi.

★ FROSIO, Robert C., Commander, USN, posthumously, for heroism and achievement on

21 Aug 1966 as flight leader of an eight-plane flight of A4E aircraft against the Thanh Hoa Railway Station in North Vietnam.

Gold Star in lieu of Second Award

★ FROSIO, Robert C., Commander, USN, posthumously, for sustained heroism and achievement from 10 August to 12 Nov 1966 in leading daily strikes against heavily defended targets in North Vietnam.

★ GREER, William E., III, Lieutenant Commander, USN, for heroism and achievement on 3 Jun 1966 as flight leader during a successful attack against a suspected missile support and storage area located southwest of Haiphong.

★ HARMON, James O., Lieutenant Commander, USN, for heroism and achievement on 27 Jul 1966 as flight leader of a rescue combat air patrol.

★ HENRY, David A., Lieutenant (jg), USNR, posthumously, for heroism and achievement during combat operations against North Vietnam forces on 1 Jul 1966.

★ HILL, Arthur S., Jr., Lieutenant, USN, posthumously, for heroism and achievement during an attack on the Uong Bi thermal power plant at Haiphong, on 22 Dec 1965.

★ HURLBURT, Michael B., Lieutenant (jg), USNR, on 30 Jun 1966 as a pilot in the first division of A4 aircraft participating in an important strike against the Bac Giang petroleum storage area, northeast of Hanoi.

★ JACKSON, Virgil F., Jr., Lieutenant, USN, for heroism and achievement on 9 Apr 1966 as a pilot attacking the strategic Vinh Army Headquarters Military Complex, North Vietnam.

★ KRUEGER, Otto E., Commander, USN, for heroism and achievement as commanding officer, Attack Squadron 94, during an attack on the Uong Bi thermal power plant on 22 Dec 1965.

Gold Star in lieu of Second Award

★ KRUEGER, Otto E., Commander, USN, for heroism and achievement on 23 Dec 1965 during a coordinated air strike on the Hai Duong rail and highway bridge in North Vietnam.

Gold Star in lieu of Third Award

★ KRUEGER, Otto E., Commander, USN, for heroism and achievement while leading a 14-plane strike against the Ha Tou Army Barracks in North Vietnam on 11 May 1966.

★ KREUTZMANN, Kenneth P., Lieutenant, USN, for heroism and achievement as a pilot during an attack against a suspected hostile North Vietnamese missile site on 23 Aug 1965.

★ LAWS, Richard L., Lieutenant, USN, posthumously, for heroism and achievement as a member of the flak suppression element in a coordinated strike against the Bai Thuong petroleum storage area in North Vietnam.

★ LEE, Warner F. Lieutenant (jg), USNR, for heroism and achievement on 28 Sep 1965 during a mission against the Thanh Hoa Bridge in North Vietnam.

★ LINQUIST, Harry L., Lieutenant, USNR, for heroism and achievement on 12 Apr 1966 while

participating in an attack on a highway bridge near Vinh, North Vietnam.

★ LYNNE, Jimmy S., Lieutenant (jg), USN, for heroism and achievement during a mission in support of combat operations in Southeast Asia on 20 Jun 1965.

★ MACINTYRE, Daniel G., Lieutenant Commander, USN, for heroism and achievement while conducting operations against North Vietnam forces from 21 to 23 Sep 1966.

★ MANSFIELD, Richard H., Lieutenant, USN, for heroism and achievement on 7 Jul 1966 during operations against hostile forces in North Vietnam.

★ MARR, Harold L., Commander, USN, for heroism and achievement on 1 May 1966 as a pilot during a strike on the Ben Thuy POL storage area in the target complex of Vinh, North Vietnam.

★ MC ADAMS, Lee T., Commander, USN, for heroism and achievement as leader of a flight of attack aircraft in the retaliatory strike against North Vietnamese targets on 5 Aug 1964.

★ MC INTIRE, Larry A., Lieutenant (jg), USNR, for heroism and achievement on 7 Jul 1966 as a wingman on an important attack on the Haiphong petroleum storage area.

★ MC MAHON, John P., Lieutenant, USN, for heroism and achievement on 10 Sep 1965 as flight leader of a rescue combat air patrol conducting a search for a downed pilot in North Vietnam.

★ MERCHANT, Paul G., Commander, USN, for heroism and achievement on 17 Oct 1965 as flight leader of a section of propeller-driven aircraft providing direction and close support for rescue helicopters en route to recover downed F4B pilots 60 miles inland.

Gold Star in lieu of Second Award

★ MERCHANT, Paul G., Commander, USN, for heroism and achievement on 7 Nov 1965 as flight leader of a section of propeller-driven aircraft assigned as helicopter escort in an effort to rescue downed Air Force men deep in enemy territory in North Vietnam.

★ MOHRHARDT, Robair F., Commander, USN, for achievement as pilot of a jet fighter in action against North Vietnamese PT boats on 2 Aug 1964.

★ MOORE, Thomas G., Lieutenant Commander, USN, for heroism and achievement on 27 Apr 1965 while leading a photographic reconnaissance flight whose mission was to record the reconstruction progress of the Thanh Hoa and Dong Phong Thuong bridges in North Vietnam.

