

ALL HANDS

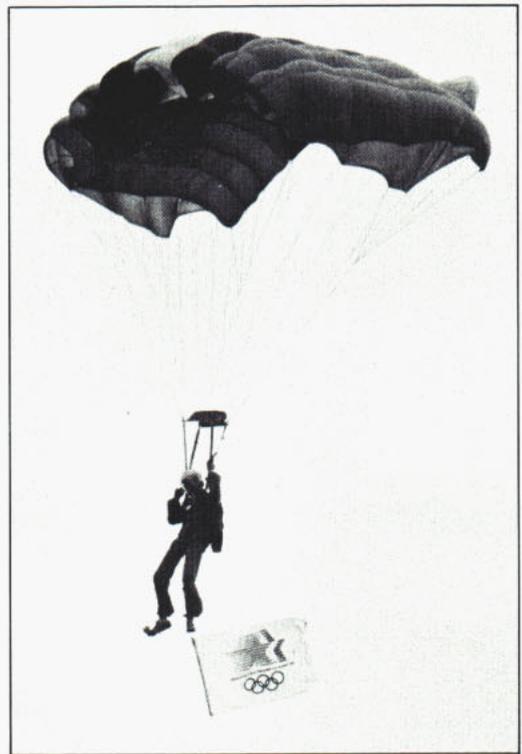
OCTOBER 1984



U.S. NAVY

October 13
U.S. Navy
Birthday

Navy Supports Olympic Soccer Trials



Secretary of Defense Caspar W. Weinberger (upper left with R. Alcantara, French representative to the Federation of International Football Associations) opens the soccer trials at the U.S. Naval Academy's Navy and Marine Corps Memorial Stadium in Annapolis, Md. Chief of Naval Operations Admiral James D. Watkins (left) with (l-r) Annapolis Mayor Richard Hillman and Doug Hill, a Los Angeles Organizing Committee representative, makes opening remarks. Local skydivers contributed to the opening day's excitement, as did the teams from France and Qatar who battled to a 2-2 tie opening game. Photos by JOC(SW) Fred J. Klinkenberger Jr.

ALL HANDS

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Page 2

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Covers:

Front: Oct. 13, 1984, is our Navy's birthday. It marks 209 years of U.S. naval tradition, as illustrated by a present-day officer's sword and dress gloves, an old U.S. Navy "flat hat"—the type worn by enlisted men until 1959—and a model of a sailing brig. Concept and photo by JOC(SW) Fred J. Klinkenberger Jr.

Back: The Office of Naval Research is interested in more than research and development of hardware for tomorrow's Navy. Its concern also is with the effects of its research on the human body. Computer-generated images of the head and brain are used to study adsorption of electromagnetic fields. Photo by Professor H.N. Kritikos, Univ. of Pennsylvania, Philadelphia.

2

The Pentagon

The building with a lifestyle of its own

18

Today's Link With Tomorrow's Navy

Naval research at the scientific and technological forefront

24

Star-Spangled Port Visit

USS *Independence* (CV 62) and New York City celebrate

30

Saratoga Rejoins The Fleet

SLEP puts ships back into action

38

Military Retirement

Understanding an important benefit

42

Tom Harper's Winning Philosophy

One man's successful fight against cancer

26 Bearings

48 Mail Buoy/Reunions

The Pentagon: A

His freshly pressed dress blues fit just right upon his disciplined body. From his glossy black shoes, up along sharp trouser creases, past the rows of ribbons resting on his chest, to his hair cut exactly one-half inch above his ears, he is all military.

He walks by the demonstrators without noticeable concern; they show up fairly regularly to carry signs and tell about their causes—nuclear war, Beirut, the situation in El Salvador.

Ironically, the uniformed men and women and the dissenters are drawn here for the same reason—the demonstrators to exercise their freedom of speech, and the sailors, soldiers, airmen, and Marines to ensure that America's dissenters will be heard. Freedom, rights and privileges are what this place is all about. This is the Pentagon.

* * *

Sometimes referred to as the "puzzle palace," the Pentagon is the no-nonsense center of the nation's defense system. Thousands of people are drawn here each day. Most are on official business, others

Security checks are a way of life in the Pentagon and so are the escalators, especially the ones leading from the Metrorail station.

visit out of curiosity, and some come out of defiance.

As headquarters of the Joint Chiefs of Staff and the offices of the Secretary of Defense on down, nothing less than this enormous building could handle the daily flow of more than 25,000 employees, almost half of whom are active duty military.



The building's five-sided limestone exterior blends neatly between adjacent Arlington National Cemetery and the Potomac River. Only five stories high, it doesn't detract from the national capital's skyline as some opponents of the original plan had forecast. Judging from the way the surrounding neighborhood has bloomed skyward, the Pentagon's location almost



Lifestyle of Its Own

guarantees a clear view of Washington for years to come.

That the federal bureaucracy managed to erect this massive building in less than 16 months is, in itself, quite a story. But in addition, whether the building itself can take the credit, the U.S. War Department was never the same again.

In 1941, Washington became a boom

town dealing with the growing business of World War II. The War Department already employed 24,000 workers spread around Washington in 17 different buildings, and offices began cropping up in Northern Virginia.

Space was at a premium, and the war effort flooded into hotel rooms and apartments that served as make-do offices.

Temporary buildings sprouted up almost overnight. The joke around town was that if the Army and Navy could capture territory as well as they grabbed up office space, we could easily win the war.

Congress began debating what to do about the War Department's space problem, but, considering the world situation, it had to be a quick decision. General Bre-



The Pentagon

hon B. Somervell, Chief of Construction Division of the Quartermaster Corps, came up with a plan to combine the entire department in Virginia.

Somervell delegated two staff members to produce a design, giving them exactly one weekend to have the plans on his desk. Amazingly, a design for a concrete building having five sides, air-conditioning and an open-air center court was on his desk Monday morning.

The reason for five sides was not to provide one wing for each of the five services. In reality, a pentagon shape fit the construction site, which was bounded by five roads. Although the location shifted before the first pile was driven, the shape remained a pentagon even without the original necessity for it.

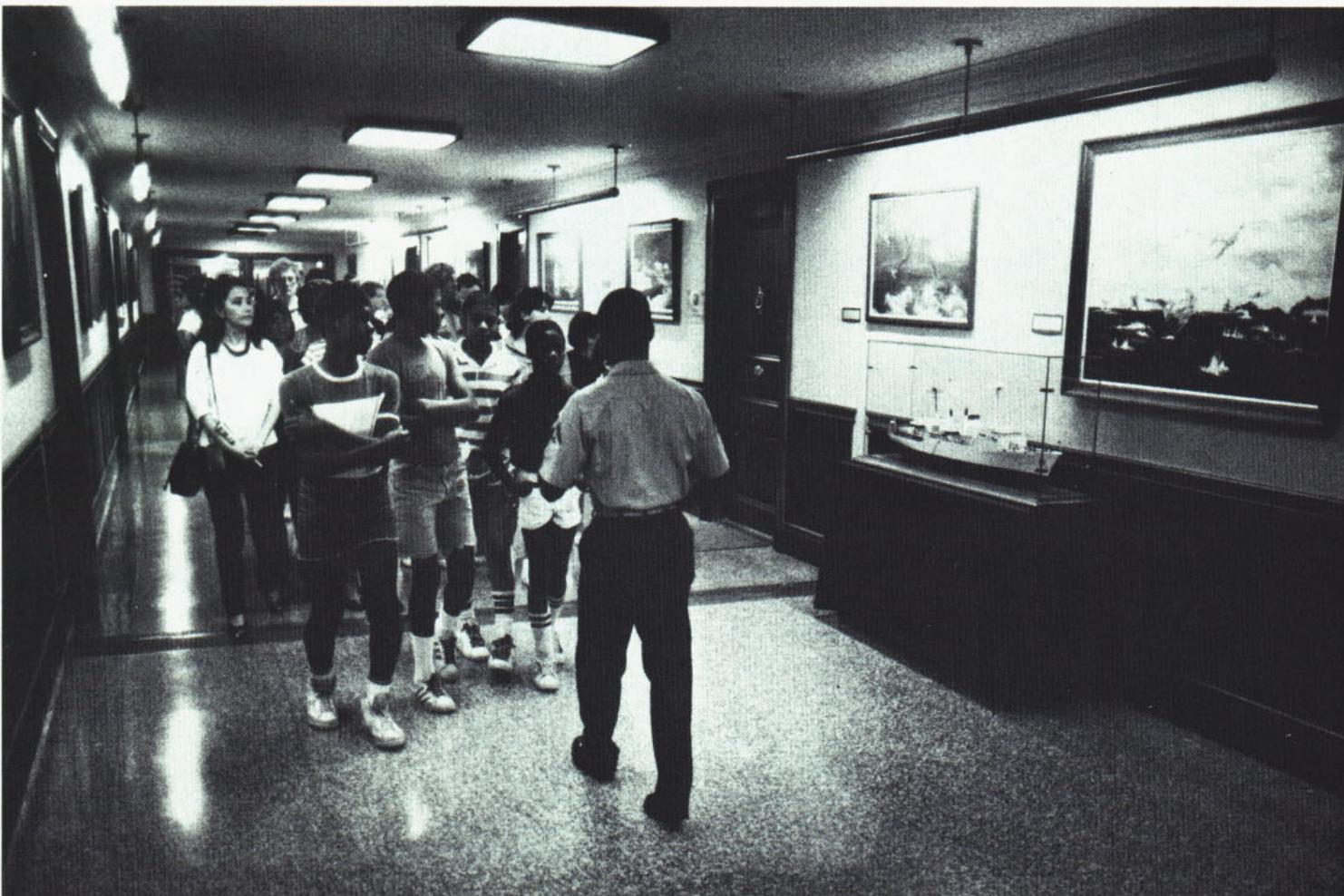
The mailing address of the Pentagon is Washington, D.C., but the building is physically located in Arlington, Va. Back in the early '40s, Pentagon opponents were outraged that the government had plans "to carpet acres of Virginia farmland with concrete." But the farmland was already

owned by the government and managed by the Department of Agriculture, which made this Arlington site attractive to budget-minded congressmen.

Along with nearly 300 acres already owned by the government, about 300 more acres of Hell's Bottom (as the area was known) were bought from private owners. The land included the former site of Hoover Airport, once the area's major air ter-

minal. Mostly swampy, the land was used for dumping grounds, ramshackle housing, pawn shops and rendering works—a likely candidate for urban renewal.

One of the first construction obstacles after grading 6 million cubic yards of earth involved shoring up the mushy grounds. More than 41,000 concrete piles were cast in place, some up to 45 feet long. The Potomac was dredged for gravel for mix-



ing concrete. The entire building was designed to be built with concrete instead of steel, which could be better used in the war effort for producing ships.

The result was a building of monumental construction. In 1983, it was estimated that rebuilding the Pentagon would cost \$650 million. But that estimate is unrealistic because "they just don't build them like that anymore."

On the drawing board, the estimated cost was \$35 million. As might be expected, that estimate was low. The final bill came in at \$83 million. On the other hand, production schedules speeded up when World War II heated up, and the building was finished in only 16 months.

Four thousand construction workers worked in round-the-clock shifts. It was said if a carpenter moved too slowly, the painters painted his hammer.

The first occupants moved in April 29,

1942—before the entire building was habitable and even before the cement had thoroughly dried. An office worker remembered: "One day we were all sitting at our desks and the wall behind us caved in—the fresh cement poured down like molten lava. We jumped over our desks and ran for our lives."

Telephone wirers came in at night and installed overhead cables for phone hook-ups. Then they'd come back the next night to finish and discover that the office workers had rearranged their desks. With schedules moving that frantically, a few mix-ups had to be expected.

Because of the war, the government never took time out to formally dedicate the Pentagon. The War Department officially announced that the building would be known as the "Pentagon," leaving "War Department Building" available for a more permanent building to be built in the future. More than 40 years later, there is a waiting list for Pentagon office space, and there are still no plans to build a War Department Building.

But back in the '40s an uproar began about what would be done with this huge white elephant after the war. . . . President Roosevelt had plans to keep it as defense headquarters and use the extra space as a warehouse for federal records and supplies. Congressmen suggested making it a veterans hospital or a college. Whatever

the future held, as the blueprints were finally transformed into 6½ million square feet of floor space, curious eyes met with more than a big building. This was a whole city.

Not only was the Pentagon a hot topic of conversation, but it became the brunt of numerous jokes, and the subject of more than a few anecdotes.

For example: "Mice are rolling in the aisles over at the Pentagon. After years of being tormented in mazes by researchers they are finally able to enjoy seeing the shoe on the other foot."

Or, "Did you hear about the Western Union messenger who went into the Pentagon on Monday, got mixed up in red tape and walked out on Friday as a colonel?"

Our how about this one? "French General Giraud, who escaped from two Nazi prisons, got lost in the Pentagon and was trapped inside until he stumbled upon a policeman who led him out."

The *Reader's Digest* told a story about a Japanese spy who reported back to his superiors that there was no point in sabotaging any Pentagon office because there would be at least two or three other offices duplicating its work.

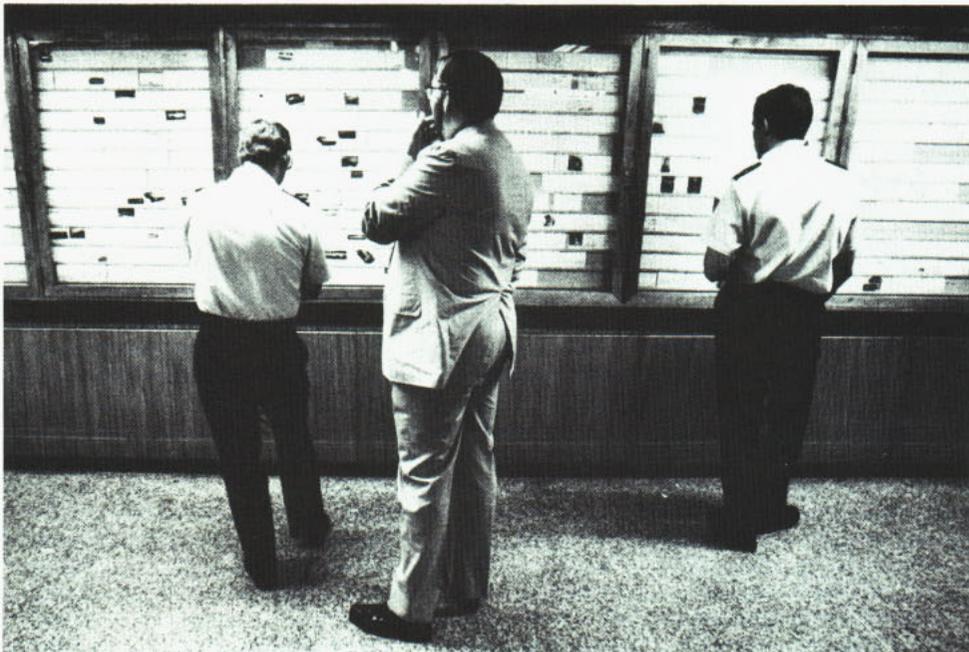
Or, finally, this sign over a desk: "If the boss calls, find out his name."

Just getting to the Pentagon was pretty confusing in those early days. There were roads only for buses, and roads only for taxicabs. Some roads were for use by trucks, and some just for passenger cars.

Old-timers remember the frustration of bus drivers who often missed a turn into the new building, and the clouds of dust from the unpaved roads that settled on the people lined up at the bus stops. One woman even remembered fights to get aboard. "Girls would smack each other over the heads with their purses to get into the buses."

The largest work force to report daily to the Pentagon was about 37,000 during the war's peak. Divided into three shifts,

Some of the daily events at the Pentagon include landing a helicopter, reading a challenging bus schedule, checking the bulletin board and touring the Navy Executive corridor.



The Pentagon

the workers never taxed the building beyond its capabilities.

The Pentagon was designed to be self-sustaining with its own heating and cooling plant, and sewage disposal plant. Today, the building uses the Arlington County sewage disposal system, but the heating and cooling plant, located about half a mile to the southeast, is still on the job. Besides burning coal and oil to produce energy, the incineration plant burns shredded classified paper and shredded money sent over from the Bureau of Engraving.

The Pentagon, itself, has only one chimney, but it isn't used any more. Before Arlington County enforced clean-air restrictions, classified material was burned on the premises several times each day.

Cleaning crews take over each night as the office workers go home, and garbage is hauled out by the tractor load.

John Horn, executive secretary of the DoD Concessions Committee, said that as late as 1956 you could buy lunch in the Pentagon for 45 cents. Building food services are privately run, but Horn's office exercises a controlled profit margin, and prices are not out of line for this somewhat captive audience. You'd have to walk about three blocks just to get outside of the Pentagon grounds or parking lot.

Lunch runs smoothly for today's Pentagon population, most of whom work regular daytime hours. You can buy just about anything you crave including nachos, omelets, lo-cal spaghetti or double-dip pistachio spumoni ice cream cones. There are three vending units and four short order snack bars scattered around the corridors. The cafeterias can seat 1,700, and they ring up about 20,000 daily transactions.

The biggest surprise for first-time Pentagon-goers has to be what's out in the open air at "ground zero." Right in the middle of the center court of the Pentagon—and it's no secret—sits that most all-American of establishments: a fast-food hamburger and hot dog stand. From May

to September, the center court serves fast-food in a parklike setting complete with its own park benches and pigeons. Sometimes military bands such as the Navy's Bluegrass group "Country Current" strum a little music for the noon-time crowd.

At one point the original plans were to make the center court the bus and taxi stop, and over the years it has been criticized as a waste of space, among other things. Now, it's hard to imagine the Pentagon without this 5 acres of greenery. In 40 years, its saplings have grown into shade trees reaching the rooftop.

In keeping with the relaxed atmosphere of the court, hats and saluting are not required. Not only is the center court a pleasant escape, but it can serve as a shortcut across the building.

Even if you learn all the shortcuts, the building stands determined to get even with its office denizens for sitting sedentary at their desks. It's cut like a pie into corridors 1 through 10 and divided like a dartboard

into rings A through E. The 17½ miles of hallways almost equal the distance between the Pentagon and Mount Vernon!

Somebody, sometime, must have performed some time trials, because it's been published in several places that an average walker can travel anywhere in the building within 6½ minutes. There are five floors, plus a mezzanine and a basement.



Jobs at the Pentagon are as different as the people who do them.

You'll never waste any time waiting for an elevator in this, the world's largest office building, because unless you're disabled or considered freight, you're expected to use one of the 150 stairways. The only passenger elevator in the build-



ing is private and belongs to the secretary of defense.

There are 19 escalators that either go up or down depending on the time of day. They go up until 4 p.m. Then, to accommodate the mass exodus at quitting time, they go down. All except for the escalators leading to the basement that never go up or down, so people use them as stairways.

Another way to cut down on legwork is by using a large tricycle or a motorized cart. The Pentagon's main corridor is wider than some city streets, so congestion really isn't a problem. Vehicles must not exceed a 5 mph limit, and they may use the freight elevators to move between floors.

The Air Force, however, thought they had built a better mousetrap when they came up with "Norman the Mailer" a few years ago. Norman was a robot designed to travel along a sensitized strip between Air Force offices on the fourth floor to pick up and deliver mail. Secretaries would come out to meet him when he sounded a bell outside their doors on his half-mile route. But Norman just didn't work out, and he was sent back to the dealer.

The Pentagon was built with a step-saving pneumatic tube system that's still used. Messages travel throughout the building along 15 miles of tubes.

Intra-office communication is no prob-

lem. Working spaces were meant to be wide open with only top officials having their own offices. It's still true that most private offices are reserved for VIPs. It's not at all uncommon to walk into an outer office and find a Navy yeoman sitting among two captains and a commander.

Original plans called for locating large departments above and below one another on adjacent floors instead of stretching out horizontally along the corridors. With all the shuffling of offices over the years, however, it's come to the point where you have to take what you can get. This has prompted more stories which no doubt have become a little exaggerated over the years, if indeed they were ever true at all.

There was one story told by one of the first Pentagon building managers, C.B. Overman. He maintained that when the building first opened, before you needed a pass to enter, an insurance salesman set up a thriving business in one of the cleaning closets. "But I got wind of it and ordered the room locked," Overman said.

The room numbering system is easy to understand. For instance, 3C147 means third floor, C ring, first corridor, room 47. But just when you've built up your confidence you'll find yourself stopped short of your destination by a blocked hallway or an armed Marine. That's because some



The Pentagon

of the commands occupying several of offices maintain their own security around their entire area. The space occupied by the Joint Chiefs of Staff, for example, requires a special pass for entrance.

There is, however, at least one special group of people who make it their business to know all the shortcuts and blocked corridors throughout the Pentagon, because almost every day someone's life depends on it. They are medics from the Army Health Clinic located off the concourse.

The clinic handles routine medical care for military people assigned to the Pentagon and maintains responsibility for any medical emergency within the building. When a call comes in for help, two medics jump in their battery powered "ambulance," turn on the red light and sound the siren. By the time they reach the entrance checkpoint about 50 feet away, the guards have the double doors open and the cart goes flying through the corridors. The rescue team can get anywhere in the Pentagon in two minutes or less.

As soon as possible and regardless of the nature of the emergency, another cart sets out with a doctor and a nurse. According to Major Peter Broadway, clinic administrator, the two most common emergencies are chest pain and fainting. Broadway suggested that job stress combined with the sedentary nature of office work may often be the culprit. The office of the Army Surgeon General is investigating the effects of job stress within the

Pentagon.

The effects of stress have concerned Pentagon medical staffs even from the early days when the building maintained two hospitals within its walls. Then, a psychiatrist kept regular hours at the Pentagon to aid over-strained employees and sometimes to deal with the public who could walk right in off the street.

Supposedly, one day when General of the Army Omar Bradley was chairman of the Joint Chiefs of Staff, a visitor walked into his office with an urgent message. The man said he was receiving atomic ray messages in his head straight from Russia. He was referred to the psychiatrist.

Security has been beefed up since then, with all entrances monitored by guards who require photo identification badges before granting admittance. Sometimes even briefcases and purses are inspected. Recently, the underground bus lanes were closed, and concrete barriers were placed in front of the entrances.

