ALL HANDS

THE BUREAU OF NAVAL PERSONNEL CAREER PUBLICATION

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APRIL 1968

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• **FRONT COVER:** FLAG BAG MESSAGE—Flag hoist is a familiar method of visual signaling, usually for tactical orders. In case you might be rusty on reading flags, the message flown from the halyard reads: USN, USA.—Drawing by ALL HANDS staff artist Robert H. Swain, SN, USN.

• **AT LEFT:** SHORT BREAK—Members of a U. S. SEAL team pause in a small palm grove during operations in the Vin Binh Province of Vietnam. SEALS (Sea, Air and Land) are counter-guerrilla experts highly trained in unconventional warfare and paramilitary operations.—Photo by Dan Dodd, PH1, USN.

• **CREDIT:** All photographs published in ALL HANDS Magazine are official Department of Defense photos unless otherwise designated.

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HE HAD ONLY TIME TO SAY "DUCK!"

Courage Spoke Louder Than Words

IT WAS A DAY of courage, of heroic deed and death.

That's how 6 Mar 1967 will be remembered by the surviving crew of Patrol Boat, River (PBR) 124 and by the bereaved parents of Seaman David G. Ouellet, USN, the Navy's second Medal of Honor recipient of the Vietnam conflict.

The events which led to his death in the Mekong Delta began early in the evening on 6 March, just a little over a year ago.

PBR 124, with 22-year-old Ouellet of Wellesley, Mass., as its forward twin-50 cal. machine gunner, had penetrated into the Cua Dai tributary of the Mekong River in search of Viet Cong infiltrators. The location was about 18 miles from the boat's home base, My Tho.

Seaman David G. Ouellet, USN

ACCORDING TO THE REPORTS received from Commander K. H. Ruecker, then Commander River Squadron Five, darkness was beginning to set in over the quiet countryside when Seaman Ouellet noticed suspicious activity in a rice field near the river bank. He recommended to his boat captain SM2 James W. Van Zandt that they close the area and investigate.

At about 24 knots, the boat passed the area at a distance of 40 to 50 yards when a fragmentation grenade was launched from the shore. None of the surviving crew members saw either the activity or the launched grenade. However, it appears that Ouellet saw both.

He pulled himself out of the protecting gun mount and ran aft down the narrow gunwale of the speeding boat shouting as he did so: "Duck!"

As he bounded from the gunwale onto the engine compartment cover, with his left hand he pushed the boat captain, Van Zandt, from between the two vertical waist-high armor plates forward to safety.

In the split second that followed the grenade landing in the after cockpit of the boat, Ouellet threw himself between it and the rest of the crew, absorbing most of the blast with his own body.

PBRs move cautiously while searching for enemy on canal bank.

ALMOST ALL OF THE BLAST fragments that would have gone forward were absorbed or deflected by Ouellet's flak jacket and body. Most of the shrapnel holes later spotted had gone through the stern and down into the hull of the boat. Only three small fragments went forward. One caused a slight scratch on the back of Van Zandt's hand. Another caused a slight scratch on the scalp of RM2 Joseph H. Camp. However, Ouellet's head came to rest in a five-inch hole caused by the explosion.

"I am firmly convinced," said CDR Ruecker, "that the action of Seaman Ouellet was not a mere reaction. From his position down in the forward gun mount, with only his head and shoulder exposed, he could have easily just lowered himself to complete safety. If he had done so, he would have escaped even probable injury.

"The actions of Seaman Ouellet during the flight of the grenade were apparent conscientious efforts to save his shipmates. He realized the danger and placed that secondary to his determination that his boat and his shipmates would not be harmed by the grenade. This is in keeping with his previous conduct during the numerous times he was under enemy fire."

"HE YELLED FOR US to duck," recalls Van Zandt, who told how Ouellet pushed him down and continued running aft without stopping. At his warning, the rest of the crew hit the deck and took cover.

Crewmember James D. Colville, GM3, USN, who had been forward with Ouellet before the young seaman burst aft, recalls that after the explosion Ouellet was "lying in the port corner of the stern of the boat. I ran back by the starboard gunwale and crossed over to him. Van Zandt reached him about the same time."

Ouellet was badly wounded in the body and forehead. Two of the five-man crew immediately began administering first aid while Van Zandt radioed for a Medivac helicopter and headed PBR 124 for the nearest friendly outpost. From there, Ouellet was evacuated to a hospital in Saigon where, despite all efforts, he died two and one-half hours after risking his life for his shipmates.

SUCH AN ACT is deserving of his nation's highest honor for gallantry —The Medal of Honor. And such recognition was given Seaman Ouellet on 30 January when his parents, Mr. and Mrs. Chester J. Ouellet, Sr., received the medal and citation from Secretary of the Navy Paul R. Ignatius in a Pentagon ceremony.

Ouellet, born in Newton, Mass., on 13 Jun 1944, was one of nine children. He entered the Navy in July 1964 after attending school in Wellesley. Following basic training at Great Lakes, he reported to Assault Craft Division 12 which deployed for five months to Vietnam in 1965. In June 1966, he underwent river patrol boat training at Vallejo, Calif., after which he returned to Vietnam in September to join Detachment 532 of River Squadron Five in My Tho.

Seaman Ouellet was the 25th serviceman to receive the Medal of Honor for gallantry in Vietnam, and the 731st Navyman so recognized by this nation since the War Between the States.

—Marc Whetstone, JOC, USN

Abave Right: A Navy river patrol boat similar to the one Seamdn Ouellet served on, speeds down a river in South Vietnam. *Lower Right:* A river patrol boat leaves a Vietnamese junk after inspection. *Below:* Mrs. Chester Ouellet accepts the Medal of Honor for her son from Secretary of the Navy Paul R. Ignatius as Seaman Ouellet's father looks on.

ADVISING ADVISOR—Edmund Canby, GMC, uses assault group radio to direct air and artillery strikes, call for medical aid and maintain contact with other groups. *Rt:* Vietnamese assault boat patrols Mekong Delta.