★ MORIN, James B., Commander, USN, for heroism and achievement during operations on 10 Sep 1965 as leader of a special strike group in the vicinity of Vinh, North Vietnam.

Gold Star in lieu of Second Award

★ MORIN, James B., Commander, USN, for heroism and achievement on 5 Oct 1965 as alternate strike leader for Air Wing 15 in a coordinated two-carrier strike against the Kep highway bridge, North Vietnam.

★ MOSLENER, Carl F., Lieutenant (jg), USN, for heroism and achievement on 17 Oct 1965 while conducting the first successful strike against a mobile surface-to-air missile site in North Vietnam.

★ MULLANEY, Charles F., II, Lieutenant, USNR, for heroism and achievement on 6 Nov 1965 while providing relief for aircraft involved in the rescue of several downed Air Force personnel deep in enemy territory in North Vietnam.

Gold Star in lieu of Third Award

★ MUNCIE, Wendell B., Commander, USN, for heroism and achievement on 7 Feb 1965 as a pilot serving with attack squadron 212 during operations against hostile forces in North Vietnam.

★ POST, Harry J., Commander, USN, for heroism and achievement on 1 May 1966 as escort for a hazardous photographic mission which involved bomb damage assessment of the Uong Bi thermal power plant, the Haiphong bridge and the Me Xa bridge.

★ PROMERSBERGER, Edward S., Lieutenant Commander, USN, for heroism and achievement during a successful air strike against the important and heavily defended Ben Thuy military installation at Vinh, North Vietnam.

★ PRUDHOMME, John D., Lieutenant, USN, posthumously, for heroism and achievement on 22 Dec 1965 during an attack against a key North Vietnamese power installation.

★ RAYSIN, Paul E., Lieutenant Commander, USN, for heroism and achievement on 31 May 1966 while leading a daring attack against the Tra Lay military area in North Vietnam.

★ REYNOLDS, Marvin D., Lieutenant Commander, USN, for heroism and achievement on 2 Oct 1966 as pilot of a jet aircraft during a strike against a target at Phu Ly, North Vietnam.

★ SAINTSING, Everette T., Lieutenant, USNR, for heroism and achievement on 10 Nov 1965 as pilot of a rescue helicopter during a night rescue mission of a Navy pilot in enemy waters off North Vietnam.

★ SCHAEDEL, Joseph A., Lieutenant Commander, USN, for heroism and achievement on 11 May 1966 while leading a flight of six A4C aircraft to an assigned target near Haiphong.

★ SCHORZ, Ernest H., Commander, USN, for heroism and achievement on 29 Jul and 3 Aug 1965 while leading and coordinating two successful attacks on the Nam Dinh thermal power plant in North Vietnam.

★ SCHWOEFFERMANN, Robert E., Commander, USN, for heroism and achievement as a pilot during actions against hostile forces in North Vietnam on 11 Feb 1965.

Gold Star in lieu of Second Award

★ SELLS, Warren H., Commander, USN, for heroism and achievement during a retaliatory strike on North Vietnam on 11 Feb 1965.

★ SHATTUCK, George W., Lieutenant, USN, for heroism and achievement on 1 Jun 1965 as a strike pilot in an air-wing strike against the Dong Phong Thuong bridge in North Vietnam.

Gold Star in lieu of Third Award

★ SHUGART, Kenneth L., Jr., Commander, USN, for heroism and achievement in action against hostile forces in North Vietnam on 11 Feb 1965.

Gold Star in lieu of Fourth Award

★ SHUGART, Kenneth L., Jr., Commander, USN, for heroism and achievement as a pilot in action against hostile forces in North Vietnam on 4 Apr 1966.

Gold Star in lieu of Second Award

★ SIZEMORE, William G., Commander, USN, for heroism and achievement on 22 Dec 1965 as leader of the third division of A4C aircraft in a successful strike against the Uong Bi thermal power plant.

Gold Star in lieu of Third Award

★ SIZEMORE, William G., Commander, USN, for heroism and achievement on 23 Dec 1965 while attacking the highly strategic Hai Duong bridge between Haiphong and Hanoi, North Vietnam.

Gold Star in lieu of Fourth Award

★ SIZEMORE, William G., Commander, USN, for heroism and achievement on 28 Apr 1966 as strike leader of an 18-aircraft attack on the Nam Dinh railyards, a supply and support facility and communications center in North Vietnam.

★ SMITH, William C., Lieutenant Commander, USN, for heroism and achievement on 31 Oct 1965 in a coordinated Navy-Air Force strike against enemy surface-to-air missile sites and a key highway bridge near Kep, North Vietnam.

Gold Star in lieu of Second Award

★ SMITH, William C., Lieutenant Commander, USN, for heroism and achievement on 23 Aug 1965 as pilot of a jet aircraft during a combat mission over hostile territory against a suspected surface-to-air missile site at Kep, North Vietnam.

Gold Star in lieu of Third Award

★ SMITH, William C., Lieutenant Commander, USN, for heroism and achievement on 13 Aug 1966 as flight leader of two divisions of jet aircraft conducting an armed reconnaissance mission near Hon Gay, North Vietnam.