The Pentagon concourse, however, is open to the public, and there has even been talk of renovating the shops and adding restaurants. You can already buy almost anything there, including "Somebody at the Pentagon loves me" T-shirts and "Pentagon Dreams." "Dreams" are pecan-flavored cookies baked in the basement by the same bakery that has always occupied a spot in the middle of the concourse. On the concourse, you can have your hair cut, get your shoes shined, drop

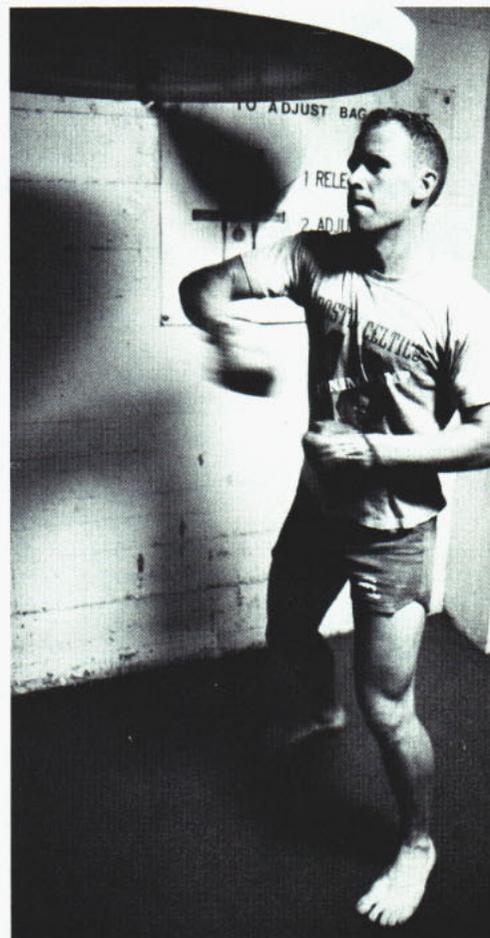
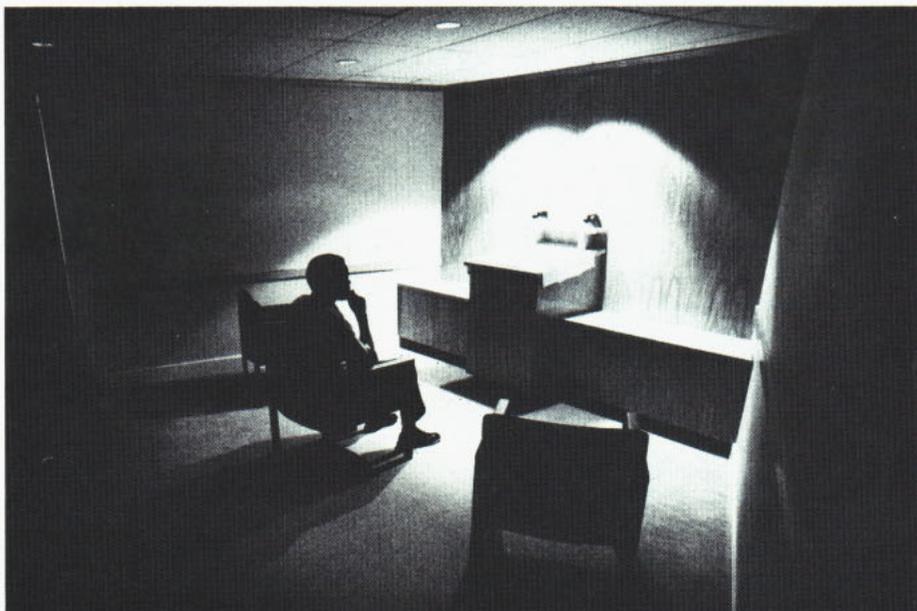
off dry cleaning and cash your paycheck, and still shop in more than 20 stores.

Some evenings, the wide-open spaces of the concourse become a dance floor for clogging and square-dancing, or an exercise studio for aerobics classes. Being General Services Administration-managed, the Pentagon comes under the "living building" program whereby federal buildings are made available to the public during off-hours for cultural, educational and recreational uses.

Getting to the Pentagon is no problem, theoretically. To area residents, it might seem that buses don't go anywhere else. Since 1977, the Pentagon has served as a busy subway stop, attracting busloads of D.C.-bound workers to the building, although many never venture outside the Metro station.

Traffic, however, is another story.

One of the original reasons for locating the War Department in Virginia was in consideration of District of Columbia traffic problems. An increasing tendency for workers to live in nearby Northern Vir-



ginia could be capitalized on, thus not adding to congestion in Washington. And, workers living in Washington would be commuting opposite the rush-hour traffic in both directions.

As it stands today, morning and evening traffic may cause Pentagon workers more stress than a day in the office, and the 8,400 parking spaces become a solid sea of cars and vans before 9 a.m. The lots are arranged so that handicapped drivers and high occupancy vehicles—those with at least four regular riders—get the spots closest to the building.

Parking is free, if you have a parking pass. If you get caught without a pass, the fine is \$10. The Pentagon used to hold its own traffic court, but now you have to answer to the federal magistrate in Al-

exandria, Va.

Back in the early days, people even arrived by boat. The river entrance overlooks a lagoon formed after sand was dredged during construction. Today, pleasure craft moor there, but there was a time when Air Force crash boats maintained ferry service from Bolling Field to the Pentagon.

There's still one more way to get to the Pentagon that most people will never experience—by helicopter. The heliport's 10,000-square-foot concrete pad facilitates about 500 landings per month. Controllers coordinate with nearby Washington National Airport while they flip switches and set dials on the command console appropriated from a Navy ship. The average helo passenger is at least an

admiral or a general, on up to the commander in chief.

Presidents have visited the Pentagon now and then, usually to attend ceremonies or to dedicate a new corridor. Within the past few years, the Pentagon initiated an ambitious program to decorate its hallways with military memorabilia, making it somewhat of a living museum and a popular attraction for nearly 90,000 tourists per year.

Aside from the building's sheer size, tourists come to see art, relics and displays dedicated to military actions and people. The Defense Department runs a tour office on the concourse, and groups led by sailors, soldiers, airmen or Marines tour continually.

Along with the other attractions on the tour (see sidebar), groups walk through the Navy Executive corridor that houses the offices of the Chief of Naval Operations and the Secretary of the Navy. The hallway is decorated with Navy art and model ships. Doors are wooden replicas of old ships' doors, complete with brass knockers.

Many Navy departments such as the Chief of Naval Information and the Office of Naval Warfare are headquartered in the Pentagon. The Navy Annex—located about one-half mile to the southwest—comprises eight wings of offices including that of the Master Chief Petty Officer of the Navy. Together with Navy commands in the Navy Yard, Crystal City and other locations around Washington, the Navy is the largest user of the defense telephone system in the area, according to Charles B. Overly Jr., system director.

About 200,000 calls are made daily on the Pentagon's 22,500 phones. About 100,000 miles of telephone cables wind within the Pentagon's walls, but not all of it is functional. Old cable isn't removed when new cable is installed. "What do

People deal with the stresses of their jobs in different ways. The Army's meditation room and the Pentagon Officers' Athletic Club are two options. Left: The maintenance crew workday starts after everyone else goes home.

The Pentagon

you think is holding the building together?" Overly joked.

What *is* holding the Pentagon together? It's more than telephone cables, and more than the "mudjacking" that occasionally goes on in the basement to plug up a sinkhole. It's people, not just the 25,000 Pentagon employees, but people everywhere who believe that the American way of life

is precious and worth defending.

Forty years ago, no one imagined the War Department would become so sophisticated with so many permanent programs. Nobody thought it would have so much to do in peacetime.

Now, in middle-age, the Pentagon finds its way onto the front pages of newspapers around the world almost daily. It has be-

come personified, as "the Pentagon reported . . ." or "The Pentagon released"

It is obvious that the Pentagon is looked upon as more than just a building. And rightly so—it's the pulse of our country's defense system. □

—Story by PH2 Liz Schading
—Photos by PH2 Perry Thorsvik

More Than The Nickel Tour

Yeoman Third Class Carl Hines spends his workdays walking through miles of Pentagon corridors, backwards. No, Hines has not developed eyes in the back of his head, but he knows those corridors like the nose on his face and he'll tell you all about the Pentagon as he leads you on a guided tour.

The Pentagon Tours Office was set up on the concourse in 1976 as a tourist attraction for the Bicentennial. Last year, 89,000 visitors got a glimpse of the nation's defense center at work, as well as seeing the uniform Gregory Peck wore in the motion picture "MacArthur," and the dog tags worn during World War II by the former Rebecca Dalton (Mrs. Caspar Weinberger).

The free tours run continuously on weekdays. To maintain security, sightseers must sign up in the tours office and then pass through a metal detector and pass the scrutinizing eyes of a security guard. Small groups are led through about 1½ miles of corridors by sailors, soldiers, airmen or Marines who keep a close count of their charges by walking backwards, and reporting back to the office several times on a walkie-talkie.

The Pentagon has become a living museum within the past few years as corridors have been dedicated to people and military actions. The Navy, Army and Air Force also have executive corridors decorated to reflect the statute of top officials and the nature of their missions.

Military art collections housed within

the Pentagon include thousands of paintings, drawings and photographs. As part of the Army art collection, the Time/Life corridor reflects the action of World War II. Time/Life funded 17 civilian artists after the Army ran out of money to continue the wartime project.

The Korean War photographs of David Douglas Duncan line the Faces of War corridor. The large black and white images envelop the viewer in the bereft eyes of his subjects. The Prisoner of War alcove, containing paintings primarily by Maxine McCaffery, also casts an introspective light on the viewer.

The Bicentennial corridor contains 28 murals specially commissioned for display during the Bicentennial. The 4-by-8-foot murals were painted by military and civilian Department of Defense employees.

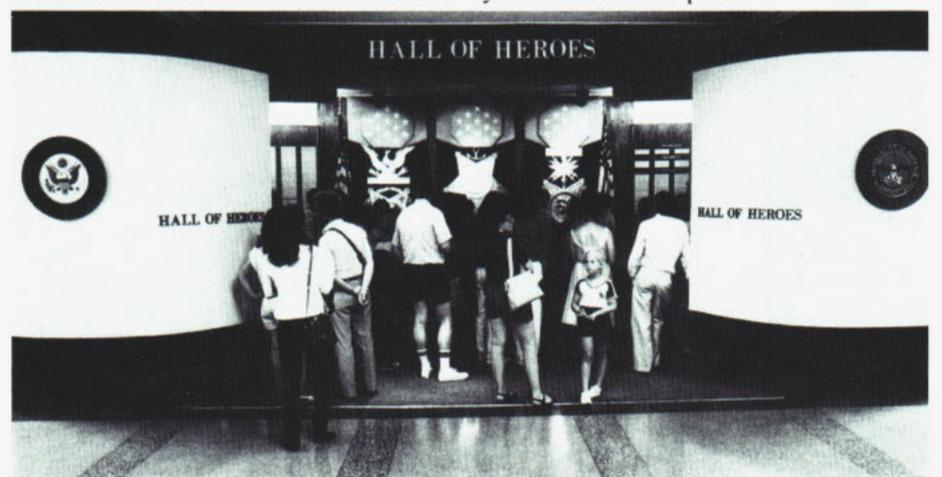
Other corridors are dedicated to the

commanders in chief, the flags of the states and the nation, and Generals Bradley, Eisenhower, Marshall and MacArthur. The tour guide will no doubt tell you that the MacArthurs were the only father/son duo to be awarded the Medal of Honor.

At the end of the MacArthur corridor is the Hall of Heroes. More than 3,500 names of recipients of the Medal of Honor line the walls of the alcove.

The newest addition to the tour is the Military Women's corridor. This display is jammed with snapshots, newspaper clippings and biographies of the famous and not-so-famous, along with uniforms and anything else relating to military women.

The tours not only give a peek into the everyday world of the nation's defense system, but also a look into the history and future of the nations as well. And, you can't beat the price.



Charleston Sailors Sing An Irish Lullaby

Story by JO2 Greg Lewis
USS Charleston (LKA 113)

Sailors manning the rails joked with each other about the night before, and the night before that. A chief threw his hat over the side to the small Irish assemblage. Shop owners, barkeeps, women, kids and dogs milled about in the early morning sun. Everybody waited for the big gray ship to leave.

But the town's tugboat went on strike because nobody wanted that ship to go.

Three-and-a-half days earlier, when USS *Charleston* (LKA 113) moored at Cobh (pronounced "Cove"), Ireland, sailors' talk had it all for just getting home. They were weary from Arctic maneuvers in NATO's "Team Work '84" exercise, and Cobh—a tiny fishing village on Ireland's southern tip—was a next-to-the-last liberty stop before home. But by the time the bo's'n's pipe blew "Underway, shift colors!" some men were ready to stay forever. All came away with a little corner of green tucked into their souls.

The out-of-town tour pamphlets and up-the-way historic sights can't do justice to Cobh. Tour buses scheduled to leave Cobh, prearranged aboard *Charleston*, were cancelled as fast as card houses in heavy weather, once visitors discovered the beauty of just staying put.

In fact, walk about that town 10 minutes, and you're no longer a visitor. Walk about it five more, and you're speaking a philosophy you never quite realized you knew to someone you had never seen, all the time getting the feeling you've known both all your life. A minute more and you notice this musical brogue start to develop on your tongue.

In Cobh, music is everywhere from the pubs to the streets to the boats passing in the harbor. When *Charleston* sailors lost a soccer match to Irish naval recruits at nearby Spike Island, the first compensations offered were Guinness and good will at a chief's mess reception. Next, in short order, were songs—lyrical, rough chanty ballads, sung on a rollicking boat ride back.

Cobh, indeed, may be the only place in the world where you can lose a hard-fought athletic battle and sing about it, with a mile-and-a-half-wide grin, all the way back to the hotel.

Ah, the hotel.

It's about noon and all but a ship's unlucky duty section have left or are leaving the brow. First in everyone's mind is where to go and what to do. To a sailor, certainly, beer holds a priority in the making of such decisions. And in Cobh, that first beer is more than likely had at the hotel.

There is an unlikely three-man band playing sometimes-in-key jazz at the dusky bar. A milling crowd of most beautiful Irish ladies, gentlemen, sailors, would-be and confirmed lovers is in the process deciding upon how to bide the afternoon.

"What shall we do this afternoon?"

"Do you think she notices me?"

"Come on now, one more round!"

After all of which one might decide to go to church—a cathedral dwarfs the village—to the marketplace, to nearby Cork with its historic sights. Anywhere. But all in the full realization that it'll be back to the hotel by nightfall.

Now, in those all-too-short hours between light and darkness, most sailors

spend their time trying to see all there is to see and do all there is to do. The American habit of dashing here and there carries itself around the world and to the most unlikely places.

Except in Cobh.

There, one simply cannot rush.

For one thing, there isn't that much to rush towards. Cobh is tiny; its greatest historical significance lies in being known as the "Port of Tears" to thousands of Irish emigrants to the U.S.

For another thing, the people won't let you rush.

A casual pub visit can turn into a philosophy seminar on the state of the world—as well as into some of the friendliest and fiercest international dart competition to be found.

A trip to the marketplace is not the fast-dash, super-econoline suburban spree Americans associate with Saturday morning. Cobh villagers have perfected the art of strolling. Past the butcher shops, cobblers and clothiers, children run among the skirts of chatting mothers. And music—this certain music—a blend of baroque and bewilderment, rings through it all as clear as cathedral chimes.

As day turns into night, the shops close. The sailors head back for the hotel, for the certainty of perhaps falling in love, or at least the excitement of a good go at it.

And the music continues through the night, into morning. Right up to that last happy-sad moment on the pier where, amid strains of "Anchors Aweigh" from a three-man band, sailors swear to come back.

And then are gone forever. □

Bainbridge – Stalwart of the Navy

Story by Lt. Janice M. Belluci, NR NIRA Det 206

It was early afternoon on Wednesday, Dec. 29, 1812. The weather off the coast of Brazil was clear and there were moderate breezes.

The mystery of the strange sails spotted by the lookout of the USS *Constitution*, and which had been in sight for hours, was about to be solved. After not answering *Constitution's* private signal of the day, the "mystery" ship was hoisting its colors. As the Union Jack unfurled, a battle cry arose from the crew.

"At 26 minutes past 1 p.m., being sufficiently from the land, and finding the ship to be an English frigate, took in the mainsail and royals, tacked ship, and stood for the enemy," William Bainbridge, captain of the *Constitution*, recorded in his journal. "At 50 minutes past 1 p.m. the enemy bore down with an intention of raking us, which we avoided by wearing.

"At 2 p.m., the enemy being within half a mile of us, and to windward, and having hauled down his colours . . . induced me to give orders to the officer of the *third* division to fire a gun ahead of the enemy, to make him shew his colours, which being done, brought on a fire from us of the whole broadside, on which the enemy hoisted his colours, and immediately returned our fire.

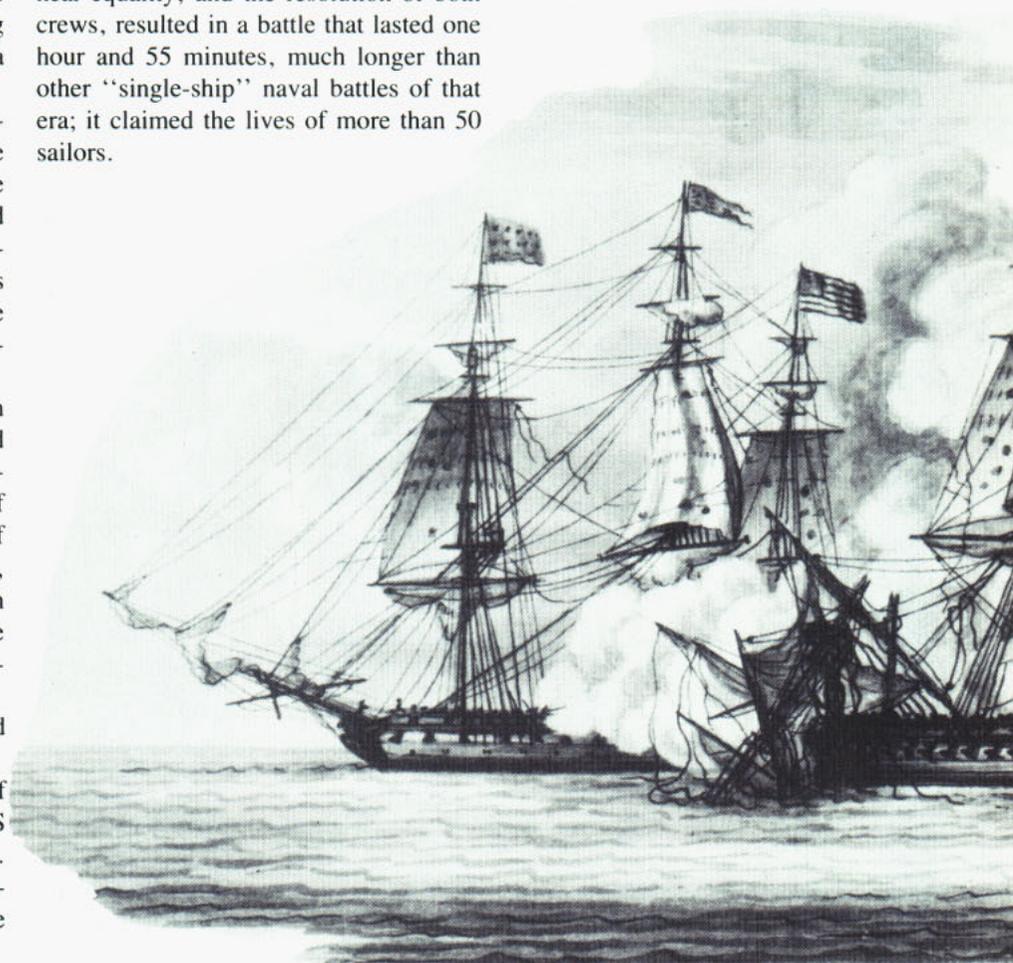
"A general action, with round and grape, then commenced."

Thus began the bloodiest sea battle of the War of 1812, the battle between USS *Constitution* and the British frigate *Java*. This battle was also the highlight of Bainbridge's career, a distinction for which he almost paid with his life.

The two fighting ships were almost equal in every respect. The British frigate was just a bit lighter at 1,340 tons compared to the American's 1,576, and was armed with 18-pounder guns against *Constitution's* 24-pounders. Both ships also mounted 32-pounder carronades. More than 400 men were in each crew. This near-equality, and the resolution of both crews, resulted in a battle that lasted one hour and 55 minutes, much longer than other "single-ship" naval battles of that era; it claimed the lives of more than 50 sailors.

Despite the near physical equality of the two ships, the numbers of casualties were highly unequal. Forty-eight of those killed were aboard *Java*, which was scuttled after Captain Bainbridge decided it was too damaged to take as a prize.

Some say the different results can be credited to the superior training of the



American seamen. Others credit the American victory to the highly efficient maneuvering of the *Constitution* during battle. Either way, the credit was deserved by and directed to William Bainbridge.

Bainbridge had led his crew to victory despite severe wounds—a musket ball lodged in his hip and a piece of canister shot in his thigh—and the lack of his ship's wheel, which was shot away early in the battle and made it necessary to maneuver the ship with relieving tackles below-decks.

At the time of this famous duel, Bainbridge was no stranger to the sea. He had begun a seafaring career at the age of 15 when he joined a Philadelphia merchantman under the tutelage of its captain.

Bainbridge showed a daring spirit, an enterprising disposition, and ambition even during the earliest days of his career. His considerable talents were recognized and he was given command of a merchant vessel at age 19. When he was 22 years old, in 1796, he made a name for himself by

defeating a British privateer, with twice his firepower, that had attacked his ship without warning.

Then, while Bainbridge was engaged in trade between Europe and the West Indies at a time when Britain was carrying on a harassment action against the United States, one of his crew members was impressed by a British warship. The captain retaliated just a few days later by impressing an English sailor.