RAG-TIME SAILOR— Legend of the Delta

HOLDING onto the handrail, the chief made his way along the side of the command boat. At 0200 it was dark, and every step had to be taken carefully. One careless move, and he could have fallen into the swollen Mang Thit River.

With the Vietnamese River Assault Group (RAG) command boat moving swiftly downstream, Chief Gunner's Mate Edmund B. Canby, USN, was making his way to the craft's forward 20-mm gun mount to assist the gunner in repairing his weapon.

Chief Canby, the enlisted advisor to the Vietnamese Navy's RAG 31 based at Vinh Long in South Vietnam's Mekong Delta, had worked on all types of guns during his 24 years in the Navy and could fix the weapon, even in the dark.

During one period which was supposed to be a 24-hour truce in the fighting on Buddha's birthday, the RAG patrol had been attacked by the enemy from both sides of the river. The 65-foot command boat had taken hits by a B-40 rocket, recoilless rifle fire and automatic weapons before it could get out of the ambush area. One of the incoming rounds had damaged the 20-mm gun.

Assessing the damage, Chief Canby and the crew made the necessary repairs before returning to the ambush site to give the enemy a taste of his own medicine.

After silencing the enemy guns, the RAG continued patrolling the area until daybreak.

THIS WAS TYPICAL of the kind of duty experienced by Canby, and typical of many such actions in which U. S. Navy advisors are directly involved in the conflict in Vietnam.

15 May 1964, Military Assistance Advisory Group (MAAG) Vietnam was redesignated as Military Assistance Command, Vietnam (MACV). The Navy's efforts at that time came under the command of the Naval Advisory Group (NAG)—and this was when Chief Canby first reported for duty in Vietnam.

RAG-TIME HERO

While serving in Southeast Asia, Chief Canby has been decorated by the Vietnamese Government with the Cross of Gallantry, bearing the Bronze Star. From the United States, he has earned three Bronze Star Medals and the Air Medal as well as numerous campaign ribbons.

Assigned as an advisor to Vietnamese Coastal Group (junk force) 37 at Thiem Thom in lower Kien Hoa Province, Canby remained there for over a year. In September 1965, he was reassigned to Coastal Group 36 at Long Phu in Ba Xuyen Province.

It was while he was serving with the junk forces that reports of the chief's heroic exploits first began circulating around the Delta. On 9 Nov 1964, while he was still serving with the Thiem Thom junk base units, an event occurred which formed the basis of the legend.

That afternoon, the junk in which Canby was riding as an advisor gave chase to five Viet Cong sampans, herding them toward shore. As his junk came within range of the shore, enemy machine guns and rifles opened up with a heavy barrage of fire.

Grabbing a 57-mm recoilless rifle, Canby immediately returned the enemy's fire. The Vietnamese crew manned the .30-caliber machine gun and 60-mm mortar.

As they neared shore, the machine gunner was wounded, and the mortar crew went to his assistance. Then, when Canby fired the last of his recoilless rifle ammunition, he jumped down to the mortar and began sending the enemy some high explosives. Singlehandedly, and without concern for his own safety, he directed the mortar fire which silenced the Viet Cong's .50-caliber machine gun positions.

When the mortar crew returned, Canby then manned the .30-caliber machine gun until the junk's crew had captured the five enemy craft and had destroyed several of the fortifications on the beach. The chief's heroic actions on that day earned him the U. S. Bronze Star Medal with Combat "V."

IN FEBRUARY 1966, Canby was called back to the U. S. to help set up a new curriculum for training river patrol boat crews. After three months of helping to organize the new training unit, he returned to Vietnam.

Arriving in the Mekong Delta in May 1966, Canby was assigned to the U. S. Navy's Operation Game Warden as a patrol officer with River Patrol Section 511 of River Division 51, which had become operational a month earlier.

On a routine patrol of the Bassac River about 15 miles southeast of Can Tho, the river patrol boats (PBRs) being directed by Chief Canby were attacked from the riverbank by Viet Cong with automatic weapons and rockets. Unable to suppress the heavy fusillade of enemy fire, the chief radioed for helicopter gunship air support.

With the arrival of the helicopters, Canby moved his boat into an area near the enemy positions where he could direct the air strikes. With bullets flying around him from the enemy's machine guns, he maintained his forward position until the last Viet Cong attacker had been put down.

While he liked his job of patrolling the rivers of the Mekong Delta, the chief yearned for his former role as an advisor to the Vietnamese Navy. Thus, at his request, he was reassigned to the Vietnamese River Assault Group (RAG) 31 at Vinh Long on 20 May 1967.

Upon his transfer from the River Division, Chief Canby's immediate superior, Lieutenant N. B. Howell, Officer in Charge of River Section 511, made the following comments:

"Chief Canby's initiative, courage and devotion to duty while engaged in action against Viet Cong insurgents are incomparable. His performances while under fire from the enemy have shown him to be an excellent leader of the highest caliber. And, his ability to direct and coordinate supporting elements during hostile engagements has contributed greatly to the success of the River Section's operations."

VIETNAMESE crewman discusses working on 81-mm mortar with Chief Canby. The chief gunner's mate works and lives with Vietnamese river assault group.

IN THREE YEARS Canby had become the legend that was to be told again in action that occurred only this past June. Lieutenant J. A. Daniel Smith, U. S. Navy Advisor to Vietnamese RAG 23, recalled the event.

LT Smith began: "On 25 June I had the opportunity to be on patrol with Chief Canby and the RAG he advises. We were embarked on a commandament boat, when at 0800 we received word that the 1st and 16th Vietnamese Army Battalions were under attack. They were located near the Mang Thit River, about halfway between the Co Chien and Bassac Rivers in the Mekong Delta.

"As we were already on the Mang Thit River, the RAG immediately proceeded to the site of the attack so we could give the Army units gunfire support, and, if needed, a troop-lift capability.