★ SMITH, Jack S., Lieutenant, USNR, for heroism and achievement on 7 Nov 1965 as a pilot of an attack aircraft directing and escorting helicopters deep in enemy territory of North Vietnam.

★ SMYTH, Jerry S., Lieutenant, USNR, for heroism and achievement on 30 Jun 1966 while engaged as section leader in the second division of an A4 aircraft attack element in a strike against the Bac Giang petroleum storage area near Hanoi.

★ SPEAR, Sherley L., Lieutenant, USN, for heroism and achievement on 18 Aug 1965 during an armed reconnaissance flight over hostile North Vietnamese territory.

★ STARLING, Jay D., Lieutenant (jg), USNR, for heroism and achievement as pilot of a light jet attack aircraft during rescue operations for a downed pilot on 10 Sep 1965.

Gold Star in lieu of Second Award

★ STOCKDALE, James B., Commander, USN, for heroism and achievement in aerial flight.

★ STENDER, Charles F., Lieutenant (jg), USN, for heroism and achievement on 31 Oct 1965 during a combat mission over hostile territory.

Gold Star in lieu of Second Award

★ STENDER, Charles F., Lieutenant (jg), USN, for heroism and achievement during a combat mission against a suspected surface-to-air missile site at Kep, North Vietnam.

Gold Star in lieu of Third Award

★ STENDER, Charles F., Lieutenant (jg), USN, for heroism and achievement on 7 Nov 1965 as pilot of a jet aircraft during a mission over hostile territory near Ninh Binh, North Vietnam.

★ STRONG, Daniel L., Lieutenant Commander, USN, posthumously, for heroism and achievement as a pilot during a strike mission over hostile North Vietnam territory on 29 Sep 1966.

★ THIELE, Gary F., Lieutenant, USN, for heroism and achievement on 30 Jun 1966 during operations against hostile forces in North Vietnam.

★ TIERNEY, John M., Commander, USN, for heroism and achievement on 5 Jun 1965 leading a large air-wing strike group against the Ben Thy port facility and wharf in North Vietnam.

Gold Star in lieu of Second Award

★ TIERNEY, John M., Commander, USN, for heroism and achievement in 11 major air strikes against heavily defended primary targets in North Vietnam from 26 May through 16 Dec 1965.

★ TOLBERT, Clarence O., Lieutenant, USN, for heroism and achievement on 7 Jul 1966 while flying as wingman during a coordinated attack against the POL facility at Haiphong.

★ URBAN, Henry, Jr., Commander, USN, for achievement on 5 Aug 1964 during the successful retaliatory air strike against the Vinh oil storage area in North Vietnam.

★ VOGT, Leonard F., Jr., Commander, USN, posthumously, for sustained heroism and achievement as pilot of an A6A aircraft from 1 July to 18 Sep 1965 in developing strike tactics for the A6A aircraft while operating in the combat environment of Southeast Asia.

MARS MEN ARE COMING—Crew of USS Mars (AFS 1) go to their stations as the ship pulls alongside to replenish a Task Force 77 aircraft carrier.



★ WANGEMAN, Charles E., Jr., Lieutenant, USN, for achievement on 26 Mar 1965 as a member of an attack strike group against a radar installation on Bach Long Vi Island, North Vietnam.

★ WEICHMAN, Denis R., Lieutenant Commander, USN, for heroism and achievement on 1 Oct 1966 as a pilot during action over hostile North Vietnamese territory.

★ WHITMAN, Donald L., Commander, USN, for heroism and achievement while flying a fighter during a combat mission over hostile territory in North Vietnam on 7 Oct 1965.

★ WILEEN, Gordon C., Lieutenant, USNR, for heroism and achievement as a pilot assisting amphibian helicopters in the rescue of a downed pilot within the enemy island territories of North Vietnam on 1 Nov 1965.

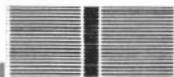
★ WILMER, Robert R., Lieutenant Commander, USN, for heroism and achievement on 17 Nov 1965 as part of an air-strike group to obtain post strike photography of the Hai Duong bridge in North Vietnam.

★ WILSON, William B., Lieutenant, USN, for achievement as flight leader during the initial portion of a low level photo run to obtain post strike photography of an attack made on North Vietnamese PT boats on the Rao Nay River on 28 Apr 1965.

★ WRIGHT, Donald F., Lieutenant (jg), USNR, for heroism and achievement on 31 Jul 1966 as flight officer of a jet attack aircraft during combat operations against North Vietnamese forces.

★ WRIGHT, Timothy W., Lieutenant, USN, for heroism and achievement on 1 Jul 1966 while providing fighter cover for A4 and A6 aircraft which were diverted from their mission to strike North Vietnamese patrol torpedo boats speeding to attack four U. S. destroyers in the Gulf of Tonkin.

★ ZINK, Roy A., Lieutenant (jg), USN, for achievement on 19 Aug 1965 as a pilot while conducting a photographic reconnaissance mission in North Vietnam.



BRONZE STAR MEDAL

"For heroic or meritorious achievement or service during military operations . . ."

★ BARKER, Arthur, Jr., Captain, USN, for meritorious service from 21 Nov 1965 to 15 Apr 1966 as operations officer on the staff of Commander Carrier Division Three, deployed in USS Enterprise (CVAN 65) during the first participation of a nuclear-powered carrier in combat.