Bainbridge joined the U.S. Navy in 1798 as a lieutenant commandant. During the undeclared "quasi-war" with France, he took command of the schooner *Retaliation*, which was part of a three-vessel squadron. Finding itself alone and hopelessly outgunned, *Retaliation* surrendered to two French frigates. Bainbridge prevented the same fate for the remaining vessels of his squadron by convincing the French those vessels had much stronger armaments than they actually had.

Again through the use of his wit, Bainbridge was able to secure his own release and the release of several other Americans held captive by the French. Upon his return to the United States, he was promoted to master commandant and given command of a new ship, the 18-gun brig *Norfolk*.

Bainbridge returned to the West Indies, where he protected merchant convoys and patrolled against French privateers. His service there was so successful that, in 1800, he was promoted to captain (then the highest rank in the Navy, although senior captains commanding squadrons held the operational title of commodore) a few days before his 26th birthday.

During the next three years, Bainbridge commanded two ships. As captain of USS *George Washington*, a former merchantman converted to a 24-gun warship, he had the unpleasant task of delivering American tribute to the Dey of Algiers during the Tripolitan Wars. The United States at that time had agreed to pay the Dey—the ruler of Algiers—\$20,000 a year so that American ships could safely pass by the Barbary coast. After this disagreeable mission he wrote to a friend that he hoped that he "may never again be sent to Algiers with tribute, unless I am authorized to deliver it from the mouth of our cannon."

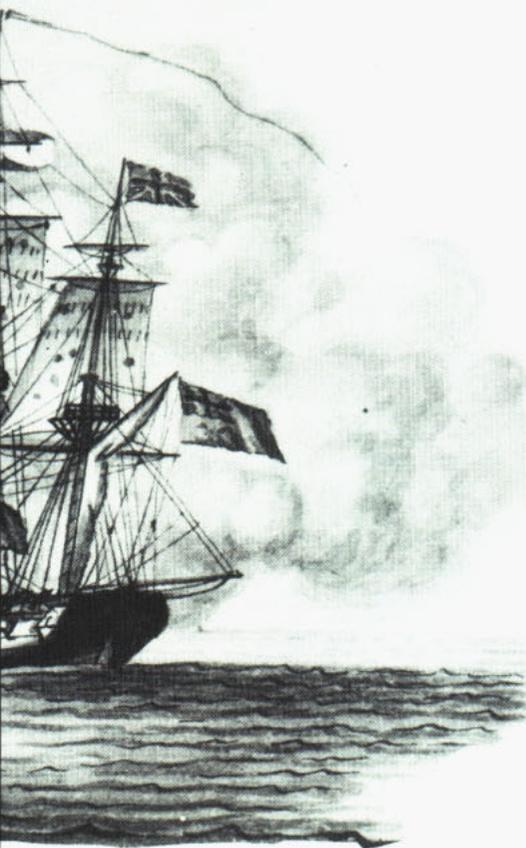


Left: *Constitution vs. Java off the coast of Brazil, Dec. 29, 1812. Painting by Michel Corne.* Above: *Burning of the frigate Philadelphia in the harbor of Tripoli, Feb. 16, 1804. Painting by Edward Moran.*

Appointed captain of the 32-gun frigate *Essex*, Bainbridge went to the Mediterranean with a naval squadron ordered to curb the piracies of the Bashaw of Tripoli. Bringing his ship home for repairs in 1802, he had a short period of duty ashore and then took command of the new frigate *Philadelphia*. Bainbridge returned to the Tripolitan coast in the late summer of 1803, and succeeded in capturing several Barbary pirate vessels.

But his good luck on that coast ran out on Oct. 31, 1803. While chasing a Tripolitan corsair into the poorly charted harbor of Tripoli, *Philadelphia* ran aground. The captain and his crew worked hard to try to force the frigate over the shoal. The crew laid aback the ship's sails, cut away three anchors from the bow, pumped out all the drinking water, and hove overboard all guns except those well aft. When those efforts proved futile, they cut away the foremast, which carried with it overboard the main topgallant mast.

After all efforts to get free of the shallow waters failed, Bainbridge ordered the ship scuttled to prevent its use by the Tripolitan pirates. Crew members worked furiously to flood the magazine, disable the remaining guns, destroy signal books, and bore holes in the ship's bottom. It was only after these actions that *Philadelphia* struck its colors.



Bainbridge

Despite the crew's hasty efforts, the Tripolitan pirates reached the ship before it filled with water. In addition, a westerly gale raised the tide enough to allow the Tripolitans to get the frigate off the shoal and into port for repairs and refitting. The pirates took Bainbridge and his crew to hold them for ransom.

Though a captive, Bainbridge was able to get a secret message through to his squadron commander, Commodore Edward Preble. The message conveyed Bainbridge's hope that his vessel would be destroyed before its refitting was complete. This was accomplished in a daring raid led by Lieutenant Stephen Decatur, who succeeded in blowing up *Philadelphia* within sight of the pirates ashore.

While still a prisoner, Bainbridge played a key role in the peace settlement between the United States and Tripoli. After two years of captivity, he was released; a court of inquiry exonerated him from blame in the loss of *Philadelphia*.

In order to recoup financial losses incurred during his confinement, Bainbridge obtained a leave of absence from the Navy and returned to the merchant service. He was recalled to active duty in 1808 to command the 44-gun frigate *President*. With the title of commodore, Bainbridge commanded naval forces along the southern coast of the United States.



Medal presented to Commodore Bainbridge by the Congress of the United States for the victory of USS *Constitution* over H.M. frigate *Java*.

He returned to the merchant service in 1810 before rejoining the Navy on the eve of the War of 1812. Following the historic battle between *Constitution* and *Java*, Bainbridge returned to shore duty, first to recover from his wounds and later, in 1813, to take command of the Boston Navy Yard.

He superintended construction of the 74-gun ship-of-the-line *Independence* and took it to the Mediterranean in 1815 to join Commodore Stephen Decatur's squadron off Algiers. Relieving Decatur

as squadron commander, Bainbridge successfully negotiated with the ruler of Algiers before returning to the United States late in 1815.

After duty at Boston and Newport, R.I., he returned to the Mediterranean in 1820, flying his commodore's pennant in the new ship-of-the-line *Columbus*. Bainbridge completed his career as President of the Board of Navy Commissioners and as commander of the Navy yards at Boston and Philadelphia. He died in 1833, at 59, while still on active duty.



An artist's rendition of Commodore Bainbridge's squadron sailing from Gibraltar on Oct. 6, 1815.

Bainbridge The Man

William Bainbridge was born to a wealthy New Jersey family on May 7, 1774. The fourth son of a respected physician, he was educated by his maternal grandfather, John Taylor Esq.

Ambitious and adventurous, young Bainbridge distinguished himself by excelling in both academics and athletics.

It may have been a disappointment to his family when at age 15, William decided to leave home to embark on a career with the mercantile service. But his family soon had something to be proud of.

Within three years of entering the merchant marine, Bainbridge was promoted to first mate. It was as first mate that he had his first, but not his last, experience with a mutiny.

During a voyage to Holland the ship's crew mutinied while Bainbridge was below deck. The sailors had seized the captain and were about to throw him overboard when Bainbridge, with the help of a faithful second mate, rescued the captain and quelled the mutiny.

Bainbridge's admirable conduct as first mate plus his rapid progress in learning his profession led him to command of a ship at 19. While captain of that merchant ship, Bainbridge had his second experience with mutiny and his first brush with death.

While sailing off the coast of France in 1796, Bainbridge came upon another American ship under threat of mutineers. Bainbridge and his crew immediately went to the aid of the ship's captain and stopped the mutiny. During the fighting, however, a bag containing gunpowder exploded, severely wounding Bainbridge.

After a short time ashore, Bainbridge recovered from his wounds and returned to sea, first as a mercantile captain and soon afterwards as an officer in the newly formed United States Navy.

It was during his early naval travels that Bainbridge met his wife, Susan Heyliger, the daughter of a merchant and the granddaughter of the governor of the Caribbean island of Saint Eustatius. They married in 1798 and had four children—three daughters and a son.

According to historians, Bainbridge was a patriotic man. He was proud of his coun-

try and was willing to fight the indignities thrust upon the early American Navy by England, France and the Barbary powers.

Off the coast of North Africa, he fought Barbary pirates, who threatened this country's merchant shipping. As captain of USS *Constitution*, he ably defended the United States during the War of 1812.

Bainbridge believed in the need for an American Navy and fought for its continued existence and betterment. When a peacetime Congress threatened to curtail severely the naval service in order to save \$20,000 a year, Bainbridge and a handful of senior captains successfully led the opposition against the proposed congressional action.

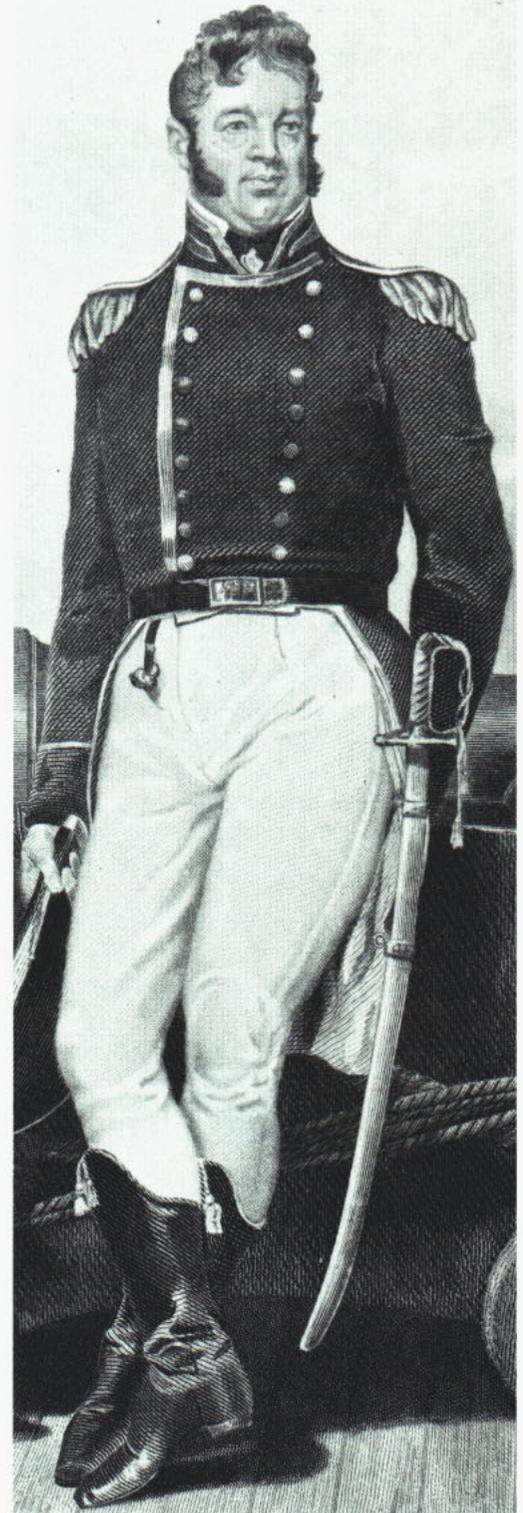
He pressed for improvement of the officer corps, first by establishing a board that examined midshipmen for promotion and then by inaugurating a school for naval officers.

Bainbridge's dedication to the Navy earned him accolades from his superiors, peers and subordinates. One example is an excerpt from a letter from 18 cockpit and steerage officers of USS *Independence* who wrote, "Be pleased to accept [our] sincere thanks for the many indulgences and the kind treatment received from you, while serving under your command. With regret for the bereavement which [we] are about to experience in the loss of your paternal care, receive [our] congratulations on your transfer to a command of equal or superior importance, convinced as [we] are, that there is no situation in which you would not confer honour on the naval character of our country."

Like any public person, Bainbridge also had detractors. One of his most formidable proved to be John Branch, then Secretary of the Navy, who backed a controversial ruling against Bainbridge. Their difference of opinion was aired in the press where naval officers and the public sided with Bainbridge. While victorious in this confrontation, the captain is believed to have lost his good health as a result of that event and an attack of pneumonia, in addition to the untimely death of his son.

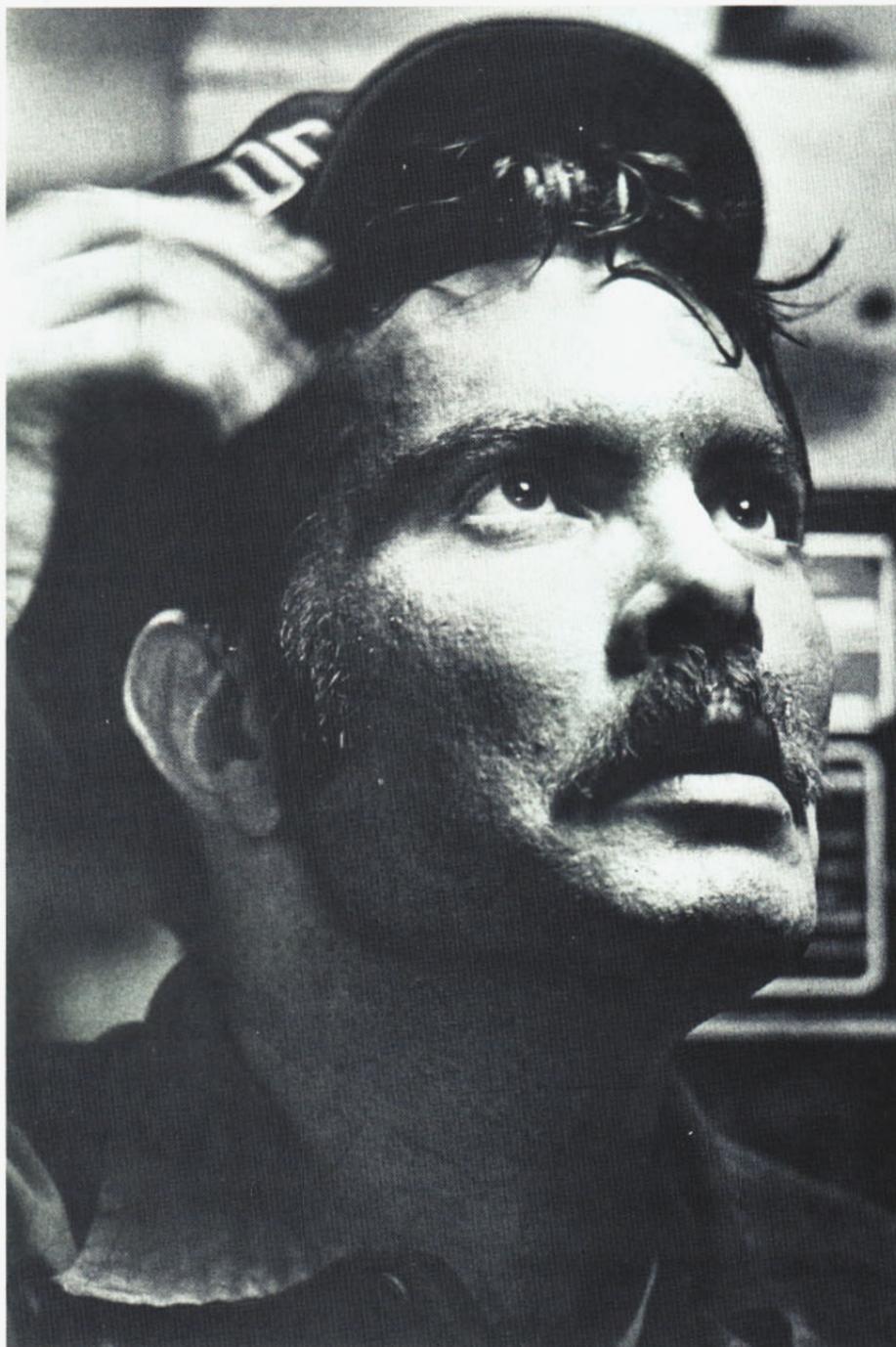
Bainbridge died July 28, 1833. Not surprisingly, the Navy was the subject of his

last words. After asking that his sword and pistols be brought to him, Bainbridge raised himself from his pillows and ordered in a strong voice, "Call all hands and prepare to board the enemy." □



Hotter Than A Mississippi Summer

Story and photos by PHI Lon E. Lauber, PA Center, San Diego



Sweat-soaked and feeling the strain of long, noise-filled work days, the boiler technicians of the guided missile destroyer USS *Robison* (DDG12) cling tight-fisted to their vanishing trade.

The traditional skills of the men who work in engineering on this steam-driven ship—and others like it—are slowly being replaced with push-button technology in today's newer nuclear- and gas turbine-powered vessels. There, 120-degree temperatures give way to air-conditioned spaces.

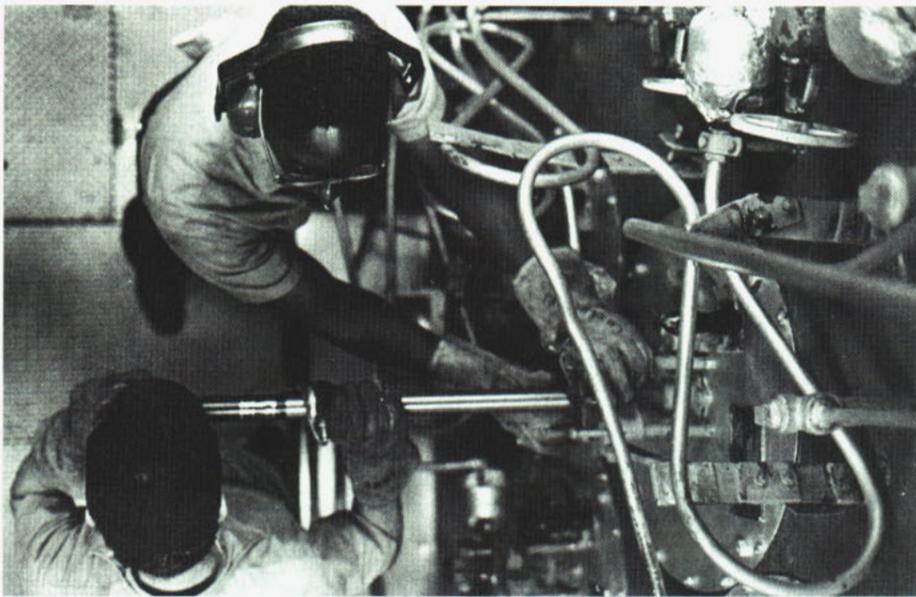
Until the last of these steam-driven ships is gone, however, the Navy will rely on the grit of the men in the hole, men like Boiler Technician Fireman Les Seabourn.

"Sure, it's hotter than a Mississippi summer," said the 25-year-old Navy fireman. "But it's worth it just knowing I'm in the heart of the ship."

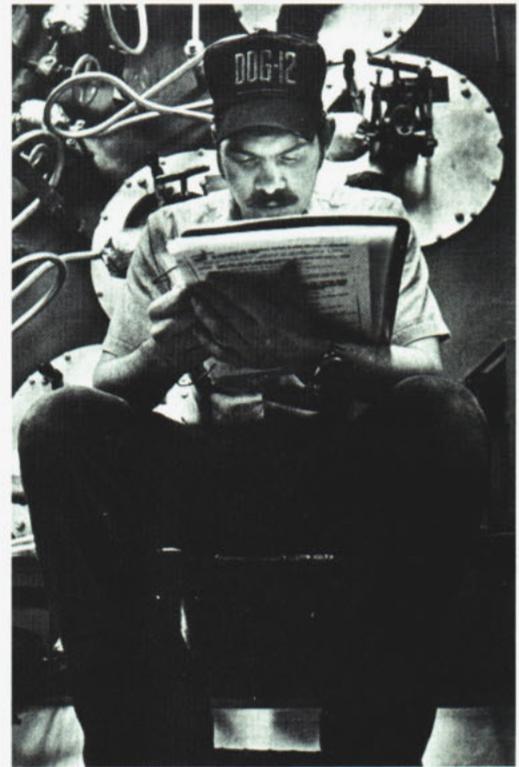
"A lot of guys say they wouldn't work in the hole, but I'm proud of my job," he said. "If it weren't for us, the ship wouldn't go anywhere."

Like all conventionally powered ships, *Robison* uses a distillate fuel, similar in consistency to kerosene ignited in the boilers. The resulting steam, with temperatures in excess of 900 degrees and pressure of more than 1,200 pounds per square inch, creates the power to drive the ship at 30 knots (35 mph), run auxiliary machinery, then be recycled to do it all again.

Excess steam from the ship's giant kettle-like boilers also provides the power to produce electricity needed to operate the ship's electronic navigation gear and high-tech weapons systems.



Boiler Technician Fireman Les Seabourn keeps his cool despite the near 120-degree heat in USS Robison's (DDG 12) engine room. Seabourn and a shipmate (top left) ensure no raw fuel or contaminants are in the boiler before light-off (bottom left). When not working on the boilers, Seabourn bones up on boiler-operating techniques.



Even the hot water for such taken-for-granted comforts as cooking, showers and laundry is provided by the boilers.

Shipmates refer to the boiler techs as "snipes." Seabourn quips that "snipe" is an acronym for "Super-Naturally Intelligent Propulsion Engineer."

"There's a certain mystery about engineering spaces," Seabourn said. "I've been told heaven won't take boiler techs and hell is afraid we'll take over. We play along with that. If people don't come down and see what we do, we'll let them believe whatever they want."

Above the entrance hatch to Seabourn's boiler room is a painting of a devil emerging from a fiery boiler and a sign warning, "Abandon hope, all ye who enter here," a reference to the sign hanging over the gateway to hell as described in Dante's "Inferno."

For the uninitiated who venture inside, the boiler room seems a confusion of gauges, pipes and valves. But Seabourn sees it differently.

"It reminds me of a street map of my hometown," said the Hobbs, N.M., native. "I know where every pipe leads and what every valve controls."

"I'm the burnerman and I keep an eye on the boilers," he said. "If the ship needs more steam, I add another burner, flip the right lever and open the correct valves."