"Having gotten to within a few miles of the embattled area, our boats were suddenly attacked by the Viet Cong. They were hitting us with 57-mm recoilless rifle and B-40 rocket fire, as well as with automatic weapons and small arms.

"The ambush attack was so intense that we were unable to suppress the enemy's fire then, and had to fight our way out of it," LT Smith continued. "Had it not been for the quick action of Chief Canby in firing a grenade launcher at the enemy, all of us on that boat might have died.

"Chief Canby's immediate reaction in firing a high volume of accurate fire with the M-79 grenade launcher at the enemy's 57-mm and B-40 positions, dug in on the riverbank less than 150 feet away, was directly instrumental in silencing many of the enemy and prevented the possible destruction of the RAG.

"Despite the intense automatic

TRAINING crewman how to load a machine gun.—Photos by L. Robinson, PH1.

weapons fire being directed at him by the Viet Cong, the chief remained kneeling on the deck of the command boat and continued to return the enemy's fire. When he ran out of ammunition, he made his way to the pilothouse and assisted a Vietnamese gunner to repair a .30-caliber machine gun that had been damaged by enemy fire.

"Chief Canby then assisted the gunners of a 20-mm cannon and .50-caliber machine gun in repairing damage to their weapons. With this done, he made his way down to the engineer to assist in repairing an engine cooling line hit by rocket fire.

"Once we were clear of the ambush," LT Smith said, "the chief radioed for a helicopter to evacuate the wounded, then began giving first aid to them.

"Man, when the chips are down," concluded LT Smith, "there is no one I would rather have on my side than Chief Canby."

Chief Canby has just recently applied for another extension of duty in Vietnam. He likes his job as RAG advisor, and to explain why, he had this to say:

"As far as naval units are concerned, I think these RAGs are among the finest I've seen. Militarily, they have taken everything thrown at them by the VC, have stayed in there and slugged it out, and have won every battle.

"The RAGs," concluded Canby, "are living proof that naval units can work effectively with ground forces in waging battle against the enemy. I have nothing but the highest praise for the men of the Vinh Long RAGs."

The chief's new boss, Lieutenant Kenneth C. Jacobsen summed it up this way:

"Chief Canby is certainly a legend throughout the Delta for his many exploits. But what impresses me most about him, and what he's probably best known for, is the way the Vietnamese sailors admire and respect him.

"He works side by side with them," LT Jacobsen concluded, "and they know that when he gives them advice and training, it has been tested and used, and will work."

—E. T. Tompkins, JO1, USN

CHOPSTICK EXPERT—Vietnamese crewmen become advisors as Chief Canby learns chopstick techniques.

USS WINDSOR at work in Subic. *Rt:* Docking basin is lined with keel blocks which will support incoming ship.

ARD Leaves Them High & Dry

DRYDOCKING is the simple matter of getting a ship high and dry so that it may be repaired. The operation seems simple because a team of Navy professionals make it so.

One Navy team of professional drydockers is the crew of USS *Windsor* (ARD 22).

Windsor has been serving as part of the ship repair facility at Subic Bay for 13 years. In that time, she has docked more than 1000 vessels ranging in size from destroyers and submarines to small service craft.

Each of the dockings has been different even though some of the ships have been of the same class. Even ships of the same class have peculiarities in hull configuration and frame placement.

The docking procedure begins when a message is relayed to Ship Repair Facility, Subic Bay, by the ship requesting a docking period. The request is forwarded to the docking officer, who schedules the yard period and checks specifications for the ship to be docked.

A PATTERN of keel and frame support blocks is assembled on the chamber floor of the drydock to receive the ship for repairs. There is no margin for error in the arrangements of these support blocks, and the professionalism of men such as those of *Windsor* is evident in their placement. If one block misses a frame when the water is pumped out of the dock, the weight of the ship will punch a hole in the hull.

General quarters is sounded during the flooding process, and *Windsor* crewmembers man air and water valves, straighten tow lines and ready service connections for the incoming ship.

Windsor sinks gradually when the stern gate is lowered and all valves opened. She descends to a depth of 30 feet in about an hour. Tugs and push-control craft usher the ship to be docked toward the stern gate of the drydock. A weighted line marks the keel position over the submerged blocks as the ship eases into place. Marked chains set between the well walls serve as guides for the keel line indicators. A web of lines is strung between the well walls and the ship for stabilization and maneuvering.

A final check of keel alignment is made by a team of SCUBA divers before pulling the plug on the drydock. Pumpout is a time-consuming procedure. During this operation, keel position and support lines require constant watching.

Finally, the last drop of water is pumped from the now dry drydock, and *Windsor* contains a high and dry ship ready to be repaired.

—Story and Photos by
Tim Leigh, JOSN

EASY DOES IT—*USS Lucid* (MSO 458) is towed into submerged docking basin. *Center: Lucid* is maneuvered directly above keel blocks. *Right:* Guideline hangs from bow as crewmen aboard *Windsor* (ARD 22) center ship with lines.

KEEPING TABS—River Assault Group checks craft to make sure they are not carrying supplies to the Viet Cong.

PATROL BOATS Keep the Canal Open

IN THE Mekong Delta, an area of approximately 7000 square miles, hundreds of waterways lace the rice-rich land, providing avenues of transportation for thousands. It is over these water arteries that the Vietnamese farmer must transport his produce to the marketplace. Thus the importance of keeping them open and secure from Viet Cong harassment is obvious.

One important connecting canal is the Mang Thit-Nicolai, located in Vinh Long Province between the Bassac and Co Chien Rivers about 40 miles inland from the South China Sea. Made up of the Mang Thit River and the man-made Nicolai canal, this transportation artery once saved farmers and merchants two days when transporting goods from the city of Can Tho (on the Bassac) to Vinh Long (on the Co Chien).

Until last summer, the MT-N canal had been closed to civilian use. It was Viet Cong-controlled. And if you did use it, you paid through the nose.

The VC used extortion as a means of getting supplies, collecting "taxes" from users of the waterway. The canal was also a major supply route for Viet Cong forces.