★ BEEBY, James L., Lieutenant Commander, Medical Corps, USN, for meritorious service from 10 Mar 1965 to 9 Mar 1966 as commander of a surgical team assigned in the Republic of Vietnam.

★ BENACCI, John L., Radioman First Class, USN, for heroism on 24 Jan 1965 while serving as senior advisor to Junk Division 22, Navy of the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ BERGIN, Daniel E., Captain, USN, for meritorious service from April to July 1965 while serving as Commander Destroyer Squadron Three and Commander Task Group 77.8 in connection with operations against the enemy in Southeast Asia.

★ BIRDWELL, Carl, Jr., Commander, USN, for meritorious service from 17 Dec 1965 to 8 Jul 1966 in connection with operations involving conflict with an opposing foreign force while serving as commanding officer of Attack Squadron 216 embarked in USS Hancock (CVA 19).

★ BLAIR, Thomas B., Hospitalman, USN, for heroic achievement on 9 Dec 1965 while serving as a corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ BLEAKLY, Edward W., Lieutenant, USN, for meritorious service from 14 April to 9 Aug 1965 while serving as senior advisor to Vietnamese Navy Coastal Group 23, engaged in armed conflict against insurgent communist forces in Vietnam. The Combat Distinguishing Device is authorized.

★ BODKIN, Thomas R., Hospital Corpsman Second Class, USN, for heroic achievement while serving as a corpsman with a Marine unit near Chu Lai in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ BOEHME, Lynwood W., Hospitalman, USN, for heroic achievement while serving as a corpsman with a Marine unit in operations against insurgent communist forces in Vietnam on 25 Oct 1965. The Combat Distinguishing Device is authorized.

★ BOOS, David C., Hospital Corpsman Third Class, USN, for heroic achievement while serving as a corpsman with a Marine unit on 2 Apr 1966 in operations against Viet Cong forces in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ BOWEN, Alva M., Jr., Commander, USN, for meritorious service from 12 June to 29 Oct 1965

during military operations involving conflict with an opposing foreign force while commanding officer of USS Preble (DLG 15). The Combat Distinguishing Device is authorized.

★ BRATCHER, Ralph, Hospital Corpsman Third Class, USN, for heroic achievement on 23 Oct 1965 while serving with a reconnaissance battalion in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ BRIDGES, Robert J., Jr., Hospital Corpsman Third Class, USN, for heroic achievement on 7 Jan 1966 as medical advisor to friendly foreign forces engaged in armed conflict against communist insurgents in Vietnam. The combat Distinguishing Device is authorized.

★ BUTLER, Jackie W., Hospitalman, USN, for heroic achievement on 27 Dec 1965 while serving as a corpsman with a Marine unit in connection with operations against insurgent communist forces in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ BUTZ, John T., Lieutenant Commander, USN, for meritorious service as Intelligence Officer and Assistant Intelligence Officer to Commander U. S. Naval Forces, Vietnam; Commander River Patrol Force; Chief Naval Advisory Group; Commander Coastal Surveillance Force, from 12 May 1965 to 7 May 1966.

★ COLE, George Kermit, Hospitalman, USN, for heroic achievement while serving with a Marine unit in operations against Viet Cong forces in the Republic of Vietnam on 18 Apr 1966. The Combat Distinguishing Device is authorized.

★ COLLINS, Jerry M., Hospital Corpsman Third Class, USN, for heroic achievement while serving with a Marine unit on 21 Mar 1966 in operations against Viet Cong forces in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ COMPARDO, John, Jr., Hospitalman, USN, for heroic achievement on 9 Dec 1965 while serving as a hospital corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ CURRIE, Robert J., Chief Gunner's Mate, USN, for meritorious service from 5 Oct 1964 to 3 Oct 1965 while serving with friendly foreign forces in armed conflict against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ DARNELL, Leon, Hospitalman, USN, for heroic achievement on 5 Mar 1966 while serving as a corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ DAY, Lynn B., Hospital Corpsman Third Class, USN, for heroic achievement on 28 Apr 1966 while serving as a corpsman with a reconnaissance battalion in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ DELANOY, Billie L., Lieutenant, USN, for meritorious service in connection with the salvage of Baton Rouge Victory during the period 23 to 31 Aug 1966.

★ DOAN, Robert T., Lieutenant, USN, for meritorious service from 8 Oct 1964 to 10 May 1965 as advisor to River Assault Group 24 in the

Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ DOUDS, James E., Hospitalman, USN, for heroic achievement on 28 May 1965 while serving as a corpsman with a Marine unit in operations against Viet Cong. The Combat Distinguishing Device is authorized.

★ DRIESEN, Jeffrey M., Lieutenant, USNR, for meritorious service from 12 April to 10 Oct 1965 as an advisor to the Vietnamese Navy Sea Force while engaged in armed conflict against communist insurgents in Vietnam. The Combat Distinguishing Device is authorized.

★ ENGLAND, James W., Engineman First Class, USN, for meritorious service from 11 May 1965 to 14 Mar 1966 as an engineering advisor to the Vietnamese Navy Coastal Group 43. The Combat Distinguishing Device is authorized.