In newer Navy ships, and those now being constructed, the adjustments are less physical. Electronic controls replace Seabourn's world of demanding mechanical and manual adjustments.

Sensitive gauges monitor the operation of the steam plant. But boiler techs, completely familiar with their work environment, often rely on the high volume of

hums and whirs in the plant to detect possible malfunctions before they show up on the gauges.

When there is a problem, their roles become almost theatrical.

"Burnerman, Top Watch," shouts the boiler room supervisor.

"Burnerman, aye," responds Seabourn.

"Trip one alpha boiler, fuel-oil, quick-closing valve," orders the Top Watch.

"Trip one alpha boiler, fuel-oil, quick-closing valve, aye," echoes Seabourn.

When the task is accomplished, the litany is repeated in reverse.

"They're like performers," said Seabourn's boss, Chief Boiler Technician James Johnson. "They learn their lines, then perform like there's an Oscar at stake."

But there are no Oscars in the boiler room aboard *Robison*. Just the constant roar of machinery, ever-present heat, and men like Les Seabourn who wait for the day when newer technology eases today's work into history. □

Today's Link With

Story by Marc Whetstone and William Lescure,

Remember Dick Tracy's wrist radio? Skeptics said it would never happen. Yet today, wrist radios and 3-inch miniature televisions are almost commonplace.

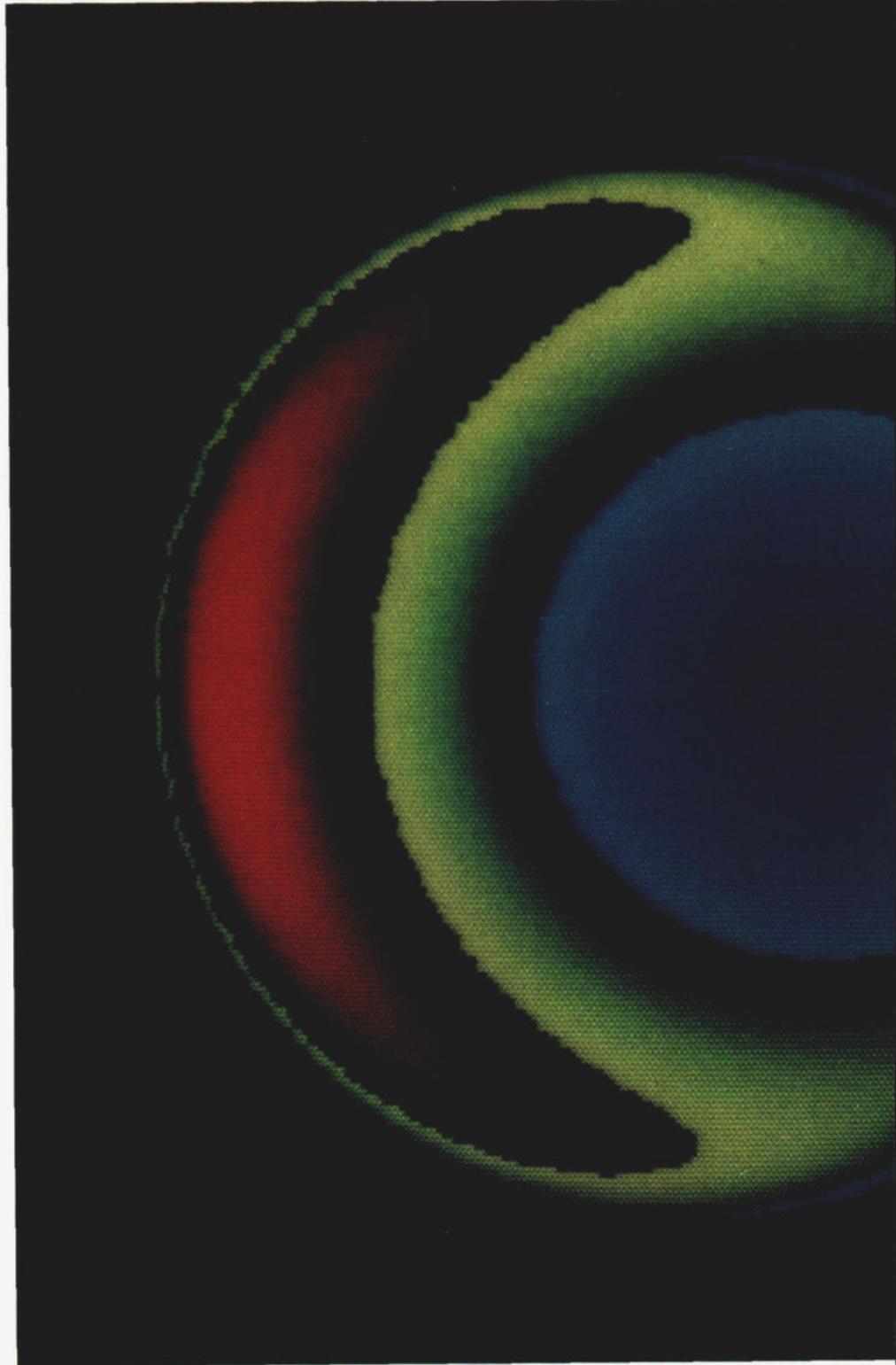
Such miniaturization has had a tremendous impact on Navy electronics such as shipboard radar systems, and computerization makes maintaining these systems extremely efficient. Built-in artificial intelligence literally communicates with the technician.

The *Aegis* system is just one that employs this miniaturization. It is designed to monitor its radar's electronic functions and alert an observer if anything goes awry.

Some scientific researchers predict that computer systems will be capable of much more than just communicating; they will perform certain physical functions as well, resolving electronic or electrical failures. A project combining such artificial intelligence and robotics is currently under study by the Massachusetts Institute of Technology, Cambridge, Mass., and Brown University, Providence, R.I. The study, under joint contract sponsored by the Office of Naval Research, is seeking out what science has to offer to meet the needs of the fleet well into the future.

Marvin Denicoff, former head of ONR's Information Sciences Division, forecasts that sometime around the turn of the century a repair technician trouble-shooting electronics problems will be able to choose repair information by viewing images on a screen.

Right: Computer-generated images of the head and brain show where microwave electromagnetic fields are absorbed (maximum absorption in red). Accurate estimates of energy distributions in critical regions like the head help with assessing potential hazards of exposure to microwave electromagnetic fields. Far right: A protective chemical coating developed by Naval Research Laboratory scientists and applied seven years ago to the tug "Seamule" is still effective in the removal of marine fouling organisms such as barnacles and sea squirts.



Tomorrow's Navy

Office of Naval Research, Washington, D.C.

"Maybe he'd like a printed narrative or a movie of an expert doing repair work, or cartoon figures doing the job," said Denicoff. "Maybe he'd like to look at the blueprints or see an animated layout of the blueprints."

That's not all. The technician may also consider different modes of instruction and ask the computer: "What do failures like this sound like? What do they look like? What tools should I use? How should I use them?" Or, if the technician thinks of a better repair method, he can draw or write it on the screen with an electric pencil.

What repairs were made, what parts were needed, how long it took, and even the training and experience of the individual who repaired the equipment would become part of the computer's intelligence bank, available for other technicians. This information also becomes valuable for preventive maintenance purposes—other radar components can be checked for potential weaknesses.

This is just one of many information system projects being investigated by the Information Sciences Division, but it represents a part of the mission of the Office of Naval Research: producing technological wonders for tomorrow's Navy.

The Office of Naval Research serves as the catalyst between the operational Navy and the bench scientist. ONR scientists—military and civilian—are the intermediaries of the naval research and development effort. They review and translate the Navy's relevant scientific language for the research and technology community. Conversely, they translate information for fleet operators so that the operators can understand what scientific researchers are trying to do.

"Not an easy thing to do," said Rear Admiral Brad Mooney, chief of naval research. The admiral tells his scientific officers that they first must understand what the Navy is all about, so that they can be more effective translators.

"As custodians of the Navy's technol-



Today's Link With Tomorrow's Navy

ogy base, we have a significant responsibility to keep our naval services—the Navy and Marine Corps—at the scientific and technological forefront of a rapidly changing threat environment. We must be able to respond to scientific and technical opportunity for the future, and we must be able to extract from technology the solutions to the current problems of the fleet.”

Those were among the principal objectives Admiral Mooney set for himself last October when he became CNR, as well as Deputy Chief of Naval Material for Technology and Chief of Naval Development. As the CNR, Admiral Mooney commands ONR; as the CND and DCNM (T), he directs the Office of Naval Tech-

nology, a component of the Office of Naval Material Command.

Before taking a look at what science expects to unfold for the Navy of the future, it's important to understand how the research and technology-based programs work and what ONR has been up to over the years.

The Office of Naval Research, with headquarters in Arlington, Va., and a staff of 400 scientists, technicians and administrators, manages three research laboratories: the Naval Research Laboratory, Washington, D.C.; the Naval Ocean Research and Development Activity, Bay St. Louis, Miss.; and the Naval Biosciences Laboratory, Oakland, Calif. There also are field detachments—Pasadena, Calif., and

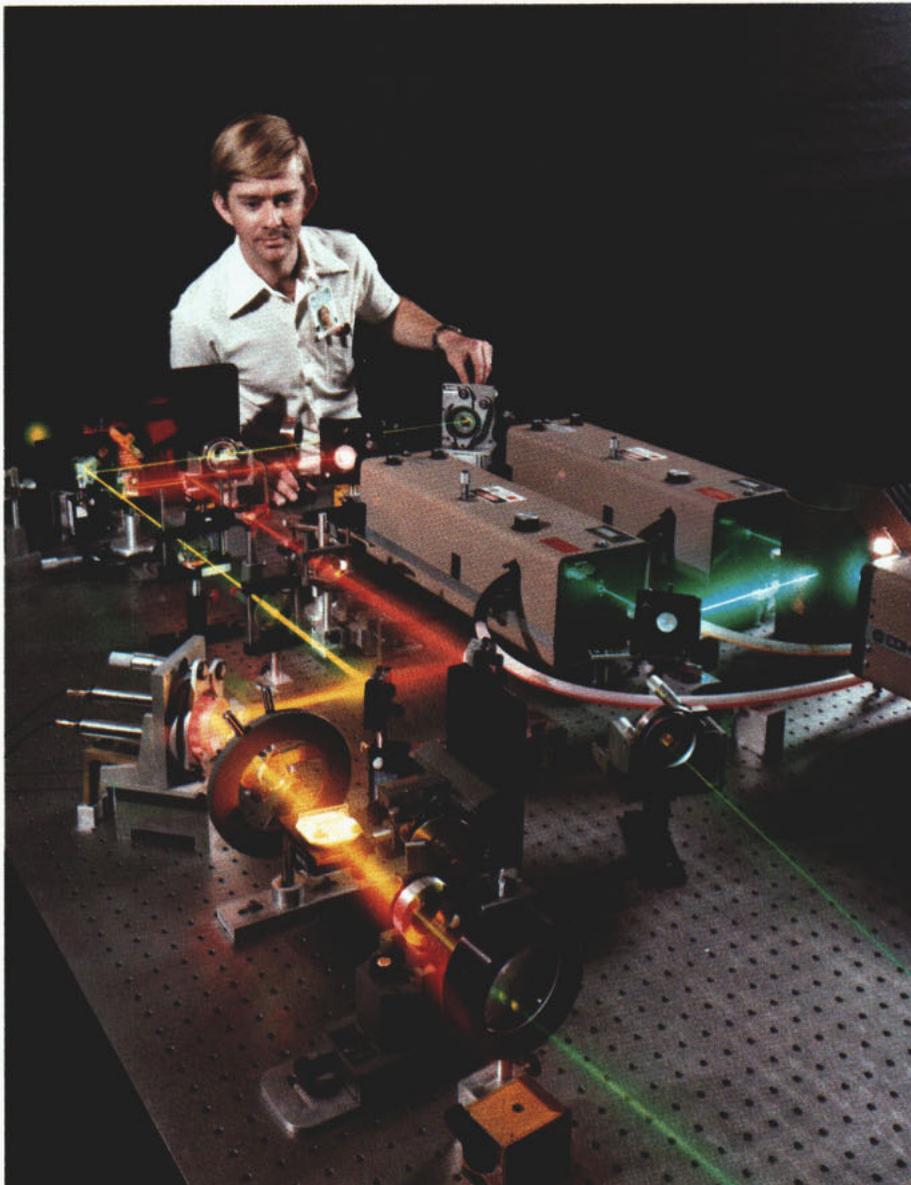
Boston—and overseas offices in Tokyo and London.

The Office of Naval Research and the Office of Naval Technology effort at the headquarters level is devoted primarily to sponsorship of long range scientific research, applied research and exploratory development which offer potential for advancement and improvement of naval operations. Research is carried out in Navy laboratories and through contracts usually awarded in response to unsolicited proposals from universities, businesses and non-profit organizations. Nevertheless, ONR publicizes its research needs so that its programs and interests can be taken into account by prospective contractors.

For 37 years, ONR has been functioning successfully under a unique framework formed Aug. 1, 1946, when Congress authorized its existence (Public Law 588) to ensure that the nation would be able to continue its scientific achievements in the wake of World War II. Through its Contract Research Program, ONR's scientific officers, knowledgeable of the Navy's needs and attentive to scientific applications in general, negotiate with universities, industry, private scientific investigators, ONR's laboratories, and other Navy laboratories to do basic research.

Understandably, the Chief of Naval Research is concerned about what becomes of the basic research achieved under his ONR hat. This is where the ONT staff comes in, serving as the dedicated unit that plans the transition of scientific results from basic research into exploratory development.

Again, a not-so-easy task. But, since its inception in 1980, the Office of Naval Technology has proven to be a positive step toward creating a strong and productive technology base in support of Navy and Marine Corps needs. Like the ONR staff, the ONT staff is comprised of highly qualified professionals trained in the rapid application of scientific endeavor. It shares the same Arlington headquarters with the



Dr. Michael Duncan demonstrates a new laser microscope that uses visible radiation, promising better resolution than laser microscopes using infrared radiation. Photo by Dan Boyd, NRL.

ONR staff and numbers about 42 people.

The person in the street may not realize how much the U.S. Navy relies on technological superiority to keep ahead of any threat. But the Chief of Naval Research isn't convinced that the U.S. Navy has that much of an edge. He does believe, however, that United States laboratories are blessed with inventive, ingenious scientists, many of whom are associated with the Office of Naval Research and the Office of Naval Technology.

Rear Admiral Leland S. Kollmorgen, who preceded Admiral Mooney as CNR, said: "One reason you find me a little more aware of ONR and more supportive—being a programmer and naval aviator and not a technologist—is that one day back in 1972 I was sent to ONR by Admiral "Red Dog" Davis (on the Chief of Naval Operations' staff), because someone at ONR had suggested that someone from Admiral Davis' office come over and look at a whiz-bang 'thing' ONR had just come up with. That was my first exposure to fiber optics.

"At ONR, they gave me a handful of fibers attached to a card with a loop on it with a little brass fitting on the end which you could hold up to a light and look through. I thought that was great, having just come from flying A-6's jammed full of coaxial cable, which was difficult to maintain and handle . . . and the connectors were always troublesome. I knew I didn't want to live with that the rest of my life, so I managed to get \$2 million and an A-7C out of the system and we did the first fiber optics experiment on aircraft—all as a result of making that visit to ONR."

Universities, industry and other investigators look to the ONR system as being one of the freer, more innovative institutions. One can come up with some off-the-wall idea and maybe find somebody there willing to fund it for a while just to get it started.

"I consider ONR part of a close-knit team with academia, industry and our user, the fleet," said Admiral Mooney. "We are fortunate to have a unique, marketable and extremely appealing product—a product which can be used in a singular fashion to show the positive side of our efforts to the taxpayers."

An example of the scientific benefits of ONR-supported research is illustrated in the case of Professor Morris Cohen of MIT. Professor Cohen is a world-renowned physical metallurgist whose work formed the base of the developments in high-strength ductile steels.

In 1947, Professor Cohen submitted a research proposal to ONR aimed at unraveling some of the mysteries of hardening steel. The program continues to be funded today. In fact, Professor Cohen's contract is the longest continuous contract in ONR's history. Over the years, Professor Cohen has instructed 40 ONR-funded students, and some 115 other graduate students, many of whom are notables in their fields.

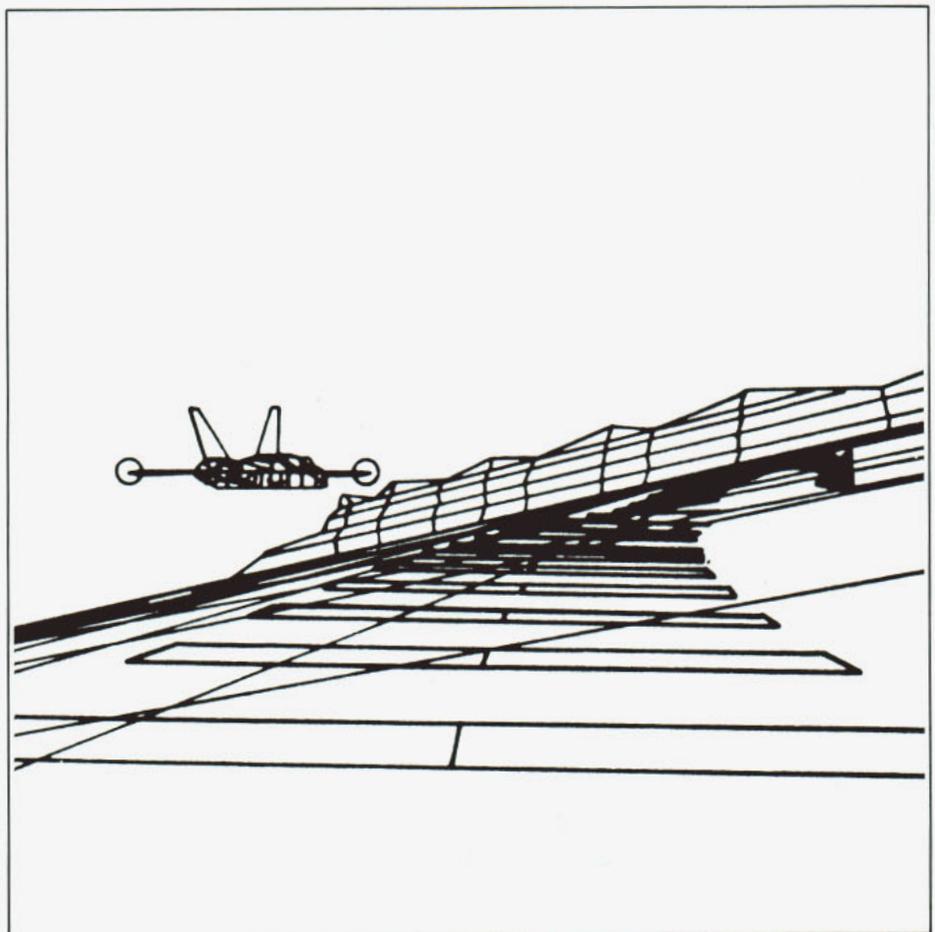
Oceanography is an area in which almost every finding is relevant to the Navy's mission. ONR has been a pioneer and leader in physical and chemical oceanography; its funding has also been instrumental in the development and continued vitality of such national assets as the Woods Hole Oceanographic Institution and the

Scripps Institution of Oceanography.

ONR's early work ranged over all areas of science that were new and important: nuclear research, low temperature physics, solid-state electronics, radio astronomy, basic biological studies and computer and information sciences, to name a few. Most of the 14 nuclear accelerators built at universities after World War II were started with the support of ONR, which also supported construction and operation of the first large radio telescopes. Its steady support of basic research in solid-state physics and quantum electronics during the 1950s helped to usher in the modern age of electronics.

Research made available new phenomena for exploration, including such components as solid state and miniaturized amplifiers, switches and signal generators as well as devices for storing, recording and displaying information that are pro-

This new maneuvering cockpit flight path guidance display integrates various flight parameters and displays the anticipated flight path and terrain.



Today's Link With Tomorrow's Navy

gressively smaller, less demanding of power, more reliable and faster in their response.

A computer capable of processing information in real time was demonstrated under an ONR program as early as 1952. Since then, collecting, processing and communicating combat information has become a matter of computer-steered electronics which, in the process, created an entirely new civilian industry.

ONR pioneered the use of balloons to explore the upper atmosphere and to obtain primary cosmic ray data in 1947 which led Commander Malcolm D. Ross, USNR, to initiate ONR's program of high altitude manned plastic balloons for upper atmospheric research.

The Navy's deep submergence systems program began when ONR purchased the Italian-built bathyscaph *Trieste* and brought it to this country in 1958. Today, *Trieste* has more than 250 "offspring"—manned

and remotely operated submersibles whose engineering features can be traced to the fundamental components of *Trieste*.

ONR also supported the design and construction of *Alvin*, the first true deep-diving submarine which could operate at a depth of 6,000 feet. A later model of *Alvin* can dive to more than 13,000 feet. It was the first of a family of undersea vehicles that enables scientists to explore and observe the oceans' depths firsthand.

Meanwhile, the Navy's 1964-65 ONR-sponsored Man-in-the-Sea program (Sealab I and II) had men living and working on the ocean floor for extended periods of time. During the Sealab II experiment, three 10-man teams spent 45 days at 205 feet studying marine life and collecting geological and oceanographic data for research purposes. One of the participants was Commander Malcolm Scott Carpenter, the first astronaut to become an aquanaut.