Today, the canal is open once again to commercial traffic. And Vietnamese farmers no longer have to pay illegal fees to transport their goods to market.

Knowing the importance of the Mang Thit-Nicolai canal, the Vietnamese government began a campaign last February to wrest control of the area from the Viet Cong.

Designating the region adjacent to the canal as a "special zone," the

HEAD WORK—U. S. Navy advisor discusses operations with officer of River Assault Group. *Rt:* Canal inspection.

Vietnamese sent two Army battalions, five Popular Force (local village or hamlet military units) platoons, three Regional Force (provincial military units) companies and one company of Police Field Forces (a segment of the National Police) into the area, to organize the population, and to open and provide security for the canal.

Vietnamese River Assault Groups (RAGs) based at Vinh Long were used in the campaign to provide armed landing craft and gunboats for troop-lift, patrol and gunfire support for the ground operations.

DURING THE COURSE of the campaign, the combined Vietnamese ground and naval forces constructed 11 new outposts to help in controlling the 31-mile long waterway. They also built bridges, classrooms, roads, medical facilities and a marketplace in each of five former VC-controlled hamlets.

While returning 824 families to their villages from which they had been displaced by the VC, the Vietnamese armed forces secured the entire length of the canal as well as everything within a mile on both sides. Some 30,760 people live within these boundaries.

Regaining operational control of the canal from the VC was no easy task. Many long and hard battles were fought. Finally, the VC were driven out.

As the canal becomes more and more secure and safe for travel, the number of civilian craft using it continues to increase. Even before the canal was declared formally "open" there was a noticeable increase in its traffic. During one six-month period there were more than 940 60-to-100-ton craft using the canal, as well as thousands of smaller sampans and junks.

The Vinh Long-based River Assault Groups had the main responsibility of patrolling the canal on a 24-hour basis until it was formally opened. Each RAG would spend 10 days patrolling the waterway while the other was being used to support other Mekong Delta operations.

According to one U. S. officer who is an advisor to a River Assault Group, "The reopening of the Mang Thit-Nicolai canal is probably one of the most important operations ever conducted in the Mekong Delta."

—Tom Tompkins, JO1, USN

KEEPING THE BOATS FIT—Maintenance crews at Nha Be keep the river patrol boats of the Operation Game Warden units in operating condition

PBR Support Barges

River patrol boats plying Vietnam's inland waterways now have a support base especially designed to accommodate them.

Up to now the PBRs have been forced to return to Saigon for repairs and various other services, thereby shortening their operating time. A cluster of barges anchored in the middle of a well-patrolled river has changed all that.

Designed by the Naval Facilities Engineering Command, the PBR support facility is made up of four barges each of which provides a separate support function.

The unusual logistics base is designed to accommodate numerous PBRs and has facilities for repair; berthing and messing; and water, fuel, ammunition, and food storage.

The barges are each 110 feet long and 30 feet wide. The four units are:

- Administration Unit — The barge has a superstructure containing administration offices, ship's store, supply office, communications space, repair shop, armory, command center, CPO berthing, and sick bay. It has berthing for 23 men.
- Galley and Mess—Contains a dining space with galley and associated equipment, central air-conditioning plant, berthing for 21 transients, and power units. The hull contains fuel, water, and dry stores space.
- Berthing Unit—Provides living spaces for 116 people, and laundry facilities. The hull contains fuel and water storage.
- Repair Unit — Superstructure contains repair office and shop space. It has cleared space on about half the deck for small boat repair, and an overhead bridge trolley crane for lifting small boats from the water. The hull contains fuel, spare engines, pumps, and repair parts storage. Also in this hull is a desalinization plant to convert salt or brackish water to potable water.

"Big Gun" Title Claimed

USS *Mansfield* (DD 728) claims the title of "Top Destroyer Gun" for the most rounds fired in Vietnam. As of late December 1967, the Yokosuka-based destroyer had fired 24,685 rounds, and had passed the previous titleholder, her sister ship, USS *De Haven* (DD 727).

The men of *Mansfield* are confident of their possession of this title, but just to make certain that no other destroyer has been slighted, challenge all other ships who feel they deserve the title to step forward and be recognized.

Mansfield, attached to Destroyer Squadron Nine, is commanded by Commander Jack R. Griffin, USN.

LSTs: Mobile Bases on the Mekong

WHEN THE NAVY became involved in river combat in Vietnam, there was a need for mobile bases that could support river craft and helicopters.

The LSTs fit the description.

USS *Jennings County* (LST 846), *Hunterdon County* (LST 838), *Harnett County* (LST 821), and *Garrett County* (LST 786), were among those pulled out of mothballs and outfitted to support Operation Game Warden forces in the Mekong Delta.

While on station in the Delta, each LST carries a full river patrol section (usually 10 boats and 50 to 60 men) and two UH-1B copters and crews.

The embarked PBR section is dependent upon the LST for logistic and maintenance support. The boats' engines are overhauled or rebuilt, the radar sets are maintained and, in some cases, entire sections of hull are fashioned out of fiber glass by the skillful LSTmen.

Most of this maintenance is done with the PBRs in the ships' tank decks. This in itself causes problems. Getting the 31-foot, seven-ton boats out of the water and into the tank deck hatches takes skill and precision.

Although the helo crews perform their own maintenance, the LST crews fuel and arm the gunships and provide landing signalmen to direct the helo pilots.

LST duty in Vietnam means spending most of the time on a muddy, treacherous river. But this is the Navy's river combat, and the LSTmen are glad to be a part of it.

Photos Clockwise from Upper Left: (1) Patrol boats leave USS *Harnett County* for a day on the river. (2) USS *Jennings County* shells enemy positions on Bassac River. (3) Helicopters use LSTs as home roost between support missions. (4) PBR is hoisted aboard USS *Garrett County* for work by maintenancemen. (5) USS *Harnett County* is one of four LSTs outfitted for support of helicopters and patrol boats. (6) Landing signalman directs helo off USS *Hunterdon County* flight deck. (7) PBR is hoisted from tank deck ready for service after quick repair job.—Photos by Tom Walton, JO1, and Dan Dodd, PH1.