★ ENZMAN, James M., Hospital Corpsman Third Class, USN, for heroic achievement on 4 Jul 1966 as a corpsman with a Marine unit in operations against Viet Cong. The Combat Distinguishing Device is authorized.

★ ERIKSON, Warren W., Commander, USN, for meritorious service in connection with operations against insurgent communist forces while serving as a naval advisor in Vietnam from 17 Jul 1964 to 14 Jul 1965. The Combat Distinguishing Device is authorized.

★ FENNO, Eric N., Commander, USN, for meritorious service from 29 Jul 1964 to 15 Nov 1965 as Plans Officer, Naval Advisory Group, Military Assistance Command, Vietnam.

★ FRASER, Dale M., Hospitalman, USN, for heroic achievement on 6 Mar 1966 while serving with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ FRAZIER, Raymond T., Chief Boatswain's Mate, USN, for meritorious service from 1 Apr to 22 Aug 1966 while serving with River Squadron Five in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ GAMACHE, Paul G., Jr., Hospital Corpsman Second Class, USN, for heroic achievement on 9 Dec 1965 while serving as a corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ GLYNN, John J., Lieutenant, Chaplain Corps, USN, for meritorious service from 12 June to 29 Nov 1965 while serving with a Marine unit in operations against Viet Cong forces near Chu Lai. The Combat Distinguishing Device is authorized.

★ GONLIN, Albert J., Hospital Corpsman Third Class, USN, for heroic achievement on 22 Sep 1965 while serving as a corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ GOODFELLOW, Alexander S., Jr., Rear Admiral, USN, for meritorious service from July through Nov 1965 as Commanding Officer, USS Galveston (CLG 3) rendering gunfire support in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ GOODRICH, John R., Lieutenant Commander, USN, for meritorious service from 20 February

to 26 Nov 1965 as Senior Naval Advisor to the Vietnamese Third Naval Zone, and Assistant Third Riverine Zone Advisor. The Combat Distinguishing Device is authorized.

★ GRABER, Harold F., Lieutenant, USNR, for heroic achievement on 5 Oct 1965 while serving with friendly foreign forces engaged in armed conflict against the communist insurgents in Vietnam. The Combat Distinguishing Device is authorized.

★ GUERRERO, Joseph M., Chief Gunner's Mate, USN, for heroic achievement on 8 Jul 1965 in connection with operations involving conflict with an opposing foreign force while serving as Naval Advisor to Vietnamese Navy Coastal Group 25. The Combat Distinguishing Device is authorized.

★ HALL, Jack D., Hospitalman, USN, for heroic achievement on 24 Oct 1965 while serving as a corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ HANSEN, Ray A., Builder Third Class, USN, for heroic achievement on 28 Oct 1965 in connection with action under enemy fire while serving with U.S. Naval Mobile Construction Battalion Nine at Da Nang, Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ HARRIS, Thomas A., Jr., Hospitalman, USN, for heroic achievement while serving as a corpsman with a Marine unit during a combat patrol in the Republic of Vietnam on 3 Dec 1965. The Combat Distinguishing Device is authorized.

★ HAWKINS, Sam H., Lieutenant, USN, for heroic and meritorious achievement in connection with operations within the Dominican Republic while attached to and serving with Joint Task Force 122 on 29 Apr 1965. The Combat Distinguishing Device is authorized.

★ HINOJOS, Paul R., Hospitalman, USN, for heroic achievement on 16 Oct 1965 while serving as a corpsman with a reconnaissance battalion at Chu Lai. The Combat Distinguishing Device is authorized.

★ HOFFMAN, Jerry A., Hospitalman, USN, for heroic achievement on 24 Feb 1966 while serving as a corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ HOLDER, Paul D., Aviation Ordnanceman Third Class, USN, for heroic and meritorious achievement on 16 Oct 1966 and on 18 Oct 1966 while serving with Attack Squadron 144.

★ HUDSON, William H., Jr., Commander, USN, for meritorious service from 2 Jul 1965 to 15 Jan 1966 as assistant operations and plans officer for Commander Carrier Division Nine during air operations in Southeast Asia.

★ JACKSON, John L., Hospital Corpsman Third Class, USN, for heroic achievement on 10 Dec 1965 while serving as corpsman with a Marine unit in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ JENKS, Arlen S., Builder Constructionman, USN, for heroic achievement on 27 and 28 Oct 1965 during an intense attack on the battalion

camp of Naval Mobile Construction Battalion Nine near Da Nang, Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ JOHNSON, Walter C., Hospital Corpsman Second Class, USN, for heroic achievement on 9 Dec 1965 while serving with a Marine unit in the Quang Tin Province of the Republic of Vietnam in operations against Viet Cong forces. The Combat Distinguishing Device is authorized.

★ KEENER, Bruce, III, Commander, USN, for meritorious service while serving as commanding officer of USS Joseph Strauss (DDG 16) from 25 April to 15 May 1965 and from 8 June to 5 Jul 1965 while the ship was assigned to picket station in the Tonkin Gulf.

★ KIDD, James L., Photographic Intelligence man, First Class, USN, for meritorious service as a combat intelligence photographer from 28 June to 17 Dec 1965. The Combat Distinguishing Device is authorized.