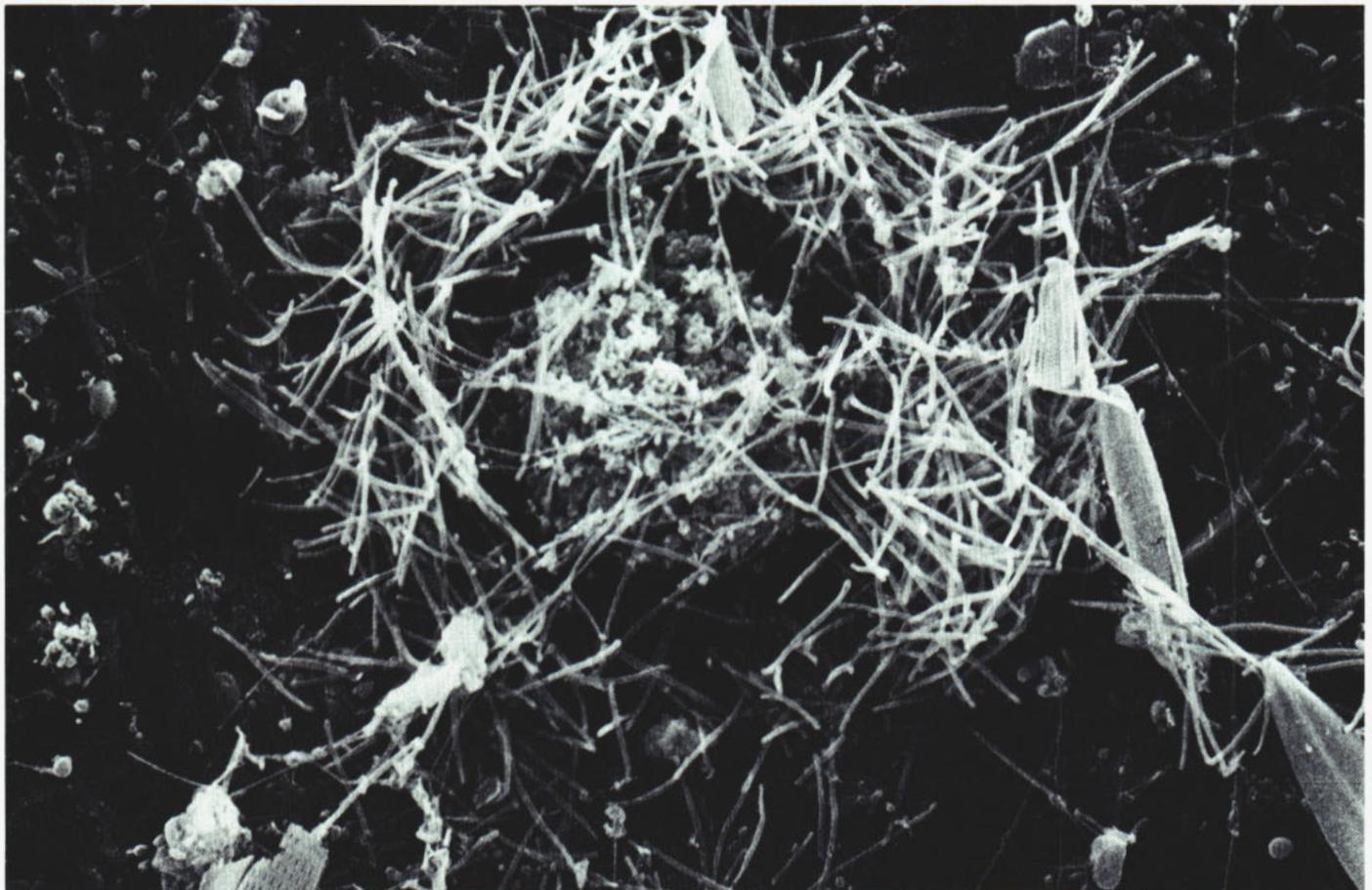
In 1972, ONR funded the establishment of an artificial intelligence laboratory at MIT under the direction of Professor Marvin Minsky. Its research resulted in robots

able to survey their environment and move about under control of natural English language instructions. Such robots not only see with the aid of a television camera "eye," but can "hear" and have a sense of "touch," through electronic sensors. Remotely controlled by computer, these devices are expected to supplant or supplement man in hostile environments, such as deep-sea exploration and salvage work.

Integrated optical technology was a new field during the 1970s when ONR set up its own committee to see how research in this area should be directed to best suit the Navy. The ONR-funded research has produced many of the electro-optic devices for today's communications, display and computers. Fiber optics has emerged from the stage of basic research to the point of testing and application for tomorrow. An example is the Navy's Fiber Optics Sensor Systems Program from which will come the fiber optic devices for the fleet.

For several years, ONR has supported work at Stanford University in California to improve study in the field of scanning

Bacteria beneath surface biofilm on stainless steel in seawater is magnified by a scanning electron micrograph.





"We must be able to extract from technology the solutions to the current problems of the fleet," says Rear Adm. Brad Mooney, the chief of naval research.

it will resist corrosion and reduce friction, wear and fatigue, adding considerable life to the metal.

And so it goes. From idea to application is often a long and torturous path. It is impossible to find a piece of equipment in the fleet that is stamped "Made by ONR/ONT." Yet, if the genealogy of almost any system or weapon were examined closely, it would be rare not to discover some influence of the offices of Naval Research and Technology.

Today ONR and ONT are focusing their research efforts on those areas which will best meet the needs of tomorrow's fleet. These priority needs are microelectronics, artificial intelligence and robotics, computers, materials, space, signature reduction reducing the ability of the enemy to easily identify American naval vessels and locations, fiber optics, microwave sensors, propellants and directed energy. Such research direction will address the important demands of anti-submarine warfare, anti-aircraft warfare and other areas of Navy relevance from A to Z. Meeting such challenges is not easy because second-best in defense will not suffice.

Some years back, in an effort to heighten awareness among his staff, the Chief of Naval Material asked, "What have you done for the fleet today?" That same attitude prevails at the Office of Naval Research and the Office of Naval Technology, but it takes on a different perspective: "What have you done today for the fleet of tomorrow?" □

acoustic microscope. These years of research are now being applied to the production of a commercial acoustic microscope, which allows an object to be mechanically scanned by high frequency sound waves to obtain a picture of the acoustic reflectivity. Pictures obtained acoustically are different from optical pictures, and in many instances are more informative. For example, subsurface structures may be revealed by sound that might otherwise be invisible by optics.

Locating and identifying specific chemical bodies in living cells through the use of laser technology is an NRL discovery undergoing developmental testing. The technique offers the first hope of non-destructive real-time analysis in living and dividing cells.

Last year, a great deal of publicity was given to ONR-supported research at the New York blood center. For the first time, Type B red blood cells were successfully transformed to universal-donor Type O blood cells. The transformation was brought about by enzymatic modification. Today, work is continuing to transform Type A to Type O. The goal of the program is to combine type transformation with long term freeze preservation of red blood cells (a past accomplishment of ONR-supported work). This would enable long term stockpiling of blood, a comforting thought in combat situations.

The era of the laser is in its infancy, and ONR-sponsored scientists are steadily unfolding its mysteries. Professor Arthur Scholow, one of ONR's principal investigators, is researching an advanced laser

source. Professor Scholow shared the 1981 Nobel Prize in physics for his contributions to the field of laser spectroscopy—the physics that deals with the theory and interpretation of interactions between matter and radiation.

In the area of strengthening materials, methods to improve welding of metals, such as titanium for ship structures, are under study. Dr. Bruce A. MacDonald, from ONR's Engineering Sciences Directorate, says research using lasers as the power sources for welding has indicated that certain specific additions to the weld metal produces refinement of the weld structure and superior strength.

Also under investigation at NRL is a process known as ion implantation. During this process, scientists working with metals, for example, electronically inject atoms of any desired element into the surface layer of the metal, thus producing an intimate alloy. The implanted layer may be only a millionth of an inch thick, but

No More Bugs

A constant battle waged aboard any ship is against pests. But a ship free of cockroaches is a possibility, if the research being conducted at the Virginia Polytechnic Institute, Blacksburg, Va., works out. By crossbreeding roaches, ONR contractors, Drs. Mary H. Ross and Richard E. Cockran at the VPI Department of Entomology, have developed a hybrid strain of male roach. Inferior impregnation by

the hybrid results in weaker nymphs who lack the strength to break open the egg case carried by the female roach. The significance of this development is overwhelming. Considering that the mating cycle of the cockroach is about five weeks and it takes only 10 to 12 days to grow an egg case, one pair of undisturbed roaches could feasibly produce a chain reaction of births amounting to an astonishing 54 million offspring in just one year, according to Dr. Ross.

Star-Spangled Port Visit

Story by Lt. j.g. Jon Hoover
Photos by PH3 R.P. Fitzgerald



What could be more appropriate for a celebration of Independence Day than USS *Independence* (CV 62) steaming into New York City? Add to that the Statue of Liberty plus a veritable fleet of entertainers and you've got the making of a star-spangled Fourth of July.

As USS *Independence* steamed up the East Coast, eager crew members and their "Tigers" helped transform the ship's flight deck into a giant television stage. The "Tigers," crew members' sons, fathers, brothers, uncles and even grandfathers—650 of them—had embarked in Norfolk, Va., where all of the stage equipment had been loaded aboard. By the time *Indy* arrived in the "Big Apple," the stage was set, so to speak, for the television performers, who boarded the ship in New York.

With stage, television crews, performers, and an eager Navy audience, *Independence* moved to anchorage just off Liberty Island where, with the Statue of Liberty in the background, "A Salute to Lady Liberty" was taped on July 2 for airing on July 8.

During their four-day stay in the big city, *Independence* sailors also had time to enjoy other Fourth of July activities such as ship-sponsored tours of Manhattan and Atlantic City, N.J. Sailors exploring on their own found transportation a snap with free passes for the city's subway system. The New York Mets invited some 400 sailors to Shea Stadium for a baseball game against the Houston Astros. In pre-game ceremonies, the *Independence* Marine Detachment presented the colors while Lieutenant Commander C. Dennis Lindsey III, *Indy's* assistant supply officer, played "The Star Spangled Banner" on the trumpet.

The ship's softball team took to the field in the annual military softball tournament at Fort Wadsworth where they had a good time even though they came out on the short end of the score. Another ship's team

USS Independence (CV 62) anchors near Liberty Island for the big TV special which included performances by Ray Charles (right) and Ben Vereen and Emmanuel Lewis (far right).

participated in the international lifeboat races. They were good enough to move into the international division, but an experienced team from Newfoundland was more than the *Indy* team could handle.

On the social scene, many crew members attended a street party at the South Street Seaport where the food was free for *Indy* men. Another group of sailors and Marines found themselves part of the March for Liberty parade through Brooklyn and over the historic Brooklyn Bridge.

On July 4, a contingent of officers and

chief petty officers served as official escorts at a ceremony to mark lowering the Statue of Liberty's torch which will be rebuilt and illuminated to highlight the gold-covered flame.

For a Fourth of July finale, *Indy's* flight deck was a prime spot for watching the fireworks display put on by New York and New Jersey.

New York City was an especially appropriate place for *Independence* to celebrate this year's Fourth of July. Many of the crew members are from the area and

could visit friends and families. And *Independence*, itself, was built in New York's Brooklyn Naval Shipyard and commissioned there in January 1959. □

Lt. j.g. Hoover and PH3 Fitzgerald are assigned to USS Independence (CV 62)

Indy's visit to New York City was a great occasion for liberty (below left) and for the Joint Service Reserve Color Guard Unit to parade the colors at the Statue of Liberty ceremonies (below).



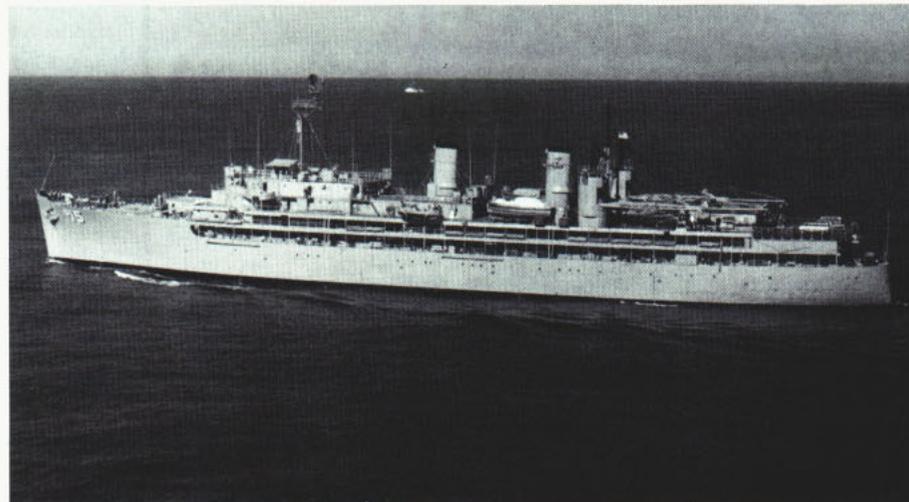
Bearings

VR 58 Gets Safety Award

Fleet Logistics Support Squadron (VR 58), flying C-9B *Skytrain* aircraft from Naval Air Station Jacksonville, Fla., won the Chief of Naval Operations' 1983 Aviation Safety Award.

The squadron flew 14 missions in support of operation "Urgent Fury" in Grenada, several operations in the Mediterranean Sea, and shuttled reservists to USS *New Jersey* (BB 62) to relieve active duty people for leave stateside over the Christmas holidays.

VR 58 accumulated more than 4,600 accident-free flight hours during the year and flew record numbers of hours, passengers, cargo and miles for Tactical Support Wing One. In addition, VR 58 was the most fuel efficient C-9B squadron in Commander, Fleet Logistics Support Wing. ■



The *Dixie*-class destroyer tender USS *Prairie* (AD 15) celebrated its 44th birthday Aug. 5. *Prairie*, the Navy's oldest ship in continuous active service, is homeported in Long Beach, Calif., and recently finished its 23rd Western Pacific deployment. *Prairie*, launched in 1940, has

served as a flagship on four deployments and is the only ship in its class to make a world cruise. The 16,000-ton destroyer tender is commanded by Captain Stephen J. Duich and has a crew of 33 officers and 850 enlisted men and women. ■

Over 30 Versus Under 30

Crewmen of the Norfolk-based destroyer USS *Peterson* (DD 969) beat the tension of steaming off the coast of Beirut, Lebanon, with an "over-30 versus under-30" footrace.

While the ship traveled 3,969 miles, its crew ran 4,108 miles around the weather decks in 33 days. The over-30 group, outnumbered three to one by the younger sailors, took the lead and met their own challenge to double the average miles run by the under-30 runners.

Leaders for the contest were Boatswain's Mate First Class Mitchell T. Laszard with 206.4 miles for the under-30s, and Electronics Warfare Specialist Third Class Sammy J. Johnson ran 201.0 miles for the over-30s. ■

DEERS

Deers—The Defense Enrollment Eligibility Reporting System—is a program for confirming who is entitled to health benefit programs administered by the Department of Defense and the uniformed services.

To prevent unauthorized use of Department of Defense health benefits, CHAMPUS, on July 16, 1984, began de-

nying medical care payments to dependents not enrolled in DEERS. Denial of claims will be phased in throughout the United States (including Alaska and Hawaii) and will be implemented fully by December 1984. On Oct. 1, 1984, denial will extend to CONUS military treatment facilities for non-emergency treatment. For now, CHAMPUS claims and treatment at MTFs for dependents of sponsors indicating APO or FPO addresses will not be denied.

Enrollment in DEERS is mandatory. Active duty military people and retirees who are entitled to retirement pay are automatically enrolled from existing person-

nel and financial records. However, *all dependents must be enrolled by their sponsors.*

Dependents are enrolled by filling out DD Form 1172, the dependent ID card application form, and supplying legal documents establishing proof of dependency (marriage certificate, birth certificate, etc.)

By now most commands should have received an individual DEERS printout indicating those dependents enrolled. If your dependents aren't listed, submit corrections through your personnel office.

Once your dependents are enrolled in DEERS they are updated each time their ID card is renewed. ■



Joseph K. Taussig Jr., left, presents Edwin W. Lard, center, and Wallace E. Day, right, a check for \$11,500 for saving the Navy \$1.6 million for developing a fresh water conservation system at the U.S. Naval Academy's laundry and dry cleaning

plant. Commodore Leslie N. Palmer, the Commandant of Midshipmen, adds his congratulations. The system also has been approved for use aboard ship. Taussig is Deputy Assistant Secretary of the Navy for Civilian Personnel Policy and Equal

Employment Opportunity. Lard worked for the Naval Sea Systems Command before he retired, and Day manages the Naval Academy laundry and dry cleaning plant. ■

Bearings

USS Hector Helps Typhoon-Ravaged Madagascar

In April, typhoon Kamisy ripped across the island of Madagascar, slamming into Diego Suarez, a northern port town. The community of 70,000 was devastated. Roofs were torn off buildings, power lines were toppled, and a leper colony was nearly leveled.

When the Malagasy government asked the United States for help, USS *Hector* (AR 7) stopped its operations in the Indian Ocean and steamed to aid the ravaged island.



Photo by PH3 William Cody

Hector's commanding officer, Captain George C. Chappel, met with city officials to plan the rebuilding of Diego Suarez. They sent some *Hector* crew members to repair two extensively damaged schools, while others went 30 miles outside of town to rebuild Berafia, a leper colony, where the living quarters looked like scattered lumber. Medical and dental teams were sent wherever they were needed.

Not only did *Hector's* 800 men and women volunteers spend a week undoing the typhoon's damage, but they also dug

down deep in their pockets to donate more than \$1,600 to the leper colony and churches.

When *Hector* departed, the ship left repaired buildings and medicine but took with them the thanks and appreciation of the Malagasy people. ■

—Story by SN Timothy Reeder,
USS *Hector* (AR 7)



Photo by PH3 William Cody

"Les Americains" in Brest, France

The Paris United Services Organization staff and the residents of Brest, France, welcomed more than 5,000 sailors when they arrived in Brest, for liberty after participating in ceremonies marking the 40th anniversary of the D-Day invasion.

The sailors came ashore from USS *Dwight D. Eisenhower* (CVN 69), USS *Mississippi* (CGN 40) and USS *Scott* (DDG 995).

Although the sleepy resort town of Brest expected to spend a quiet Pentecost holiday weekend, the citizens didn't mind the presence of the sailors. Shops and restaurants stayed open and two discos offered "les Americains" free admission. ■



Photo by HM3 Robin Whitlatch

First Non-aviation Navy Astronaut

Lieutenant Commander William M. Shepherd, a Sea-Air-Land officer, is the first non-aviation Navy person selected by the National Aeronautics and Space Administration for astronaut training.

Shepherd commanded Special Boat Unit 20 in Special Warfare Group Two, Naval Amphibious Base, Norfolk, Va., before reporting this July to the Lyndon B. Johnson Space Center, Houston, for training as an astronaut mission specialist.

The 34-year-old native of Babylon, N.Y., said his SEAL training will help him in the space program. His naval combat swimming on earth, he said, put him into the environment closest to the weightlessness of space. Other SEAL qualities, he said, will help him as an astronaut include physical conditioning, manual dexterity, self-determination, and the ability to work under adverse conditions and do detailed tasks alone or with a team.

"What the people at NASA are looking for are individuals who know something



of the way the real world works and who can take a problem and solve it, whether it be with a computer, a piece of machinery or a system," he said.

Shepherd almost became an aviator. His father was a transport and ferry aircraft pilot for the Navy in World War II, and his grandfather flew bombers in France for the Army in World War I.

"I studied aeronautical engineering because I thought I was going to be a pilot,"

he said, "but my eyesight wasn't quite good enough." He completed graduate studies at the Massachusetts Institute of Technology and holds degrees in mechanical and ocean engineering.

It could be three or four years before Shepherd makes his first shuttle flight, but he said he feels fortunate to be part of the space program. ■

—Story and photo by PH3 Joan M. Zopf, FltAVComLant

Christmas Mail

Few things are more important at Christmas than the timely arrival of gifts and other goodies. Your friends and loved ones will have a happier holiday if you meet the mailing deadlines.

Mail and parcels coming to you from overseas must arrive at the "gateway" points in Miami, New York City, San Francisco and Seattle on the dates below if you're to get them by Christmas.

Packages weighing up to 15 pounds are flown overseas as space available mail, SAM. Packages weighing up to 30 pounds can be airmailed as parcel airlift packages, PAL, and arrive up to a week ahead of space available mail. Mail too heavy for space available or parcel airlift mail—called surface mail—takes the longest time to reach its destination.

Destination	Priority	Letters	PAL	SAM	Surface
Africa	Dec. 3	Dec. 3	Nov. 12	Nov. 5	Nov. 5
Alaska	Dec. 10	Dec. 10	Dec. 3	Nov. 26	Nov. 26
Hawaii	Dec. 10	Dec. 10			Nov. 26
Australia	Nov. 26	Nov. 26	Nov. 12	Nov. 5	Oct. 19
Caribbean/ West Indies	Dec. 10	Dec. 10	Nov. 26	Nov. 19	Nov. 2
Central and South America	Nov. 26	Nov. 26	Nov. 12	Nov. 5	Nov. 2
Europe	Dec. 7	Dec. 7	Nov. 26	Nov. 16	Nov. 2
Far East	Dec. 7	Dec. 7	Nov. 26	Nov. 16	Oct. 19
Greenland	Dec. 3	Dec. 3	Nov. 26	Nov. 19	Nov. 2
Iceland	Dec. 10	Dec. 10	Nov. 26	Nov. 19	Nov. 2
Mid-East	Nov. 30	Nov. 30	Nov. 5	Oct. 29	Oct. 29
South and East Asia	Nov. 26	Nov. 26	Nov. 9	Nov. 5	Oct. 19

Incoming mail must arrive at gateway points by:

Dec. 14	Dec. 14	Dec. 12	Dec. 3	Dec. 3
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CV SLEP A Success

Saratoga

Before its commissioning, a ship is a lifeless hulk of cold, gray steel. When men report on board, machinery kicks on and operations begin, it comes alive. It continues to live and steam the world's oceans as crews turn over and technology advances. After a quarter century of hard service, the ship is still steaming—but it's tired, worn out, outdated. Nothing lasts forever. The Navy is faced with a choice: overhaul the ship again or put it in mothballs.