SHIP IN TROUBLE—*USS Hissem* (DER 400) tries to tow burning reefer from path of typhoon in waters near Guam.

Rescue at Sea: A Navy Routine

IT GOES WITHOUT saying that every naval ship's mission is primarily military. Nevertheless, each has the obligation, whenever possible, to lend a helping hand to vessels in distress at sea.

Stories of sailors rescued by U. S. Navymen from death or injury at sea are not unusual and, probably for this reason, many of these reports receive only local recognition.

Here is a roundup of the latest search and rescue stories to add to the collection.

USS Navarro (APA 215)

A distress signal was flashed to all ships by a British merchantman being pounded to death by typhoon-swept waves in the South China Sea.

Eighty-five miles from the stricken ship, uss *Navarro* received the signal and altered her course. Intermittently, *Navarro* received other communications from the British vessel and learned that 44 men were aboard the ship, which was on a reef and on the verge of disintegrating in crushed by the sea and reef.

After sighting the stranded ship, *Navarro* dropped anchor about three miles away and launched two 30-ton LCMs (landing craft, medium) to take the seamen off the hulk.

Swells on the lee side of the reef were over 15 feet high but conditions on the windward side were even worse where the swells reached 25 to 30 feet.

Wave after wave plunged over the British merchantman and one of *Navarro's* landing craft nearly capsized under the weight of a 30-footer which slammed into her, breaking open the landing ramp.

The LCM's crew battled the flooding sea and finally managed to close the ramp but not to secure it. Until the ramp would remain closed, it was futile to continue.

Meanwhile, the coxswain of the second craft, despite doubts concerning the final 600 yards which separated the LCM from the wreck, continued to push on. With the lives of 44 men at stake, there was little choice. The LCM approached the British ship from the lee side of the reef. She was able to take 22 men aboard before waves plunging over the craft forced it to cast off.

Although the transfer of 22 shipwrecked sailors from their vessel to the LCM was a victory, three miles of vicious water still separated the LCM from its mother ship. One of the men from the British ship didn't make it.

A large wave hit the LCM, sweeping two men over the side. One was rescued by a Navy swimmer with a line attached to him, but the other's life jacket was ripped off by the churning waves and he disappeared from sight before the rescue boat could reach him.

The survivors and the crew of the LCM were still in grave danger. To keep themselves afloat, the crew bailed water frantically during their return to *Navarro* and, despite serious flooding, the craft reached its mother ship.

While its sister LCM struggled toward *Navarro*, the first landing craft, which had secured its ramp with cable, block and tackle, reached the foundering merchantman and rescued the remaining men aboard.

Approaching the stricken ship was difficult, for waves kept spilling over the craft, threatening it with destruction against the reef. Nevertheless, a combination of considerable skill and a little luck enabled the LCM to reach home base.

Upon reaching *Navarro*, the survivors were given medical treatment and the five most seriously injured were put to bed in *Navarro's* sick bay. The remainder were transferred to a Dutch merchantman which had also received the distress signal.

When *Navarro* was safely away from the reef, her captain visited sick bay to check on the injured men. After their experience, the men were near exhaustion but one, despite his injuries, managed a smile and calmly said, "So nice of you chaps to drop by."

Ships Team Up for Race

For *Navarro*, the rescue of the British merchantman's crew was only the beginning. A short time later, a Navy tank landing ship, uss *Clarke County* (LST 601) broached in a pounding surf on the South Vietnamese coast near Duc Pho and heavy seas pounded her against some submerged wreckage.

SOS EQUALS SAR—After seven-hour search, crewmembers of cargo ship on reef are hoisted to safety and flown to carrier for safe passage to Subic Bay.

When *Navarro* arrived at the scene, *Clarke County* was fully broached with one propeller buried in the sand and her bow doors open and swinging freely.

A damage control party from *Navarro* boarded the LST and found large holes in her side, the result of pounding against the sunken craft.

It was immediately apparent that the LST's bow doors would have to be closed and the ship drained before salvage would be possible. It was also apparent that, unless *Clarke County* were shored from within, she could easily break apart.

More damage control crews from various ships came aboard the stricken LST with shoring and repair kits but during the night, *Clarke County* lost all power, communica-

ANSWERING THE CALL—Chopper from *USS Kearsarge* hovers over ship.

SOUTH VIETNAMESE cargo junks, dead in the water off Vietnam coast, receive assistance from Operation Market Time DER *Wilhoite* (DER 397).

tions broke down and pumping operations were threatened.

To complicate matters, a scattering of hostile fire from the nearby hills endangered rescue operations, but a ring of tanks set up to defend the ships quickly returned the fire and silenced the snipers.

In midafternoon, uss *Ute* (ATF 76) arrived on the scene and was joined by uss *Bolster* (ARS 38). Both ships played a major role in refloating the stricken vessel. At various times *Iredell County* (LST 839), *Windham County* (LST 1170) and *Alamo* (LSD 33) also participated in the salvage efforts.

During the early stages of the salvage operation, *Navarro* operated as a floating damage control, communications and support center for the repair parties and crew aboard *Clarke County*.

She also controlled the helicopter lifts of supplies to the stricken vessel, rounded up equipment needed aboard, and fed the damage control parties from the other ships as well as the LST's crew.

Navarro was released soon after uss *Mars* (AFS 1) arrived on the scene on 21 November and returned to the operation in which she had been engaged. *Clarke County* was refloated on 30 November.

Navarro's efforts on behalf of *Clarke County*, however, did not go unnoticed. Words of praise and congratulations came from, among others, the Logistics Support Force Commander of the U. S. Seventh Fleet—Well done.

—William Johnson, JO2, USN

USS Kearsarge (CVS 33)

The South China Sea seems a fertile area for rescue missions. When *Kearsarge* was en route to Subic Bay after 21 days off North Vietnam, she was notified that a Korean freighter was grounded on a shoal. The vessel had lost power in its engine room and was flooding. One of the 27 men on the grounded ship was injured and all had to be taken off the ship.