★ KING, Jerome H., Jr., Captain, USN, for meritorious service as Commander Destroyer Squadron One and Commander Task Group 77.8 in operations against the enemy from 30 August to 30 Sep 1965.

★ KRUEGER, Otto E., Commander, USN, for meritorious service from Dec 1965 to Jun 1966 as commanding officer of Attack Squadron 94, embarked in USS Enterprise (CVAN 65).

★ KNOTT, Harold A., Lieutenant, USN, for meritorious service from 12 April to 6 Oct 1965 as an advisor to the Vietnamese Navy Sea Force engaged in armed conflict against communist insurgents in Vietnam.

★ LECKLITER, Dan W., Hospital Corpsman Third Class, USN, for heroic achievement while serving as a corpsman with a Marine unit on 24 Jun 1966 in operations against communist forces in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ LEWIS, Richard L., Jr., Hospital Corpsman Second Class, USN, for heroic service while serving as senior corpsman with a Marine unit on 25 Dec 1965 in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

Gold Star in lieu of Second Award

★ LEWIS, Richard L., Jr., Hospital Corpsman Second Class, USN, for heroic achievement on 21 Apr 1966 while serving as senior corpsman with a Marine unit in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ MAC LEOD, Kenneth L., III, Lieutenant, USN, for meritorious service from 1 Sep to 4 Nov 1965 as commander of two river patrol boats attached to Rung Sat special zone, Vietnam. The Combat Distinguishing Device is authorized.

★ MARR, Harold L., Commander, USN, for meritorious service from 17 Dec 1965 to 8 Jul 1966 as commanding officer of Fighter Squadron 211 embarked in USS Hancock (CVA 19).

★ MARTIN, Douglas E., Hospitalman, USN, for heroic achievement on 4 Dec 1965 while serving with a Marine unit in operations against communist forces in Vietnam. The Combat Distinguishing Device is authorized.

★ MC CURDY, Donald E., Hospital Corpsman Second Class, USN, for heroic achievement on



USS Cleveland (LPD 7)

10 Dec 1965 as a corpsman with an engineer battalion in operations against the Viet Cong in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ MC CLENDON, William R., Captain, USN, for meritorious service as Chief of Staff for Commander Carrier Division One from 24 February to 9 Jul 1966 in the combat environment existing in Southeast Asia.

★ MILLER, Henry L., Rear Admiral, USN, for meritorious service from 21 Oct 1965 through 16 Feb 1966 as Commander Attack Carrier Striking Group 77.7 of the Seventh Fleet.

★ MORIN, James B., Commander, USN, for meritorious service in connection with operations against the enemy in Southeast Asia as Commanding Officer, Attack Squadron 155, embarked in USS Coral Sea (CVA 43) from 22 Jun 1965 to 1 Jul 1966. The Combat Distinguishing Device is authorized.

★ NALLY, Robert G., Hospitalman, USN, posthumously, for heroic achievement while serving as a corpsman with a Marine unit during a battalion search and destroy mission against the communist guerrilla forces near Quang Tri Province on 26 Oct 1966. The Combat Distinguishing Device is authorized.

★ NEWGARD, Douglas L., Commander, USN, for meritorious service from 9 Sep 1965 to 25 Aug 1966 as the first operations officer, U. S. Naval Support Activity, Da Nang, Republic of Vietnam.

Gold Star in lieu of Second Award

★ NEWGARD, Douglas L., Commander, USN, for meritorious achievement in action on 14 and 19 Nov 1966 as commanding officer of USS Hammer (DD 718) operating in hostile waters off North Vietnam. The Combat Distinguishing Device is authorized.

★ PEAKE, Dale F., Hospitalman, USN, for heroic achievement on 12 Jul 1965 while serving with a reconnaissance battalion in the Republic of Vietnam. The Combat Distinguishing Device is authorized.

★ POST, Harry J., Commander, USN, for meritorious service from 17 Dec 1965 to 8 Jul 1966 while serving as commanding officer of Fighter Squadron 24, embarked in USS Hancock (CVA 19).

★ SCEARSE, Roger D., Hospitalman, USN, for heroic achievement on 30 Jan 1966 while serving as a corpsman with a Marine unit which was ambushed by a large Viet Cong force. The Combat Distinguishing Device is authorized.

★ SHUGART, Kenneth L., Jr., Commander, USN, for meritorious service as commanding officer of Attack Squadron 212, embarked in USS Hancock (CVA 19), from 1 Jun 1965 to 1 Jun 1966.

★ SIZEMORE, William G., Commander, USN, for meritorious service from December 1965 to June 1966 while commanding Attack Squadron 93, embarked in USS Enterprise (CVAN 65) during operations with the U. S. Seventh Fleet in Southeast Asia.

★ SMITH, Meredith A., Commander, USN, for meritorious achievement as commanding officer of USS Ernest G. Small (DDR 838) during 24 April to 13 May and 8 June to 5 Jul 1965 when the ship was assigned to picket station in the Tonkin Gulf.

★ VINCENT, James M., Lieutenant, USN, for meritorious service as advisor to the Vietnamese Navy's Coastal Force while participating in patrols and operations against the Viet Cong from 24 Feb 1964 to 23 Feb 1965. The Combat Distinguishing Device is authorized.