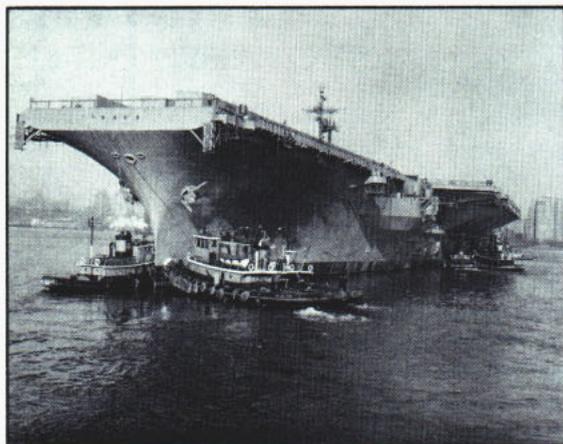
In the case of aircraft carriers, there is now a third option: major surgery—the opportunity to give the ship a new lease on life.

The surgery is called SLEP—Service Life Extension Program—and its purpose is to rebuild and modernize the Navy's vintage carriers so they will provide another 15 years of useful service life at a fraction of the cost of a new ship.

The program works.

The first SLEP ship was USS *Saratoga* (CV 60). Exhausted after 15 Mediterranean cruises and Vietnam duty, the 28-year-old veteran might well have been mothballed. But the Navy needs every carrier it now has to build the 600-ship fleet necessary to meet its worldwide commitments. By "SLEPing" vintage carriers, the Navy can save money that can be used to build other new ships and still keep its

Below: Twelve tugs tow Saratoga (CV 60) to its new berth for trials and fitting out on Jan. 28, 1956. Right: Saratoga under way during operations with the Sixth Fleet. USS Dale (CG 19) is off the carrier's starboard side.



Rejoins The Fleet



CV SLEP A Success

conventional carrier force alive and steaming past the year 2000. So *Saratoga* was sent to the Philadelphia Naval Shipyard.

Now, after a 28-month, \$549 million overhaul, "Old Number 60"—after pulling in its lines at Mayport, Fla., early in April—is once again churning the waters and launching planes in the Mediterranean with the U.S. Sixth Fleet.

"The carrier Service Life Extension Program is the cornerstone of our plans to ensure modern carriers for the fleet, and stability and carrier force levels through

the turn of the century," said Chief of Naval Operations Admiral James D. Watkins. "Both goals are being achieved at a fraction of the cost of new carriers (because of SLEP)."

Carriers completing SLEP are so updated with the latest systems and technology that they're capable of operating like new ones. Fitted with state-of-the-art equipment, "SLEPed" carriers are good for half the life of a new ship at one-fourth the cost.

Captain Gordon C. Wileen, *Saratoga's* executive officer during the latter half of

SLEP from 1981 through 1983; now coordinator, carrier advanced development programs, Deputy Chief of Naval Operations (Air Warfare) in the Pentagon, said: "The only real difference between CVNs and *Saratoga* now is the power source. A nuclear carrier can go longer without being attached to a supply pipeline for DFM (diesel fuel, marine). In essence, a CV can do exactly the same thing as a CVN—it's just a little smaller and has fewer airplanes.

"The *Saratoga* SLEP turned out to be the largest ship modernization in Navy history in almost any terms—the number of man days, the number of dollars, the extent of the work that was done."

Wileen compared a carrier SLEP to the highly publicized renovation of the battleship USS *New Jersey* (BB 62).

"A carrier is infinitely more complex," he said. "Certainly *New Jersey's* was a massive renovation, as was *Iowa's*. But with *Saratoga*, you're looking at a ship with more than 2,000 compartments—all of which had some attention paid to them.

"The interior looks like a new ship. Every single berthing compartment was taken down to ground zero, to bare metal. New tile, new racks, new paint, new lockers, new bunk curtains, new lights, new everything was installed.

"The engineering plant was rebuilt—that's six machinery rooms, eight boilers, four engines. All of the catapults were rebuilt—one was lengthened by 42 feet and all of the arresting gear was replaced," Wileen said.

Philadelphia Naval Shipyard's SLEP project manager Commander Charles W. Matchett, who has spearheaded the program for more than five years, said the program's bottom line is in-depth repair, systems upgrades and modernization.

"You give it the capabilities that the newer ships have—we can't deliver a brand new, nuclear-powered carrier, but we can make the ship competitive and able to carry out its mission on a par with the bigger decks," he said.

The size and complexity of the CV SLEP work package is about two and one-half



No place on the ship is beyond the reach of workmen who inspect and repair equipment in difficult places. Photo by JO2 Russell Coons.

times greater than that executed for a typical carrier overhaul. And the Navy is pleased with SLEP's success because it did the job it was supposed to do.

"All the major systems worked and worked well," said Wileen. "Firing the NATO *Sea Sparrow* with success. Firing the close-in weapons systems which worked perfectly. That's encouraging. All the observers, evaluators and inspectors are there and you punch the button, pull the trigger or throw the switch, and it works—and it works the way it's supposed to. That's what it's all about."

Philadelphia Naval Shipyard completed *Saratoga's* SLEP on time and within budget. Six thousand shipyard workers and a skeleton force of 1,500 crew members labored more than 1.5 million man days on the work package. It was the first major carrier overhaul performed in Philadelphia in more than 10 years and the Navy's first carrier-SLEP overhaul ever attempted.

To Philadelphia, SLEP meant several thousand new jobs and an impact of nearly \$800 million on the local economy for the first two ships.

The city welcomed both *Saratoga* and *USS Forrestal* (CV 59) in grand fashion. The city's Pennsylvania-New Jersey-Delaware Council established several programs including citywide orientations on schools, transportation, athletics, etc., for the ships' crews and their families. The program, unprecedented in the Navy, will continue for follow-on SLEPs. *USS Independence* (CV 62) is also scheduled to undergo SLEP in Philadelphia.

Five years of planning went into SLEP before the first ship entered the shipyard. Many new programs were being tried and lessons were learned as each project was completed, tested and evaluated.

As with any new program, there were some problems. Among the more publicized were the problems with the ship's boiler superheaters.

Saratoga's boiler problem stemmed from a new semi-automated welding procedure. Leaks were discovered in the superheater tubes in each of the ship's eight boilers just weeks after leaving Philadelphia, and repairs were performed during the planned post-shakedown availability in Mayport.

The Philadelphia Naval Shipyard sent

a special team to Mayport to assist local contractors in rewelding the superheaters. Conventional welding techniques were used and three months later *Saratoga* was again steaming.

"Despite the adverse publicity regarding problems with boiler repairs, the initial CV SLEP ship, *Saratoga*, was an unqualified success," said Vice Admiral Robert L. Walters, Deputy Chief of Naval Operations for Surface Warfare, before the House Armed Services Committee last February. "We learned a great deal during *Saratoga's* SLEP, and those lessons learned are being fully utilized in the execution of the second SLEP on *USS Forrestal*, which is now in the program," he said.

Vice Admiral Earl B. Fowler, Commander, Naval Sea Systems Command,

told a House of Representatives subcommittee meeting on seapower: "The shipyard got a late start coming out of the starting block, and they were given an arbitrary goal of, as I recall, \$526 million in just over two years to do this job, so we shouldn't overlook the complexity of the job they were tasked to accomplish."

Secretary of the Navy John F. Lehman Jr. commented at a Philadelphia press conference, "... the yard did an excellent job in building up very rapidly from the sudden decision to put *Saratoga* in. They did an excellent job in meeting schedule. They did a very good job in most parts of the SLEP program, and they made the schedule and brought it in on budget."

Getting the ship ready for sea was a major obstacle as the overhaul wound down. According to Wileen, "Crew turn-

SLEP Modernizes Vintage Carriers

During a SLEP overhaul all of the ship's internal machinery and electronics systems are removed and stored or sent out for overhaul. With the following questions, project officers determine the course of action for every piece of equipment in the ship:

- Are superior replacements available?
- What was its original life span? Will it last 15 more years?
- Is it reliable? Does it require excessive maintenance?
- Is it more cost-effective to replace than repair?

Based on the answers, the following are scheduled as major SLEP improvements:

- Install modern 360-ton air-conditioning units to increase chilled water distribution.
- Rebuild fire and flushing pumps with stainless steel casings and enclosed motors.
- Install Halon-gas firefighting systems in the six main and auxiliary machinery rooms.
- Incorporate the improved weapons-handling system to allow the ship's crew to handle and transfer ordnance faster and safer than before.
- Convert magazines to universal-stor-

age facilities and install large, straight-through weapons elevators to complete the weapons-handling conversion.

- Repair tanks and voids. After in-depth repairs, *Saratoga* gained a 12-inch improvement in draft which will reduce the ships drag in the water.

- Replace point defense missile system with NATO *Sea Sparrow* surface missile systems. *Sea Sparrow* is a shipboard surface-to-surface and surface-to-air missile system that has two directors per battery.

- Install *Phalanx* close-in weapons systems. *Phalanx* is a self-contained, all weather, lightweight gun system with integral fire control that provides for short-range defense against anti-ship and cruise missiles, and low-flying aircraft.

- Add new and improved evaporators to increase fresh water distillation capability. This will provide the crew with more than the required 30 gallons of fresh water per man, per day.

- Update facilities; install a new fast-food restaurant, open round the clock, to serve hamburgers and french fries.

- Increase JP-5 storage capacity.

- Replace carbon-steel fuel oil piping with copper-nickel piping.

CV SLEP A Success

around and remanning was one of the most difficult issues facing the ship in SLEP. We had to find 3,000 more people and get them through the training pipeline in Norfolk, Va.

“When we went to sea for the first time, we had only one officer below the rank of captain who had ever stood OOD on a carrier—only one, on the whole ship. So, to prepare for that, we sent entire bridge watch teams out on other ships for experience. Every opportunity we were sending people to sea for training.

“I think one of the biggest accomplishments was putting together a very inexperienced crew with some experienced managers—CPOs and officers—and going to sea and learning how to run and fight the ship. When you get right down to it, it’s people who make it work,” he said.

While *Saratoga* was heading for sea, the second SLEP ship, *Forrestal*, was laid on the operating table. The 1,039-foot-long, 25-story-high carrier was gutted—no engines, no planes, no men. The only flight operations going on were at a nearby airport.

“First they took out all the furniture, machinery and equipment,” said one *Forrestal* seaman. “Then we moved into the barracks. The offices were moved to a

building nearby and now there’s nothing left.”

“They started cutting it up. They took the catwalk off. They cut holes in the side of the ship. They even took the ship’s wheel off the bridge. They cut the heart and soul out of the ship. The initial reaction from most people was ‘you can’t do that to my ship.’ It was very depressing,” said Lieutenant Commander R. L. Chenery, fighter pilot and *Forrestal*’s collateral duty public affairs officer. “But even at that time you could envision a proud, new *Forrestal* under construction.”

The flight deck was transformed into a construction site and was loaded down with box trailers, cranes and tool boxes. Shipyard workers scurried about cutting, grinding and ripping.

“Now, we’re starting to put it back together,” said Chenery.

The berthing spaces were one of the first conversions completed. Racks with curtains, new lockers, bright colors and fewer steam pipes overhead are just some of the improvements to make the spaces more livable.

“We are moving people back on the ship, and soon it (*Forrestal*) will start to breathe again. We’re past the halfway

point. In less than a year, the ship will be ready for sea.” (*Forrestal* is scheduled to complete SLEP in May 1985.)

Ship’s Force Overhaul Management System renovations, work done by the ship’s force, played a big part in improving habitability—particularly the crew’s berthing spaces. *Saratoga* had a 250,000 man-day package on its berthing spaces. *Forrestal* expanded its efforts to include officers’ staterooms.

“Upgrades were completed in the showers, heads and galleys,” said Matchett.

Naval Sea Systems Command instituted the SFOMS self-help program in 1975 as a cost effective way for commanding officers to upgrade berthing spaces and make ships more habitable. It takes the enthusiasm of members of the ship’s force working together to make the program work.

A new program went into effect aboard *Forrestal* during the equipment removal phase of the overhaul to ensure that machinery and sophisticated electronic equipment were handled with care. It was appropriately called CARE—the Careful Attention Removing Equipment program—and was a lesson learned from *Saratoga*.

SLEP Project: Carrier Catapults Upgraded

“The catapult reconstruction was a very difficult job which at one point we thought might extend the overhaul by at least six months,” said Vice Admiral Earl B. Fowler, Commander, Naval Sea Systems Command, to a House of Representatives subcommittee meeting on seapower. “They (the shipyard) attacked that (the project) with vigor and brought it back within schedule, so we shouldn’t lose sight that they have done a super job in finishing that ship in the time allotted and within the costs established for it.”

The catapult reconstruction was one of the major upgrades completed in *Saratoga* during SLEP.

Commander Charles Matchett, Philadelphia Naval Shipyard’s SLEP project manager described the procedure:

“We lengthened one of the catapults and added a small extension to the flight deck so the planes would have better maneuvering room coming up. By lengthening that cat we made it equivalent to modern standards. *Saratoga* is now equivalent to new nuclear-powered carriers (CVN 68 class) as far as the arresting gear and the catapults go.

“What that has done, relative to looking at 15 years, is, now you can launch at a higher speed and also trap (recover a plane) at higher speed,” he said. The ship can now accommodate planes through the F-14 *Tomcat*.

“Because you have higher launch speeds and can trap at higher speeds, you cut down on the load on the machinery plant,” Matchett continued. “Where it used to

take six to eight boilers to get adequate wind over deck to launch and recover, you can now do it on four boilers. That cuts down on the wear and tear of the machinery plant, and saves fuel—a number of economies there.”

Captain Gordon Wileen, former executive officer of *Saratoga* and currently coordinator, carrier advanced development programs, Deputy Chief of Naval Operations (Air Warfare) in the Pentagon, said “You can launch and recover aircraft at an average of six to eight knots slower speed. It saves a tremendous amount of fuel. The engineer and I sat down one day and figured out how much fuel we’d save and it amounted to hundreds of thousands of dollars over the 15 year service life of the ship.”

Problems were encountered during *Saratoga's* "rip-out," where systems and equipment were cut out and removed at random without defined management instructions, procedures or quality assurance checkpoints.

Saratoga had been decommissioned during part of its SLEP and the ship was under the charge of the shipyard for one year. This created problems with establishing chain of command, maintaining security and supervising work procedures. Not so with *Forrestal*, which has remained in commission and established an exemplary quality assurance program for follow-up carrier SLEPs.

"We've got the whole ship involved right down to the men standing fire-watch," said *Forrestal's* commanding officer Captain Bobby C. Lee. "We keep the ship clean and secure. If one of my men sees someone doing something wrong, he reports it right away. We have a security team working around the clock keeping a constant eye.

"We have a tight quarterdeck watch and pier side security. It's also another way of keeping the ship clean and free of graffiti, vandalism and theft."

Forrestal is sectioned off by an 8-foot-high cyclone security fence, and security watches guard the turnstile gates and patrol aboard the ship. The crew works in temporary office spaces in an adjacent warehouse. Security on the entire base is tight; proper identification, special passes, vehicle passes and escorts are required for anyone to go anywhere.

"Walk around the ship and take a good look at it," said Lee. "Even with as much industrial work going on as there is, the ship is pretty clean. It's necessary, and QA (quality assurance) plays a big part. Everyone cares about what's happening to the ship."

Each SLEP is a learning experience according to Matchett. "Lessons learned on 'Sixty' are applied to 'Fifty-Nine.' We undocked CV 59 10 weeks early. It was in a large part due to *Saratoga's* experience—we were able to take advantage of that. We're continuing to learn in a number of different areas.

"We've completed one SLEP, we're working on another, and we essentially have our hands around the majority of the work (planning stages) for *Independence*. And I have people aboard the *Kitty Hawk*

getting ready, too," he said.

Other ships slated to undergo SLEP include USS *Constellation* (CV 64), USS *America* (CV 66), and USS *John F. Kennedy* (CV 67). A program similar to SLEP has been set up for USS *Enterprise* (CVN 65).

Under current new-ship construction schedules, only six carriers will be within their 30-year design lifespan by the year 2000. The Navy won't get another new carrier until delivery of *Theodore Roosevelt* in 1986. To meet the Navy's goal of 15 deployable battle groups, its veteran carriers must keep on steaming. SLEP has proved a viable means of extending their service lives through the turn of the century. While SLEP means taking a carrier out of service for more than two years, it's returned healthy, rejuvenated and better-prepared to handle any threat. □

—Story by JO2 Russell L. Coons

Check and double-check is a way of life for this Philadelphia Naval Shipyard worker as he inspects work during a SLEP.



Training Hard During SLEP

By JO3 Gregory W. Belmore FltAVComLant, Norfolk, Va.

Sailors reporting to sea duty for the first time face the uncertainty of shipboard life. It's a harder task when they report to a ship going through overhaul, and even worse, when it's going through SLEP—the Service Life Extension Program for aircraft carriers.

After settling in at a new command, seamen are put to work standing fire watch and chipping paint. Very little time is devoted to learning about the ship or shipboard life.

To overcome this gap in training, the Naval Sea Systems Command developed an indoctrination program for sailors reporting to SLEP carriers. It's called the "School of Ship" and is held at the Fleet Training Center in Norfolk, Va.

Saratoga has already completed SLEP and *USS Forrestal* (CV 59) is now undergoing the overhaul.

"The purpose of the school is to provide basic shipboard training to the crew that will remain *Forrestal* after the SLEP program is completed," said Commander Lawrence De St. Croix, officer-in-charge.

More than 200 seamen and petty officers went through the program in the first six months. *Forrestal* expects to train more than 1,500 men by the end of December 1984.

The curriculum covers general shipboard life, first aid, the planned maintenance system, maintenance and material management, ship's security force and flight deck safety. Firefighting and damage control are also taught to all ship's company.

In addition to training at the two-week School of Ship, individual rates such as boiler technicians and electronics technicians receive specialty training to keep them familiar with new techniques.

"We have sent 60-70 percent of our students to specialty schools," said Master Chief Avionics Technician Bill Binkley. "For example, the aviation rates attend aviator fuels and refresher school at NAS Oceana, Va."

"The most important aspect of the school is the formal training (firefighting, damage control and specialty schools) the students receive before being assigned to the ship," said De St. Croix. "The ship has a reputation to maintain, and everyone is a shipmate. We start the process of team-building here before they report to the ship."

Training detachment Master Chief Ship's Serviceman Ralph Stevenson said that FTC provides an excellent environment for training. He added that 90 percent of the students in the program are fresh out of boot camp or "A" school.

The school's instructors are screened by the Naval Military Personnel Command in Washington, D.C., before reporting to the detachment. In most cases, the instructors will report to the ship later on, so they also attend the basic firefighting and damage control training.

Aviation Storekeeper Second Class Donald England, a 3-M instructor in the course said, "If the students use the program, and do it right, it will work."



Aviation Electrician's Mate Second Class Jim Parente, a flight deck safety instructor, and England often hold after-hours studies for students in the barracks. "One major problem area is damage control because a lot of material is taught in three days," said Parente. "We slow down the students and talk to them about what they don't understand."

"We've seen the failure rate of damage control drop from 30 to 5 percent," said England. "On many occasions we would study until 1 a.m. I feel the success of the study time is due to the more relaxed atmosphere in the barracks. The students feel more at ease about asking questions."

In the personnel office, administrative officer Lieutenant John McCarthy supervises a crew of five personnelmen who maintain and update the detachment's service records. "We maintain our own service records and do the reporting and detaching orders. This saves time for the students, because they don't have to go through the personnel support office on the base."

First aid instructor, Chief Hospital Corpsman Gary Sanders enjoys teaching first aid and cardiopulmonary resuscitation. "We get good feedback from the students about the school," said Sanders. "When students satisfactorily complete CPR, I issue them cards that state they're certified CPR performers. This has gone over well, and makes students more conscious about CPR."

Summing up the school and the program, Mess Management Specialist Seaman Donald Lamar said: "I wouldn't want to go aboard a carrier without going through this program. If I would have gone straight to the ship, it would have been mass confusion. I'm glad I joined the Navy while they're doing this program."

Chief Hospital Corpsman Gary Sanders demonstrates a first aid technique during the "School of Ship" for sailors whose carrier is undergoing SLEP.



Indy Sailors Lend A Helping Hand

Story and photos by SN Billy Oosterink, USS *Independence* (CV 62)

In keeping with a strong U.S. naval tradition, men of the aircraft carrier USS *Independence* (CV 62) offered a helping hand to 120 children of the Opera per la Slaute del Fanicullo orphanage while the ship was in Naples, Italy.

Passing up opportunities to tour Rome, Sorrento, Pompeii and Amalfi, a group of crew members used their time ashore to help others. They visited the orphanage and did some much-needed repairs, put up siding and painted. The paint was provided by *Indy's* deck department.

"We thought it would be nice to help them out in any way we could," Chaplain (Lieutenant) Jessie Tate said. "We didn't do all that we would have liked to, but we put in a good eight hours work."

After the first day of work, the work group, plus a few others, ventured back to the orphanage to have a little party with

the 120 children at the home.

"An orphanage here isn't the same as orphanages in the United States," Tate explained. "Here, not all of the children are without families, but some of the children's families are very poor. The orphanage helps by feeding, clothing and educating these children."

Touching the sweet tooth almost every kid seems to have, *Indy's* supply department provided a 30-pound cake and more than 300 cookies for the party. "It was all gone at the end of the party, though," Tate said.

"The U.S. Sixth Fleet has been a blessing for the children," said Anna Welcome, a United Services Organization volunteer. "A few years ago, the first ship, USS *Nimitz* (CVN 68), visited and since then we have had a lot of different ships visit the orphanage."

Commander Joseph Anderson, *Indy's* dental officer, and members of the dental department provided the children with dental kits and gave a demonstration on how to use a toothbrush properly. They also attempted to explain the use of floss. But Welcome, acting as interpreter, said, "I'm not sure they understand, but they'll still try to figure it out after you're gone."

"Seeing the children's shiny faces and big smiles made you just want to take one or more home with you," Anderson said.

As the party ended, Tate and *Indy's* first class petty officers' mess president, Yeoman First Class Steve Lewis, presented the orphanage with a \$1,100 donation. □

Chaplain (Lt.) Jessie Tate, (top left) tried to meet every child at the orphanage as Independence (CV 62) sailors entertained and played with the youngsters.