Choppers from *Kearsarge's* Helicopter Squadron Six were dispatched to find the Korean ship and pick up the crew. Seven hours later, the vessel was located and an aircrewman was lowered to help members of the crew into the rescue harness.

Six of the survivors were taken aboard the first chopper, including the injured man, while the others awaited rescue by the other two SH3A helicopters which hovered overhead.

The Koreans were transported in the big helicopters to *Kearsarge*, where they were given medical examinations and fed a hot meal.

When *Kearsarge* docked at Subic Bay, the sailors without a ship were sent to the base hospital for observation while the Korean Embassy in Manila made arrangements to return them to their home.

USS Wilhoite (DER 397)

uss *Wilhoite* also came to the aid of sailors in trouble in the South China Sea. While patrolling off the coast of South Vietnam, *Wilhoite*

TO THE RESCUE—Navy ships steaming to aid those in distress at sea are not unusual. Ships below have done so.

USS Wilhoite (DER 397)

USS Kearsarge (CVS 33)

USS Hissem (DER 400)

USS Navarro (APA 215)

came upon two cargo junks whose engines had broken down.

A boarding party from the DER looked the situation over, but found the motor on one of the junks needed a major overhaul. The other motor was repaired by *Wilhoite* mechanics.

For the Vietnamese in one of the junks, *Wilhoite* arrived in the nick of time, for they were completely without food and water and one of the crewmen needed medical attention.

After treating the sick Vietnamese and giving the crew of the disabled junk food and water, the boat with the *Wilhoite*-repaired motor began towing the other junketeers to home port.

A week earlier, *Wilhoite* had played another role in the rescue mission field. This time it was with a Vietnamese coastal freighter which had a badly damaged rudder.

Unfortunately, the repairs needed by the freighter were too complex for *Wilhoite's* facilities, so she radioed the nearby base of Qui Nhon requesting a tug which could tow the freighter to safety.

USS Hissem (DER 400)

When the radar operator in USS *Hissem* (DER 400) picked up a large, stationary blip in the path of an oncoming typhoon, it seemed probable the blip would prove to be a ship in trouble.

Hissem, which had left Guam early in the morning to avoid the typhoon, altered her course to investigate and, about 15 miles from the blip, was able to establish radio contact with ss *San Jose*, a reefer about 80 miles from Guam.

When *Hissem* was still seven miles from *San Jose*, her crew could see the reefer's lights but they soon faded because *San Jose* lost her power. But the ship became visible again when an ominous column of smoke and flames billowed from amidships and from the stack.

Before *Hissem* reached *San Jose*, she found two lifeboats in the water and discovered that 13 men still remained aboard the reefer. Inasmuch as the men in the lifeboats were in no immediate danger and things looked perilous aboard the burning ship, *Hissem* pushed on.

Upon reaching the reefer, *San Jose's* skipper informed *Hissem's* captain that the crew remaining aboard was in no immediate danger and urged *Hissem* to return and pick up the men in the lifeboats.

When *Hissem* again located the lifeboats, the men in one of them were already being picked up by a newly arrived ship.

Hissem's crew helped the 19 men from the other lifeboat aboard and gave them first aid, hot coffee and dry clothes.

When the DER returned to *San Jose*, she found the fire was raging out of control in the reefer's engine room and had spread to the berthing spaces.

The men remaining on board *San Jose* badly needed firefighting aid and equipment, which *Hissem* set out to supply in her boat.

As the boat was launched in the heavy seas, however, the davits were carried away, the engine stalled and the boat drifted.

Fortunately, the whaleboat was brought alongside the DER and the crew clambered to safety. Then a line was passed to *San Jose* in the hope that her crew could successfully pull the boat and its equipment alongside.

The scheme worked beautifully until the whaleboat came alongside *San Jose*. Then the heavy seas swamped the whaleboat before the equipment could be unloaded. The whaleboat was lost.

Although the typhoon was fast approaching, *Hissem* began towing *San Jose* out of the storm's path but the reefer's jammed rudder made towing difficult in the heavy sea. After four hours, the tow was lost.

Because fire was still raging in *San Jose* and the weather was rapidly becoming worse, *Hissem's* captain and *San Jose's* skipper decided to abandon the reefer.

The 13 men remaining aboard *San Jose* climbed down the side of their ship on a rope ladder and onto a rubber life raft. After an anxious few minutes, the sailors and *San Jose's* captain were brought aboard *Hissem* which headed south fast to avoid the typhoon's wrath.

Congratulations were not long in arriving for *Hissem's* captain and crew. The salvage attempt and the rescue in the face of a typhoon, the messages said, were in the highest traditions of the sea.

A REEFER—*Coral Sea* copter comes to the aid of Liberian freighter on reef.

ALL SMILES—Flight deck personnel of *USS Coral Sea* (CVS 43) escort merchant seamen from helicopter that rescued them from grounded ship.

RESCUE TEAM NUMBER ONE: The Paramedics

WHEN SEVENTH FLEET Search and Rescue teams sought pointers in land and sea SAR techniques, they looked for and found an expert on the subject at Subic Bay, R. P.—Cubi Paramedic Rescue Team Number One.

The two doctors, two corpsmen and the aircrew survival equipmentman who make up the team don't consider themselves a venerable Navy institution. The group was, in fact, organized only five years ago when two medical men at the Cubi Air Station adapted standard rescue techniques to the rough Philippine jungle terrain.

When the team was organized, its rescue role was a secondary duty. Now, however, it is officially recognized, not only as a practicing rescue team, but as a teacher of SAR men throughout the Seventh Fleet.

Team Number One has been in the training business for about a year. It started its teaching career when one of the Fleet's SAR helicopter units felt it lacked sufficient background. Thanks to Cubi's paramedics, that deficiency has been remedied.