★ WHISLER, George H., Jr., Captain, USN, for meritorious service from September 1963 to September 1965 as Commander Seventh Fleet liaison officer to Commander U. S. Military Assistance Command, Vietnam, and Commanding General, Second Air Division, U. S. Air Force, Saigon.

★ WILSON, James D., Construction Mechanic First Class, USN, for heroic achievement while serving with U. S. Navy Seabee Team 1104 at Dong Xoai on 10 Jun 1965. The Combat Distinguishing Device is authorized.

TAFFRAIL TALK

HOT WEATHER finally getting you down?

How about a nice refreshing dip after a hard day's work? It's yours if you are lucky enough to be assigned to *uss Duluth* (LPD 6).

The decor may not be quite as plush as that afforded by the more luxuriant luxury hotels but no one can complain about inadequate facilities.

The swimming pool—170 feet by 50 feet by 10 feet deep—created when *Duluth* floods down her well deck and closes her stern gate. The LSUs and LCMs are first removed.

Swim call is then passed and all hands not on watch find relief from the 100-degree temperature that prevails in Vietnam. The ocean water off the coast is unusually clear and is usually at about 85 degrees.

The swimming pool, it might be mentioned, is larger than those to be found in any of the luxury liners.

★ ★ ★

No doubt about it. The Navy is, to coin a phrase, far-flung. While Navymen aboard *Duluth* and her sister ships were sweating it out in Vietnam, others were slipping on an extra set of woolen underwear and preparing to sweat it out in an entirely different fashion.

As winter began last May at Plateau Station, Antarctica, all hands faced a brisk, refreshing minus 108.2 degrees Fahrenheit.

Last year's recorded low temperature was a minus 126 degrees F.

★ ★ ★

Back to Vietnam.

During *uss Constellation's* (CVA 64) recent Far East tour, space, not weather, was the big problem for Willie.

Willie the Mole has a job that is not to be found in any NEC.

He spends a good part of his working day crawling inside jet engine intakes looking for possible loose parts or objects that could be sucked into the aircraft's engines.

His real name is Robert A. Williams, Jr. He's a second class petty officer, and a career man, and he's worth his weight in gold—after a manner of speaking.

It takes about six minutes to check out one of the F4B *Phantom II* jets flown by Fighter Squadron 161. Willie makes his inspection of the intake ducts immediately before and after each flight of each aircraft.

Willie's pay is about \$370 per month. A *Phantom* costs something in the neighborhood of four million dollars.

Willie neglected to tell us how many, if any, foreign objects he's found to date, but he doesn't need to find many to pay for his keep.

★ ★ ★

Seabee Harvey Visnaw, of Lakewood, Calif., has one of the more unusual hobbies that we've heard about.

As an avocation, he collects uniforms and their accessories. His collection now consists of more than 185 uniforms of U. S. servicemen, dating from 1914 to the present. Most of his collection comes from donations and swaps.

How he manages to take care of that many uniforms is a problem that would puzzle a lot of Navymen with single seabags.

The All Hands Staff

The United States Navy

Guardian of our Country

The United States Navy is responsible for maintaining control of the sea and is a ready force on watch at home and overseas, capable of strong action to preserve the peace or of instant offensive action to win in war.

It is upon the maintenance of this control that our country's glorious future depends. The United States Navy exists to make it so.

We Serve with Honor

Tradition, valor and victory are the Navy's heritage from the past. To these may be added dedication, discipline and vigilance as the watchwords of the present and future. At home or on distant stations, we serve with pride, confident in the respect of our country, our shipmates, and our families. Our responsibilities sober us; our adversities strengthen us.

Service to God and Country is our special privilege. We serve with honor.

The Future of the Navy

The Navy will always employ new weapons, new techniques and greater power to protect and defend the United States on the sea, under the sea, and in the air.

Now and in the future, control of the sea gives the United States her greatest advantage for the maintenance of peace and for victory in war. Mobility, surprise, dispersal and offensive power are the keystones of the new Navy. The roots of the Navy lie in a strong belief in the future, in continued dedication to our tasks, and in reflection on our heritage from the past.

Never have our opportunities and our responsibilities been greater.

ALL HANDS

The Bureau of Naval Personnel Career Publication solicits interesting story material and photographs from individuals, ships, stations, squadrons and other sources. All material received is carefully considered for publication.

Here are a few suggestions for preparing and submitting material:

There's a good story in every job that's being performed, whether it's on a nuclear carrier, a tugboat, in the submarine service or the Seabees. The man on the scene is best qualified to tell what's going on in his outfit. Stories about routine day-to-day jobs are probably most interesting to the rest of the Fleet. This is the only way everyone can get a look at all the different parts of the Navy.

Research helps make a good story better. By talking with people who are closely related to the subject material a writer is able to collect many additional details which add interest and understanding to a story.