Military Retirement:

Understanding An Important Benefit

Military retirement is an important but often misunderstood benefit. To help Navy members better understand this system which is such an important consideration in making career decisions, the CNO's Military Compensation Policy Branch has prepared the questions and answers on these pages.

Q. Why do so many outside the military want to change the military retirement system?

A. Fundamentally there are two reasons: A large federal budget deficit and significant differences between the military retirement benefit and private sector pension benefits. We currently have an annual federal budget deficit of over \$150 billion. Every federal program, including military retirement, is being carefully examined to see what can be done to reduce the deficit. When you also have a retirement program that is significantly different from private sector pensions, we shouldn't be surprised that well-intentioned people outside the armed forces question its necessity.

Q. What are the differences between the military retirement system and private sector pensions?

A. The military retirement system has almost entirely different goals. They are:

- Provide a youthful and vigorous combat force.
- Support military personnel management policies.
- Support the "up or out" promotion system which historical experience has demonstrated is necessary for the readiness of the armed forces.
- Provide a retention incentive for a professional, military career force.
- Maintain a portion of the mobilization base of trained personnel for contingency use.
- Provide old age support.

The only goal common to both the military retirement system and to provide sector pensions is the final one, to provide old age support. This goal, however, is a minor one for the military retirement system. Because the goals are different, the benefits are different. Many people do not understand this.



Q. Isn't the monetary benefit of the military retirement system half of basic pay after 20 years service?

A. That's only partially correct, and it omits several *essential* elements of the retirement benefit. *First*, the precise benefit formula is 2½ percent times years of service times basic pay. This formula works out to be 50 percent of basic pay for 20 years service up to a maximum of 75 percent of basic pay for 30 or more years service. *Second*, the "basic pay" used in the formula differs for two groups of our personnel. For those who first entered the military before Sept. 8, 1980, it is their final month's basic pay. For those who first entered the armed forces *on or after* Sept. 8, 1980, it is the average of their highest 36 months of basic pay (which is referred to as "high-three" averaging). *Third*, retired or retainer pay is periodically adjusted to protect it against the effects of inflation. These adjustments have been an essential part of the military retirement system since 1870. They are *not* an "add-on," *not* "frosting on the cake," and have obviously been a part of the system for a very long time. *Fourth*, military retired/retainer pay is not integrated with Social Security. This means retired/retainer pay is not reduced when Social Security payments begin.

Q. Tell us more about "high-three" averaging. How much does it affect those who first entered military service on or after Sept. 8, 1980?

A. Those who first entered military service after "high-three" averaging was enacted will receive about 11 percent less initial retired pay than comparable personnel who have their pay computed using their final month's basic pay. This occurs because the highest 36 months (high-three years) of basic pay will be averaged. During a 36-month period there are usually three pay raises and one longevity increase (a "fogey"). There could also be an advancement or promotion during that 36-month period.

Q. These adjustments to retired pay that you mentioned, aren't they increases to pay? Aren't retirees from the 1950s and 1960s receiving more retired pay today than they did when they retired?

A. Cost-of-living-adjustments to retired pay, or COLAs, are not actual increases to retired pay. An error that some people make in comparing dollars received in different years is to assume that all dollars are worth the same. They aren't. Dollars are pieces of paper with ink on them. Their *value* is determined by what you can buy with them. In 1964, fewer than \$2,000 could buy a new automobile. In 1984, over \$6,000 would be needed to buy a new, no-frills automobile. The real value (purchasing power) of 1984 dollars compared to 1964 dollars has been significantly eroded by inflation. The purpose of retired pay COLAs is to maintain military retirees' purchasing power. In other words, we want military retirees to be able to buy the same amount of goods and services in

the future as they can on the day they retire, no more and no less. If we deflated the 1984 dollars our retirees are receiving we would see that retirees from the 1950s and 1960s are receiving today almost exactly the same value of retired pay as they received on the day of retirement. But perhaps the best way of illustrating the importance of COLAs is to realize what would happen to the value of retired/retainer pay without them. Without COLAs the typical retiree (a chief petty officer who transfers to the Fleet Reserve after 20 years service) would lose 64 percent of the real value of retired/retainer pay by age 62 and 79 percent by age 73 even with a very low (5 percent) rate of inflation.

Q. How long have we been making adjustments to military retirees' pay?

A. Since 1870. Between 1870 and 1963 we "recomputed" military retirees' pay every time we raised active duty pay. In 1963, Congress changed from "recomputation" to the current system of COLAs linked to the Consumer Price Index (the index used by the federal government to measure inflation). We can truthfully say that this has been an integral part of the military retirement system for a very long time.

Q. Did I understand you correctly that military retirees will receive both unreduced retired or retainer pay and Social Security payments?

A. Yes, that's correct. Congress was very clear in 1956 when the armed forces were put under the Social Security program. They intended Social Security benefits to be *in addition to* any Veteran's Administration benefits or military retired benefits. Survivor Benefit Plan payments, however, *are* integrated with Social Security benefits. This means SBP payments to a surviving spouse will be reduced in most cases when the spouse becomes eligible to receive Social Security benefits. Nevertheless, the combined SBP payment and Social Security benefit will still be larger than the SBP payment by itself.

Q. In the final analysis, how important is the military retirement system?

A. It is a critical element both of the military compensation system and of the military personnel management system. Navy retention questionnaires consistently show that the retirement benefit is our number one career retention incentive. If we didn't have it or had a significantly reduced benefit we would have to replace it with some other very costly incentive. More importantly, this nation opted for the current military retirement system in 1947/1948 to correct serious readiness problems in the armed forces. Promotion stagnation and a lack of young, combat-ready personnel resulted from the 30- to 40-year military career patterns common prior to World War II. There is a direct causal connection between the current retirement system and the combat readiness of our armed forces. We must always keep this in mind.

Submarine Parking

The next time you have trouble parking your car on a busy street, think about the Navy men and women who have to park a 300-foot-long nuclear submarine on a 3-foot-wide line of wooden blocks.

In San Diego, the responsibility for parking those submarines rests with the men and women of the Navy's floating dry dock, USS *San Onofre* (ARD 30), based at Point Loma, Calif. It's one of only four submarine dry docks used by the Navy today.

"Getting the submarine into the dock basin and lined up over the keel blocks is a matter of combining basic trigonometry with a lot of hard work by the deck division and line handlers," said *San Onofre's* commanding officer, Lieutenant Commander R.D. Baker, a limited duty officer with 23 years of experience in Navy submarine service.

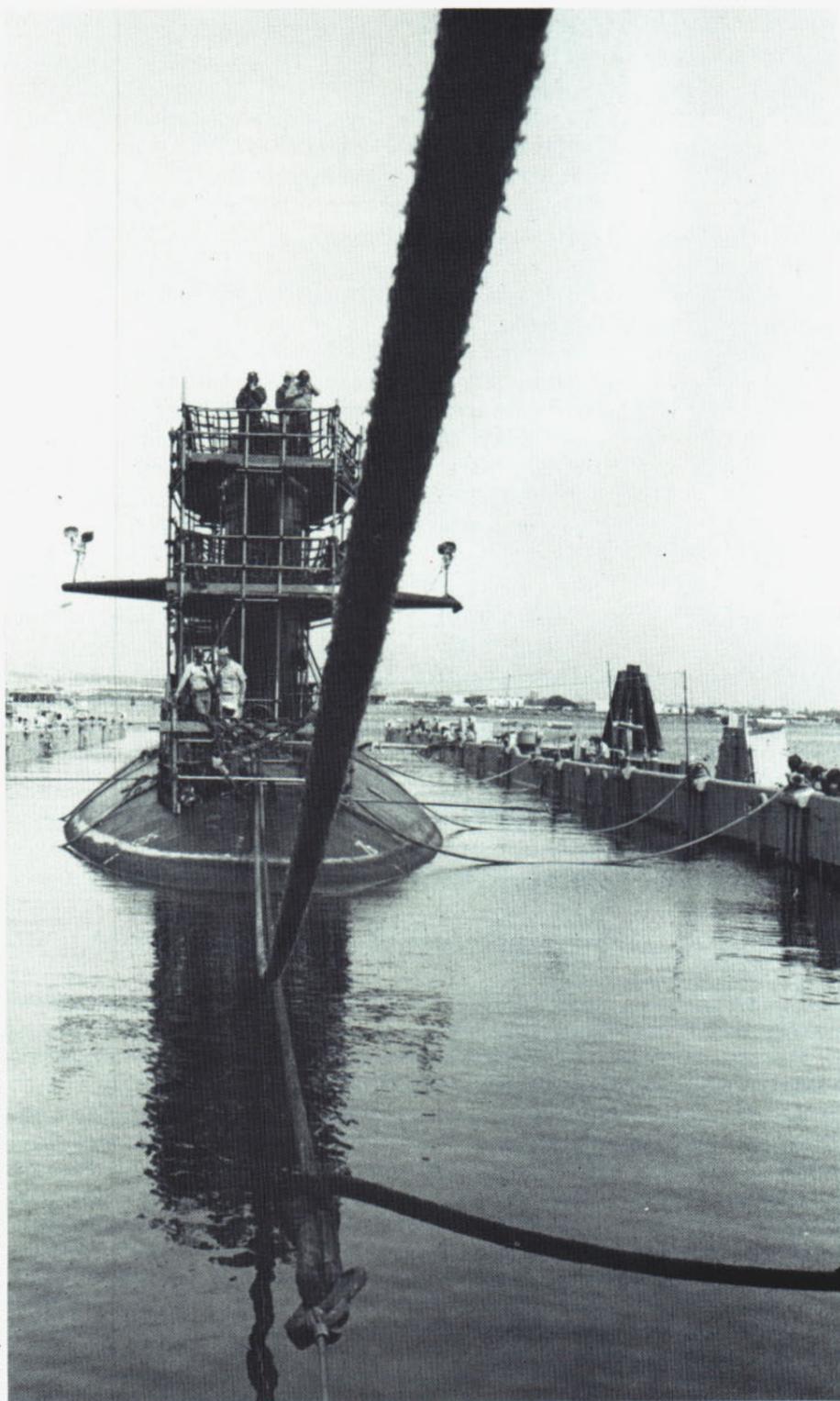
When a submarine is scheduled for docking, *San Onofre's* hull technicians do a "build up"—making the wooden blocks on which the submarine rests as it is lifted out of the water. The HT's cut and position the blocks on the floor of the dock basin using a blueprint of the submarine's hull.

"Each sub is different and we have to be extremely careful not to block any hull openings or position any blocks that will break anything off the sub's hull," Baker said.

With the keel blocks in place and the line handlers positioned, *San Onofre* floods the dock basin. In main ballast control, Chief Machinist's Mate George Voorhees works the pumps that lower *San Onofre* about 30 feet into the water.

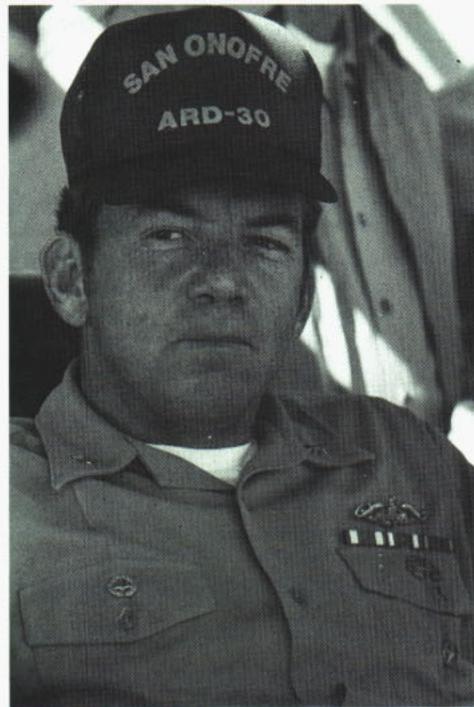
"We always bring the dock all the way down to make sure there are no air pockets in the tanks," he said. "Once we get ballasted down, we try to bring the sub in right away."

A sudden shift in water pressure, ballast or current flow could put a hole in the submarine or sink the dry dock.



Photos by JOC Rick Beih, Naval Air Reserve, San Diego

A nuclear-attack submarine is hauled into the dock basin for repairs.



The submarine is lined up and brought into the dock basin slightly to the left of center. The submarine is actually placed in the final docking position by hand, using a series of nine lines—one on the bow and four on either side—to center the sub over the keel blocks.

After the docking officer determines by sight that the submarine is centered over the keel blocks, divers from the submarine tender USS *McKee* (AS 41) go into the dock basin, visually checking to confirm alignment of the keel blocks to the hull. At this point, the submarine is floating about 1 to 2 feet above the blocks. The submarine is then muscled into final position by the line handlers with manually operated come-alongs taking up the tension on the mooring lines. The divers reconfirm the align-

ment and then preset side blocks are mechanically moved in to cradle the submarine as the dock basin is pumped dry.

"On docking days, everyone really works hard," said Boatswain's Mate Third Class Melanie Hawe, one of 19 women assigned to *San Onofre's* crew of 110. "It's a long day."

An average docking takes from 12 to 14 hours.

"A floating dry dock has an advantage over a stationary dry dock in that we can match the submarine's trim as we come up to meet the submarine rather than having the submarine settle on the blocks," Baker said. "By controlling our list and trim, we come straight up, putting less stress on the submarine's hull."

After the dock basin is emptied, Baker and his executive officer, Lieutenant

Above left: Using a power capstan and muscle power, line-handling teams guide the submarine over the keel blocks. Top: USS San Onofre (ARD 30) commanding officer, Lt. Cmdr. R.D. Baker Jr., keeps a watchful eye on the docking evolution. Above: A crew member checks the alignment of the submarine as it is hauled into the dock basin.

Steve Griesell, make a visual safety inspection of the keel and side blocks before any overhaul work is begun.

Once an overhaul is begun, *San Onofre's* crew spends many hours hydroblasting and painting the submarine's hull area along with providing other support services for the submarine. □

Tom Harper's Winning Philosophy



Three years ago, when my doctors told me I had a malignant tumor and a spreading disease and might not live much longer, I suffered a blow that knocked me down; but I didn't stay down, and that's what's important . . . to bounce back. I lost all my hair, lost over 50 pounds, had a severe complexion problem, and even had trouble walking up three flights of stairs.

Tom Harper was a midshipman at the U.S. Naval Academy, Annapolis, Md., when he made that speech to an American Cancer Society convention in 1976. He had bounced back from cancer. His hair had grown back, he put on weight, his complexion had cleared and he even was able to run around a track. But that was only part of his story.

He had survived a testicular cancer so advanced that in 1973, doctors gave him less than an 8 percent chance to live more than three to six months.

But the cure left its scars. Harper was left with only half his normal breathing capacity. After graduating from the Naval Academy he was limited to shore duty as a supply corps officer. He served at the Naval Supply Systems Command in Washington, D.C.; at Naval Air Station Dallas; and as commissary officer at NAS Oceana, Virginia Beach, Va. In spring 1984, he left active duty service to pursue new opportunities. Now a professional speaker, Harper is nationally involved with the American Cancer Society. With his brother Randy, he wrote about his fight with cancer in "I Choose to Fight." He still maintains an active interest in the Navy, currently working on projects with the Naval Sea Systems Command, and plans to stay in the Naval Reserve.

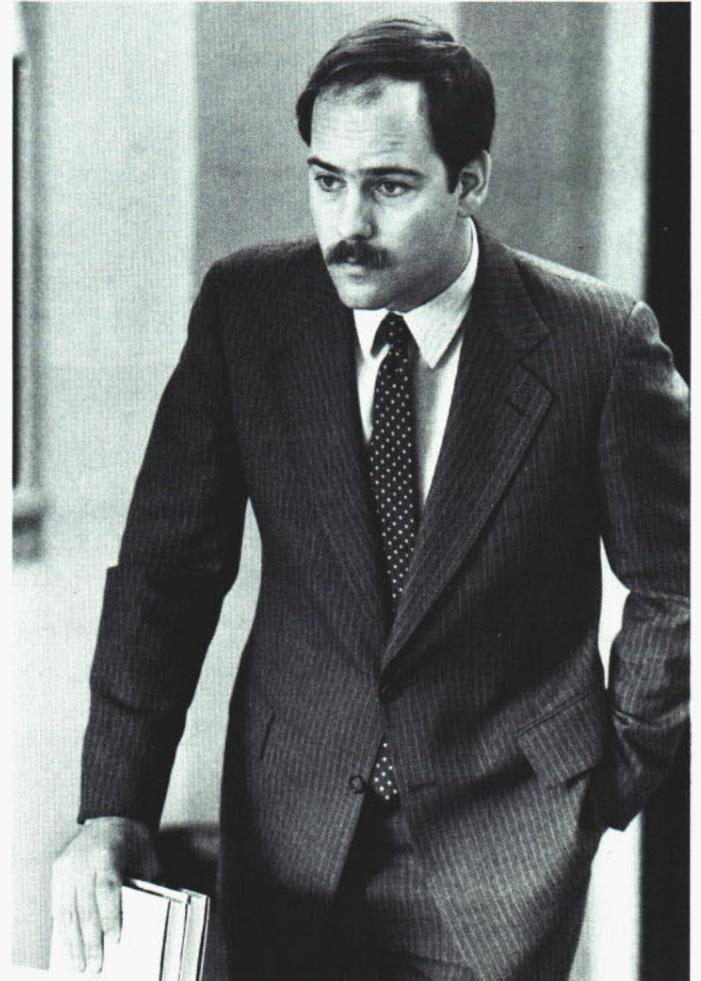
In 1983, Harper's last year at NAS Oceana, the commissary he headed won the first Richard M. Paget award—the "commissary E"—for best large Navy commissary. The Chief of Naval Operations awarded Harper the Navy Commendation Medal for his role in winning the Paget award.

Harper bears no obvious mark of cancer and does not look like a man who had a close brush with death. Though his voice is soft and pleasant, he speaks clearly. He seems endlessly energetic. His eyes are bright, he is alert and friendly and has a contagious exuberance for life.

The cancer had a deep effect on Harper's philosophy. It taught him how to survive. He said the tools he used—such as setting

goals and maintaining what he calls "positive emotion"—can be used by anyone, anywhere, anytime. Harper still uses these tools although he's no longer fighting cancer.

*I made a commitment to survive, to be involved, to play football again, and to be a commissioned Naval Academy graduate.**



*From the book "I Choose to Fight," by Randy Harper and Tom Harper (Englewood Cliffs, N.J.: Prentice-Hall Inc., 1984).

Left: Leading Bill the Goat onto the field was about as close as Midshipman Harper came to playing football again. Below: Today Harper's a professional speaker, telling his story to audiences throughout the country. Right: Harper and his 14-month-old son Adam. Photos by PH2 Perry Thorsvik.

Harper set these goals in 1973 when he learned cancer was expected to kill him. Just a few months before, he had been a 225-pound, 6-foot 3-inch tight end and one of the first freshmen to make the academy's varsity football team. That was before he noticed a lump growing inside his left testicle. In a month, the lump was larger than his fist. He was admitted to Bethesda Naval Hospital Sept. 28, 1973, to have the lump and his left testicle removed. The lump was malignant. What was supposed to be a short hospital stay turned into a long nightmare. The cancer had spread throughout his body.

At first he thought only about getting back to the football team and his academy class. He didn't hear what the doctors were saying. Later, he said he didn't think about the implications of having cancer until his ordeal was over.

The first two months in the hospital passed slowly. Each day he expected to leave soon, but the doctors always found other tests or treatments. Then, one morning, he saw a note on his chart; the note's meaning took a little while to settle in.

He had 30 days left to live.

He recovered from that blow and vowed to prove the prognosis wrong. He set his goals and began planning how to achieve them.

"I'm a goal-oriented person," Harper said. "If I don't have a goal, I get lost. I can't understand how anybody cannot have a goal—you have to have a purpose."

Harper's parents helped him choose his goals. He had been raised to fight for life.

*We learned that life (is) valuable—too short to be wasted and too precious to be taken for granted . . . I didn't realize then that the outlook on life (that my parents) passed on to me would have just as great an effect on cancer as any drug or radiation treatment.**

"If you respect life and do what you're supposed to do, it's very rewarding," Harper said. "But if you take life for granted, it will embarrass you.

"To let life leak out, to let it wear away by the mere passage of time, to withhold giving it and spreading it, is to choose nothing."

Harper clung to life and maintained the quality of his life through two brutal years of chemotherapy and a year of experimental radiation treatments. The chemotherapy made him violently ill; the radiation damaged his lungs. At times it seemed the cure would kill him if cancer didn't get him first.

Harper's excellent physical condition helped him endure the first few chemotherapy injections. He discovered if he worked out first he could tolerate the effects of the injections more easily. Working out was extremely difficult—at times it took a supreme effort just to move. He said the pain of exercise was a "good



hurt." Besides, he had to work out if he was to play football again. The desire to play football again and graduate from the academy gave him the power to continue.

*Everyone is required to get the most out of his or her life, to contribute something of quality and not to be judged merely by how long they live it. There were other things to do, and cancer was not going to deny me the chance to accomplish them.**

Through his ordeal, Harper found something he calls "positive emotion."

"I define positive emotion as the feeling that you are confident and effective in a variety of life's situations and it can quickly set you apart as a winner," he said. "Belief in the power of life and the power of love can give you that positive emotion. Belief

in the power of life and love will give you the hope and the energy to fight.

“Being a winner also gives you self-confidence.

“You can’t help but have self-confidence when you’re successful,” he explained. “The people who are successful are the people who believe they deserve to be successful. If you don’t believe you’re going to win, you’re not going to win.”

But there’s more to it—winning takes teamwork.

*I knew I had too much to lose to give in. My family, the academy, Bethesda people, the football team, everybody—they were behind me, and I would do the things I didn’t like to do in order to get back to the academy, play football and graduate. There was no other way.**

Harper attributes much of his victory over cancer to the people who supported him.

“There is almost no problem affecting our way of life that we cannot solve by being adaptable and by working together.”

he said. “Together people live and people thrive. Take togetherness away and you are left with yourself and you will crumble.”

Harper had a considerable support network of people behind him when he had cancer. He credits the “team” with victory over the disease.