Cubi has developed a course which includes a strenuous physical conditioning program, instruction in frequently encountered land and sea rescue problems, first-aid techniques,

and indoctrination in the use and care of rescue equipment. In less than a week, the team is able to give a potential paramedic a thorough understanding of the essentials.

In the final stage of the course, the student is required to rescue a pilot who has injured himself in a crash in rough country. The injury is simulated; the roughness is not. The student, borrowing a technique more familiar to mountain climbers than aviators, rappels from the helicopter, administers first aid, hooks the man up and gets him out.

Meanwhile, he has learned how to handle some of the aviation gear he will come in contact with, has become familiar with the problems to water rescue, has cut rescue time to 26 seconds in day, 39 seconds at night.

"When a man graduates from this school," says Dr. Frederick Buehl, the current team commander, "He's a real rescueman. We've simply given him some techniques, some confidence, and a little knowledge of his tools. The rest he does by himself."

Clockwise from Upper Left: (1) Realistic in every detail except for hostile gunfire, a hover, quick jump and quick pickup pilot recovery exercise is carried out by a paramedic class at Subic Bay in the Philippines. The pickup has been practiced to such a degree that it can be effected in as little as 26 seconds. (2) Paramedic practices clearing downed pilot from his parachute. (3) Quick-time pickup is watched from Cubi crash boat standing by to pick up men after the exercise. (4) Following a helo pickup exercise, paramedic class member is hauled out of the water by Cubi crash boat crew. (5) Hospital Corpsman Eugene W. Bliss, USN, is one of the pioneer developers of the paramedic rescue method. (6) Instructor shows paramedic class members how pneumatic splints protect injured pilots.

—Text by Tim Leigh, JO3
Photos by Ken Dalecki, SN

Duty in the Antarctic is an experience that many Navymen have thought about but relatively few have actually undergone. What is this duty like? Why are Navymen serving at this location at the bottom of the world?

To get a better understanding of the Navyman in the Antarctic, let's take a look at Air Development Squadron Six. This squadron is an excellent source to turn to. Its members, rotating of course, have 12 years of experience on the job at and around the South Pole. Here's their story.

The basic article, coming directly from the ice continent, was written by Chief Journalist Jim Partee, USN. *Some of the statistical and background material is from the U. S. Naval Support Force brochure, "Introduction to Antarctica." The excellent photos are the work of Charles Durel, PH2,* USN, *and Don Weldon, PH3,* USN.

AIR DEVELOPMENT SQUADRON Six (VX-6) is the U. S. Navy's only aerial support squadron in the Antarctic. It consists of about 450 officers and enlisted men,

REPORT FROM VX-6

with detachments at Quonset Point, R. I., Christchurch, New Zealand, and "on the ice" (as the Navymen call Antarctica).

VX-6 has been going back and forth to the Antarctic for 12 years. Last year's Operation Deep Freeze saw the squadron, known as the Antarctic Airline, making 578 flights, totaling 7537.7 hours of flight time, and carrying 10 million pounds of cargo and 1106 passengers.

The mission of VX-6 includes aerial reconnaissance of the snow and ice for scientific land traverse parties, photo-mapping sections of the huge continent, transporting fuel, cargo and passengers within and to Antarctica, resupplying of inland stations and placing of scientific parties in the field, and providing search and rescue capabilities.

The squadron was commissioned on 17 Jan 1955 at the Naval Air Station, Patuxent River, Md. Its job was to conduct aerial operations in conjunction with the U. S. government's participation in the International Geophysical Year in the Antarctic. Exploration and photo-mapping were the main missions assigned, but knowledge of aircraft maintenance and special techniques for large scale flight operations in the Antarctic environment were also needed.

When the Navy requested men to volunteer for Antarctic operations, the Bureau of Naval Personnel was flooded with requests to join VX-6. As a result, only one man out of every 16 could be selected.

After an intensive training program in cold weather working conditions, survival and the mission of the squadron, the first officers and enlisted men of VX-6 were ready for the ice and anxious to get there.

WHY DO MEN go to the Antarctic? Why do they face the cold, the blizzards, the long winter months of darkness and separation from their families and friends?

BLAST-OFF—Ski-equipped *Hercules* of Air Development Squadron Six fires JATO during takeoff from ice runway.

Twelve Years on Ice

Each of the many who have been there could answer these questions only in his own way. In the early days, men went there for their living—to hunt the whales and seals which abound in the waters of Antarctica. Their first and foremost motive, however, would have to be the challenge of the unknown. From the primitive explorations of centuries ago to the sophisticated studies of today, man has gone to Antarctica to search; to explore the unknown.

What do the scientists of the U. S. Antarctic Research Program want to learn from the Antarctic? Knowledge of the weather is one thing. It is believed that Antarctic weather influences the weather everywhere else in the world. Wind patterns formed on the continent have had their effects thousands of miles away. Physicists study the Antarctic continent which provides a platform for the study of the earth's magnetic field, cosmic rays, and the Aurora Australis, the southern hemisphere's equivalent to the Northern Lights.

Another subject that interests the scientists is the great icecap. Is the amount of ice growing larger or smaller? Are we headed for another ice age? Will coastal cities around the world be inundated by the water from the melting of the vast icecap? No one really knows the answers to these questions, yet.

Biologists are also conducting studies on the continent. They are seeking to discover new forms of plant and animal life and are studying flora and fauna which have already been classified.

Although deposits of minerals have been discovered through geological studies and men have talked about their economic possibilities, it seems that the main export of Antarctica for the foreseeable future will continue to be scientific data.

These are some of the factors that explain why men go to the Antarctic. And this explains the role of VX-6. It carries passengers—scientists, explorers and maintenance personnel—to the Antarctic. And it helps to carry out scientific missions on the scene.

For the Navymen who volunteer for Antarctic duty (and there are always volunteers), there are a number of reasons. In a world of narrowing horizons, the Antarctic represents one of the few frontiers left to us. Navymen have always been in the forefront when it comes to exploring the corners of the earth—and of space itself. To the Navyman, Antarctic duty offers adventure, excitement, the tests of endurance and the challenge of the unknown.