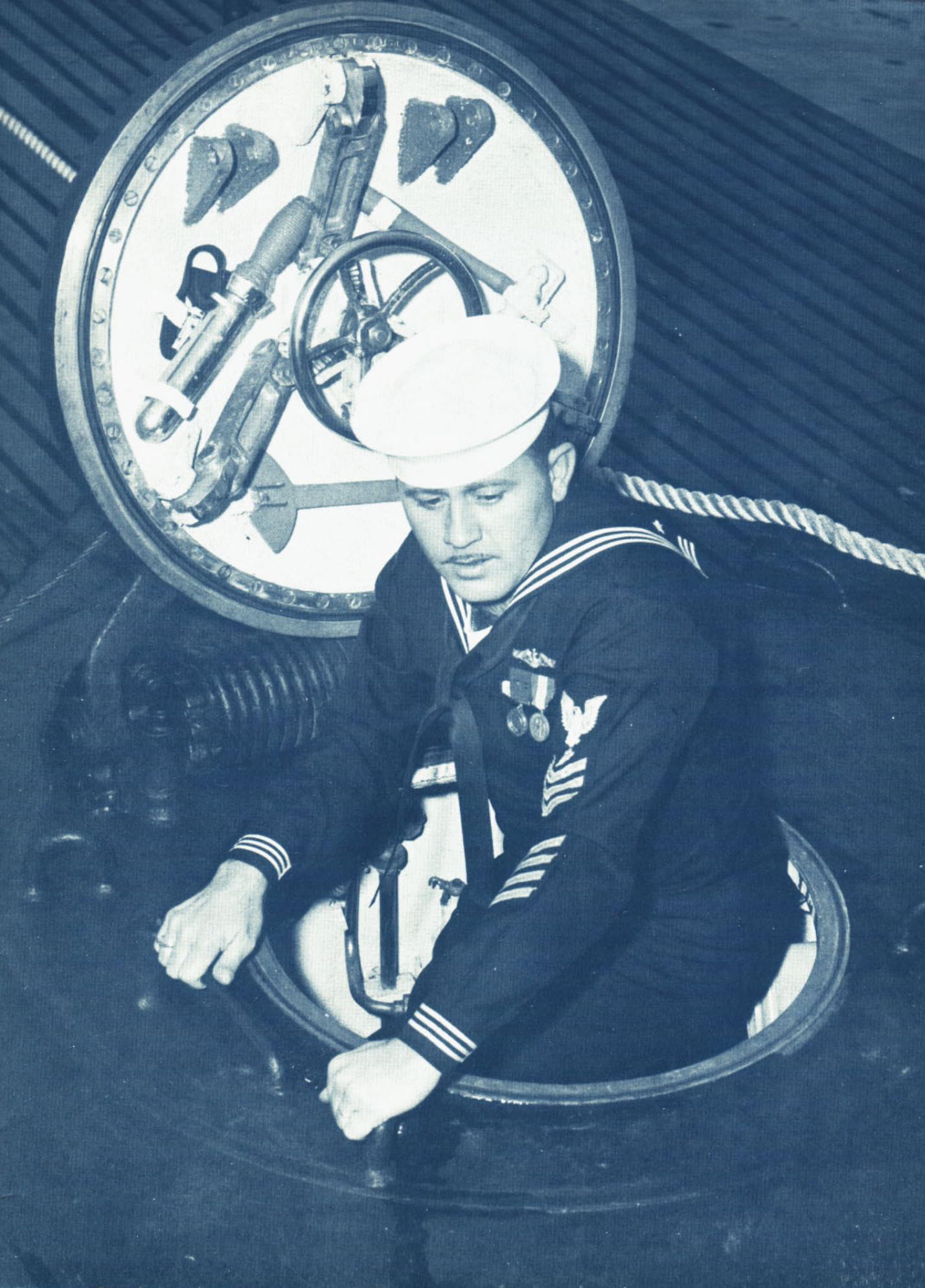
Articles about new types of unclassified equipment, research projects, all types of Navy assignments and duties, academic and historical subjects, personnel on liberty or during leisure hours, and humorous and interesting feature subjects are all of interest.

Photographs are very important, and should accompany the articles if possible. However, a good story should never be held back for lack of photographs. ALL HANDS prefers clear, well-identified, 8-by-10 glossy prints, but is not restricted to use of this type. All persons in the photographs should be dressed smartly and correctly when in uniform, and be identified by full name and rate or rank where possible. Location and general descriptive information and the name of the photographer should also be given. Photographers should strive for originality, and take action pictures rather than group shots.

ALL HANDS does not use poems (except New Year's day logs), songs, stories, a change of command, or editorial type articles. The writer's name and rate or rank should be included on an article. Material timed for a certain date or event should be received preferably eight weeks before the first day of the month preceding the month of intended publication.

Address material to Editor, ALL HANDS, Per G15, Navy Department, Washington, D.C. 20370.

● AT RIGHT: SURFACING—An Atlantic Fleet submariner climbs out of the hatch of his sub while in port at the submarine base in New London, Conn. (Unfortunately, neither the undersea sailor nor the photographer was identified.)



Will Rogers
LAFAYETTE
George WASHINGTON
PERMIT

TINOSA
SKIPJACK
Snook

SKATE
Fullibee

Ray

TRITON
SEAWOLF
Nautilus
Harder
FLASHER

WAHOO
ALBACORE
Barb
Perch
Cuttlefish

NARWHAL

Argonaut
Bonita

S-33

R-15

O-9

PLUNGER
H.L. Hunley

HOLLAND

A Great Tradition
SERVICE UNDERSEAS