“I didn’t ask ‘Why me?’ when I found out I had cancer,” he said. “But later I asked, ‘Why was I so fortunate to have all those people around me?’ ”

Those people helped Harper accomplish his most important goal: life itself. With that gained he could concentrate on playing football again and then on graduating from the academy and earning his commission. For anyone, achieving a goal is something to feel proud of. Harper is no exception.

*The sense of accomplishment was immense, and I knew I was starting a new chapter in my life, ably prepared by past experiences and a keenly developed sense of purpose. I was not a victim (of cancer). I did what I set out to do. . . .** □

Cancer Survival Rate Is Improving

Most people associate cancer with death, but cancer is no longer a death threat.

Tom Harper’s chance of surviving testicular cancer in 1973 was less than 10 percent. Today, with the same cancer in the same advanced state, he would have a better than 80 percent chance of surviving.

In the 1970s, Harper was treated with five drugs over two years, combined with radiation treatments. Today, people with the same cancer receive one or two drugs for six months.

A person’s average chance of surviving cancer is 48 percent, according to the American Cancer Society. Your chance of getting cancer is almost 30 percent. Almost one person in every three you know can expect to get cancer, possibly including yourself.

Fortunately, you can do something to lessen your chances of getting cancer. Studies show some foods may give you a greater chance of developing cancer. People who eat high-fat diets or are obese seem to be more prone to cancer. At the same time, other studies suggest that some vitamins and dietary fiber found in fresh fruit and vegetables, beans and peas, and whole grain breads and cereals may help protect you from some forms of cancer.

Occupational environments sometimes contain cancer-causing agents. Be sure to follow all safety precautions—many, such as wearing air filters, protect you from potentially harmful cancer agents.

If you smoke, you have a 10 times greater chance of getting cancer. According to the American Cancer Society, lung cancer is among the most deadly of all cancers and only 10 to 12 percent survive beyond five years. Smoking causes 30 percent of all cancers and, in addition to lung cancer, has been linked to cancers of the larynx, esophagus, pancreas, bladder, kidney and

mouth. All tobacco products—including cigarettes, cigars, pipes, snuff and chewing tobacco—can cause cancer.

Smoking marijuana also can cause cancer.

Fortunately, smokers and other users of tobacco can do something to drastically reduce their chances of developing cancer—they can quit. Their risk of getting cancer decreases as soon as they quit.

The American Cancer Society expects that about 870,000 people will be diagnosed as having cancer this year. About 450,000 people will die of the disease this year, but earlier diagnosis and prompt treatment might have saved 148,000 of them.

How do you know if you have cancer? Most breast cancers are discovered by the women themselves. Harper promotes testicular self-examination. Testicular tumors are common in males aged 17-28.

Other cancers are more difficult to detect. Harper points to seven warning signals of cancer. He remembers them by using “caution” as a key word.

C—change in bowel or bladder habit.

A—a sore that doesn’t heal.

U—unusual or unnecessary bleeding.

T—thickness or a lump, *anywhere on the body*.

I—indigestion or difficulty swallowing.

O—obvious change in a wart or mole.

N—nagging cough. This is sometimes the only early signal of lung cancer.

The American Cancer Society sometimes lists an eighth warning signal: A fear of cancer that can prevent you from detecting cancer at an early stage, when it’s highly curable. The Society says, “Everyone’s afraid of cancer, but don’t let it scare you to death.”

Serving The Battle Force With Pride

By Lt. Cmdr. James M. Kudla, Battle Force Sixth Fleet

Since its commissioning in January 1983, USS *Ticonderoga* (CG 47) has been on the move. Completing the competitive cycle in half the normal 18 months, the ship won eight out of nine possible battle efficiency awards.

Ticonderoga finished refresher training two days ahead of schedule at Guantanamo Bay, Cuba, while getting outstanding grades. Its performance in READEX '83, on the Mobile Sea Range and in other tests and evaluations met or exceeded expectations. Why?

Captain Roland G. Guilbault, *Ticonderoga*'s commanding officer thinks he knows. "Success doesn't occur by chance," he said. "First, high quality was built into the ship. Second, we added in-depth crew training. Next, the ship and systems have been exhaustively tested. Finally, we have been committed to combat readiness excellence and to come out winners should we ever have to fight." According to Capt. Guilbault, *Ticonderoga* is the first U.S. Navy ship to have fired all its weapons successfully before delivery.

The *Aegis* systems, heart of the cruiser's combat capability and state-of-the-art in design, had been exhaustively tested ashore in Moorestown, N.J., and at sea.

According to Lieutenant Commander James L. McClane, the ship's combat systems officer, "The SPY-1A radar is a mature system. It has logged about 100,000 hours of operations." Most of the hours were logged before the radar was even installed aboard the ship.

When *Ticonderoga* deployed in October 1983, just nine months after commissioning, it was perhaps more ready than any other new ship to join the fleet. But

with only six days of carrier battle group operations experience, it still needed to show how well it could perform its primary mission—air defense and anti-air warfare—as well as exploit multiwarfare capability in a real-world threat environment.

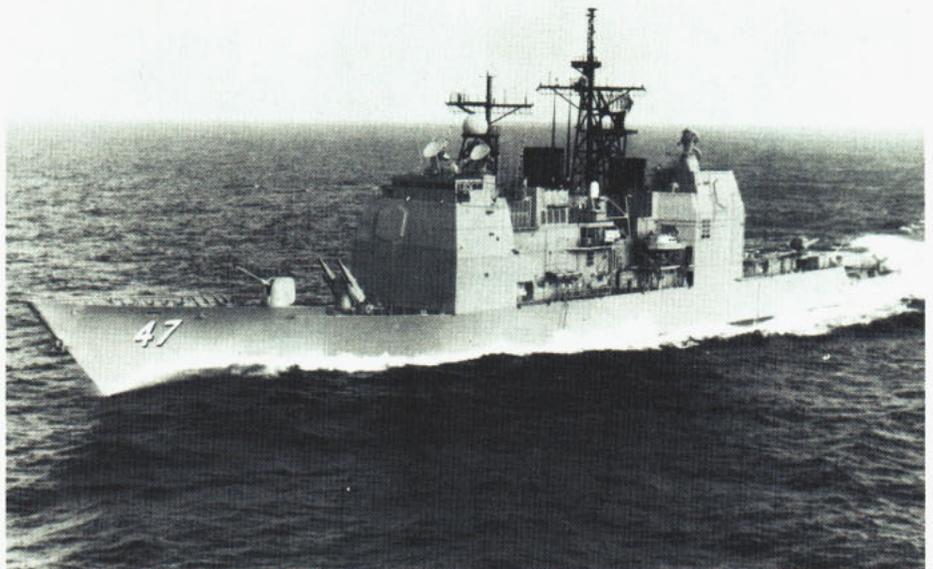
But *Ticonderoga* is more than hardware. Captain Guilbault remembers some of his initial objectives in building a cohesive team. "There would be no difference between nucleus crew and balance crew. Each man would have a name tag upon reporting and would be called a "Ticonderoga-man." The ship would not be called a unit or command—but a ship. We would be a family. Both sailors and their families. The attention paid to a sailor and his family—wife and children, or parents if single—really pays off for the ship and

the Navy."

Ticonderoga's executive officer, Commander Peter W. Bulkeley, recalls that standards to be met were set early and were high—and were kept that way. "The results speak for themselves," he said.

The command master chief, Master Chief Fire Control Technician, William Ivers, who spent half his Navy career bringing *Aegis* to the fleet, summed up the results of his shipmates' efforts this way: "We've proved we're professionals. This crew is something special. We have pride in performance, in each other and in our ship."

Ticonderoga is the first of its class. The ship and crew claim they have been second to none in their first year. Together they stand by their motto: "First and Formidable." □





Ticonderoga-class Cruisers

Capable Warships

On May 10, 1775, Ethan Allen and Benedict Arnold led the Green Mountain Boys (Vermont soldiers) in a surprise attack on Fort Ticonderoga. The facility was captured without loss of life. It was good news for the colonial leaders.

The new *Ticonderoga*-class cruisers, with their *Aegis* combat system, represent the most survivable surface combatants built by the U.S. Navy in more than 30 years. They reflect the spirit of Ethan Allen's boys—victory with no loss of life.

The Navy has projections for acquiring 27 of the cruisers; appropriations and authorization have been given for the construction of 13. In addition to USS *Ticonderoga* (CG 47) already in service, two others already designated are *Yorktown* (CG 48) and *Vincennes* (CG 49).

The *Aegis* weapons system is the key to the cruisers' success. *Ticonderoga*—having joined the fleet in January 1983 and shortly thereafter deployed to the Mediterranean—and the other ships of the class will prove to be a valuable asset to any battle group.

At the heart of the *Aegis* is the AN/SPY-1A multifunction, phased-array radar, which lends a "Star Wars" atmosphere to the ship. The computer-controlled radar can quickly detect and identify targets and program an appropriate defensive response. For an airborne target, the *Standard Missile II* would be readied.

Once launched, the missile continues to receive guidance commands from the system until it nears its target. The *Standard Missile II* is the primary missile used by the system. Although its initial flight pattern is pre-programmed, it can make mid-course corrections. This provides greater accuracy than the previous model.

In addition to the *Aegis* system, each ship of the *Ticonderoga* class will have a full complement of weapons and sensors. Among them are two Mark 26 Mod 1 guided missile launching systems, two 5-inch/54-caliber guns, two ASW triple-barrel torpedo mounts, two *Phalanx* close-in

weapons systems, two *Harpoon* cruise missile launching systems, and super rapid blooming off-board chaff launchers. *Ticonderoga*-class cruisers also will employ the Light Airborne Multi-Purpose System and the ASROC system.

From a structural standpoint, these cruisers are built on a *Spruance* hull design. They are more heavily armed, with a larger displacement and more versatility for refitting than ships currently classified as cruisers. Extra aluminum armor and steel plating, plus a passive fire protection material coating, add to the survivability of *Ticonderoga*.

Powered by four General Electric gas turbines, the ship can exceed 30 knots. The twin controllable, reversible pitch propellers and twin rudders also give the *Ticonderoga* a high degree of maneuverability.

With improved construction and automation, the manning levels are reduced, improving habitability. Berthing and messing spaces for the 33 officers and 327 enlisted are near the ship's center line, minimizing discomfort during heavy seas.

With increased space and limited maintenance and upkeep requirements, manpower efficiency levels should be high, resulting in an improved quality of life aboard the cruisers.

With this combination of state-of-the-



art electronics and design, a single ship is capable of high efficiency performance. With a proven hull design and a smaller crew than on any ship of comparable size and abilities, the *Ticonderoga*-class cruisers are the surface combatants of the 1980s and beyond. They truly represent the spirit of Ethan Allen's men—victory with no loss of life. □

—By Lt. Cmdr. Christopher J. Taylor
NR NIRA Det. 206, Washington, D.C.

The *Aegis* weapons system (below) on *Ticonderoga*-class cruisers like USS *Yorktown* (CG 48) (left) provides primary protection for the U.S. Navy's battle forces. *Yorktown* was christened April 16, 1983, by Mary Mathews of Yorktown, Va., (above with U.S. Senator John W. Warner) in honor of her late husband, Nick Mathews.



Mail Buoy

Staying With The Program

In the March '84 issue ("My Dad's In The Navy"), you showed the viewpoints of the dependents. Applause, applause and three cheers! The military sometimes forgets about its dependents. We hear about all the other areas but how do "military brats," as we are referred to, handle the situations of life when we are released from the dependency of our service parent?

I was a dependent of an Air Force T/SGT who retired in 1978 after 20 years of service. At 16, I started to make plans for the big break. The biggest question was whether I could make it in the outside world. I had never lived more than a couple miles from the nearest base.

Military privileges are pretty much taken for granted—medical, housing, commissaries, day-care centers, exchanges, etc. When teenagers go out on their own, they realize that it takes a lot of money to function out there. For many, it's a first reaction to go into the military as I did when I followed my brothers' footsteps—OS2 Richard Endert (USS *Kidd* (DDG 993)) and Duane Eagan (formally of USS *Enterprise* (CVN 65)) and joined the Navy, much to the approval of my Air Force dad. I haven't regretted it yet.

The change from dependent to active duty was minimal because I almost knew what to expect. The realization that I have made it through boot camp, weeks of "A" school in San Diego and to my first base in New Orleans astounds me. I'm trying for BOOST next year and starting to unfold the mystery of my rate. I'm starting to study for third class. But nothing makes me happier than when I see my parents' faces light up when I wear my Navy uniform home.—RMSN Kelly "Kai" Eagan, New Orleans, La.

• *We try not to forget any of the many elements that help to make our Navy great. Thanks for appreciating our efforts.*—ED.

An Aircrewman's Pride

Being an anti-submarine warfare naval aircrewman is exciting and challenging. Many naval airborne ASW platforms have AWs; however, none have such a diversified job as an SH-3H helicopter aircrewman. Our primary job is flying from carriers on missions that

include anti-submarine warfare, search and rescue, plane guard and logistics. Added responsibilities from collateral duties when not airborne increase the workload but also increase job satisfaction because they are directly related to our mission.

The most challenging aspect is the training inherent within the job. In ASW, new equipment and tactics require constant review and training so that crew members stay current and proficient. Each squadron is tested annually on its air crews' ASW knowledge. While deployed, this training is put to practical use in actual missions.

Search and rescue is a secondary mission, but it gets the most attention outside the squadron. In SAR, aircrewmembers must keep themselves in top physical condition, and on every flight the entire crew must be ready to conduct a rescue regardless of the mission. Again, each aircrewman must meet annual qualifications, but the ultimate test comes during an actual rescue where failure could mean the loss of a life.

Annual testing and meeting qualifications are not our only goals. All air crew members strive to become a First Crewman which takes 12 to 18 months of on-the-job training. A crewman enters the squadron as an air crew candidate (7801) and SAR swimmer (8215). He is under the constant supervision of a qualified First Crewman until he achieves first crew status. Then responsibilities and workload increase. The pilot depends on his First Crewman who, in some circumstances, actually flies the aircraft by using the hover trim "joy stick" located near the cargo door. Hover trim is used during night rescue missions, and the crewmen "take control" of the aircraft once the pilot brings the helicopter to a hover. The First Crewman has control of the helicopter's flight controls during the entire rescue evolution.

Despite the high workload, the job is extremely rewarding. We are some of the few enlisted personnel given responsibilities normally reserved for officers. As ASW crew members we locate the submarine and provide the attack solution. As SAR crewmen, we risk our lives going into the water to rescue a survivor. On logistic runs in the battle group we deliver the mail to homesick sailors. It's a diversified job, always interesting and very rewarding.

In six years of active duty as an H-3 aircrewman, I've compiled the following record: one open ocean rescue, 35 helicopter inflight

refuelings, 1,000 hoisting evolutions for passengers and mail transfers, 15 torpedo drops, 400 hours of submarine contact time, 150 simulated attacks, and over 1,400 hours of flight time. I'm proud of my record, but those statistics are the norm and not the exception. For job satisfaction, very few other jobs, either military or civilian, ever come close—AW2 M.W. Pilgrim, HS-2

• *AW2 Pilgrim's letter says it all.*—ED.

Reunions

• **U.S. Naval 2nd Beach Battalion**—Reunion being planned. Contact Walter Bryant, 7620 E. 50th St., Indianapolis, Ind. 46226; telephone (317) 547-2319.

• **USS Philadelphia (CL 41)**—21st annual reunion being planned; Cedar Rapids, Iowa. Contact F.J. Amoroson, 93 Dunbar St., Somerset, N.J. 08873.

• **USS LST 335**—Reunion being planned. Contact LeRoy A. Swan, 1025 S. 4th St., Aurora, Ill. 60505; telephone (312) 892-5785.

• **MATS VRs (VR 3, 6, 7, 8, 22)**—Reunion Nov. 1-3, 1984, San Jose, Calif. Contact Monte "Red" Umphress, 1348 Hanchett Ave., San Jose, Calif. 95126; telephone (408) 295-0218.

• **USS Semmes (DD 189/AG 24)**—Reunion Nov. 2-4, 1984, New London, Conn. Contact Don Miller, 517 Accabonac Highway, East Hampton, N.Y. 11937.

• **USS Hovey (DMS 11) Ex (DD 208)**—Reunion, Nov. 2-4, 1984, San Diego. Contact "Dusty" Hortman, 2827 Monarch St., San Diego, Calif. 92123; telephone (619) 278-0965.

• **Munich American High School**—30th reunion being planned for the class of '54 and others who attended 1952-1955. Contact Roberts J. Mumma, 8273 Highland St., Manassas, Va. 22110.

This Navy recruiting ad appeared in the Jan. 10, 1909, issue of the Boston Sunday Post. The newspaper page on which it appeared was found recently in an old trunk owned by Mariana Graham of the Public Affairs Office, Naval Training Center, San Diego. Recruiting in those days reflected the tone of the times. The appeal was to the serious-minded young man. →

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Your Best Interest

YOU must satisfy yourself and the Recruiting Officer that it is to your best interest to enlist in the Navy. Recruiting Officers decline to enlist young men if, in their judgment, the applicants are likely to become dissatisfied for any sufficient reason during their terms of enlistment.

The Navy, in other words, wants young men of good character who will *appreciate* the opportunities in the service. The recruit who gets ahead, shows ambition and saves money is a credit to the Service and is worth the cost of training, and schooling, even though he decides, after four years, to return to civil life. Some of the World's best records in gunnery are held by young men from 19 to 23 years old. Many young men serving their first term as seamen, artificers, engineers, or electricians, have become more proficient and have saved more money than if they had remained outside the Navy.

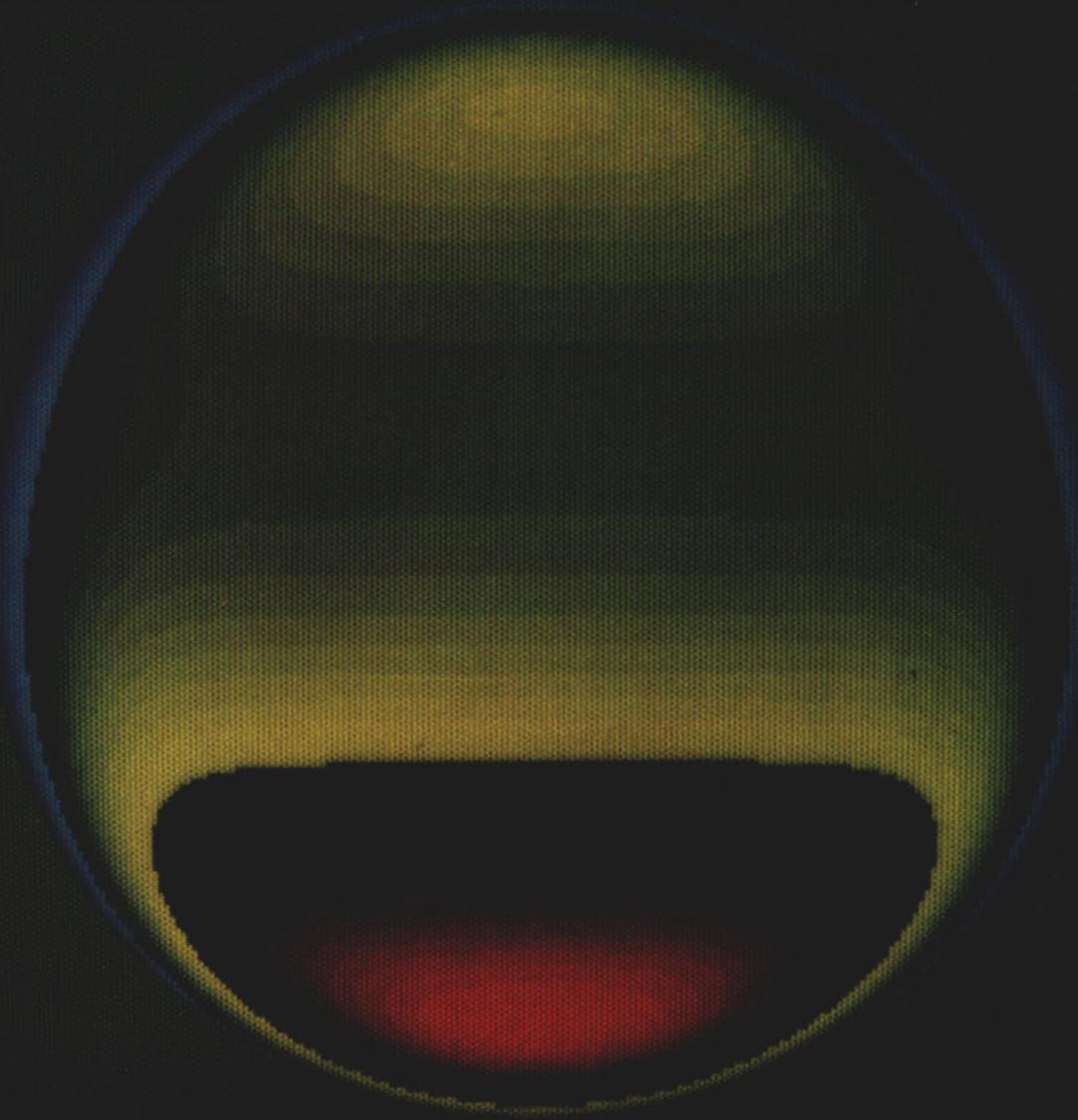
The Department does not wish to urge any young man to join the Service, but for your own good and that of the Navy, it strongly urges you to thoroughly investigate the question. The majority of those who investigate enlist, and the majority of those who enlist are well satisfied.

It is hard to find in the Navy a young man who feels he has made a sacrifice by enlisting. A great many voluntary letters are received by Recruiting Officers from bluejackets referring in the highest terms to the interest they find in their work; and their progress confirms their words. These letters are occasionally printed in booklet form and copies may be had by applying. Consult the nearest Recruiting Officer, if you are between 17 and 35 years old, regarding pay, requirements, duties, opportunities for promotion, etc. Or write to the

BUREAU OF NAVIGATION,

NAVY DEPARTMENT,

Box 42, WASHINGTON, D. C.



Today's Link With Tomorrow's Navy • See page 18