DEEP FREEZE I, back in the early days, consisted mostly of photo-mapping sections of the continent and building Little America V and Byrd Stations. This meant plenty of work for VX-6. When the newly commissioned squadron returned from its initial deploy-

ON THE SPOT—Crewmembers of VX-6 build temporary shelter while waiting repairs during 1962 Deep Freeze.

WHAT IS ANTARCTICA?

What is Antarctica—land or water? How big is it? How high is it above sea level? These are just a few of the questions that have been asked, and partially answered, by explorers and scientists since the continent was first discovered in the 1800s.

Antarctica is the continent which surrounds the South Pole. It is a high, ice-covered land nearly twice the size of the United States and is surrounded on all sides by oceans.

This South Polar region is very different from the Arctic or the North Polar region. In contrast to the South Pole, the North Pole is an ocean area almost completely surrounded by continents.

It is believed that about 95 per cent of the world's ice is in Antarctica. About 4.5 per cent of the almost five and one-half million square miles of the continent is ice-free.

The icecap which covers the Antarctic is very thick. At one point, scientists have found it to be over 14,000 feet to the surface of the bedrock below. The average thickness is about 7000 feet. The average elevation of the continent, one of the loftiest in the world, is about 7500 feet. If the ice located there should all melt, it is estimated that the oceans of the world would rise more than 200 feet.

Ice is plastic; it flows. The great weight of the polar plateau forces the ice relentlessly toward the sea. In some places it rushes through the mountain valleys as great rivers of ice, called glaciers.

From glaciers and ice shelves, great pieces break off and float northward to melt away into the sea. These are the majestic icebergs. There are two types found in the southern oceans, the rough irregular icebergs of glacial origin, looking like floating cathedrals or ancient castles, and the flat-topped or tabular icebergs, the product of the ice shelves. These latter bergs are found primarily in the Antarctic. Tabular icebergs of more than 100 square miles in area have been sighted.

While much of the continent is bounded by ice cliffs, in other areas steep mountain slopes are found and occasionally there are beaches and gentle slopes which lead inland to the icy plateau.

In a few places there are low and level areas free from ice. Areas of this type, called oases, are found scattered along the coasts. Ice-free areas found inland are called "dry valleys." Here the ice has receded and only an occasional "alpine" glacier remains. Scattered glacial debris and glacial morains usually cover the valley floor.

There are two species of flowering plants in Antarctica: one a grass flower and the other a pink growth. These are found on the Antarctic Peninsula, the section of the continent reaching toward South America. Moss, lichens and fresh water algae are found in many of the ice-free areas. One rocky area within 300 miles of the South Pole yielded moss to the exploring scientists.

There are no animals other than a few insects which can live on the continent. Forty-four species, the largest of which is a wingless mosquito, have been found among the moss and lichen. This is in strong contrast to the Arctic where there is abundant plant and animal life.

Life in the sea about Antarctica is another matter. Great amounts of mineral food are found in the polar waters and microscopic plants thrive upon it. These plants, in turn, are consumed by larger forms of life. At the end of this chain are the whales, the largest of which is the blue whale. A full grown adult may be over 90 feet long and weigh as much as 150 tons, larger than any other animal known to have lived now or in the past, including prehistoric dinosaurs.

The Antarctic is a land of great size, almost devoid of life, but with much life in the sea around it. As mentioned above, it is high in natural resources, and if this environment could somehow be harnessed, it could do much to enrich man's inhabited world.

PLANE WORK—Flight engineer R. W. Capling, ADJ2, makes log entry. *RT:* LT Steve Riley shoots sun with sextant.

ment, a change in home port orders was received and VX-6 moved to Quonset Point, R. I., in June of 1956. Quonset has been home port since that time.

Before their next deployment from Quonset Point, squadron members underwent intensive training and indoctrination.

That kind of indoctrination has been going on ever since, with the lessons of each year added to the accumulation of knowledge. VX-6 is now considered a veteran and an expert.

The squadron today has four ski-equipped *Hercules* aircraft, two C-121 *Super Constellations,* one C-47 *Dakota* and five LH-34D *Seahorse* helicopters.

Because of its varied missions, the squadron must maintain and operate several different types of aircraft. The *Hercules* is used to carry heavy cargo, the *Super Connie* carries cargo and passengers, while the *Seahorse* helicopter carries scientists on short hauls within a 100-mile radius of McMurdo.

The men in VX-6 play a personal part in the scientific effort to uncover more information about the vast white continent at the bottom of the world. Their polar flying talent, combined with the research capabilities of U. S. scientists, has brought to the surface many of the secrets hidden there.

ONE OF THE PRIMARY missions of Air Development Squadron SIX (VX-6), as mentioned above, is to photo-map portions of the continent in the interest of science.

The actual size and shape of the "white continent" is not completely known. With photo-maps, geographical data can be forwarded to the U. S. Geographical Survey section of the Department of Interior for map making.

To accomplish this task some 20 men are assigned to the VX-6 photo lab.

During the Operation Deep Freeze period of 1966-67, a *Hercules* equipped with a tri-metrigon camera and a *Super Connie* obtained mapping-quality photographs of some 335,000 square miles—almost double the record 1964-65 coverage.

The Photo Division is headed by Lieutenant Steve Riley, a former enlisted photographer, who is assisted by Chief Photographer's Mate John Reimer. (The laboratory's motto: "Have camera, will travel.")

While "traveling" during a one-month period, the photographers shot 2016 color transparencies, 350 black and white photographs and more than 11,000 feet of motion picture film, while flying some 1126 flight hours.

This year's Operation Deep Freeze has programed 280,000 square miles of Antarctica to be photo-mapped. Each of the two aircraft outfitted for this task has three cameras. One is mounted vertically and the other two are at an angle on each side of the aircraft, shooting a series of photographs stretching from horizon to horizon.

More than 9000 flight-line miles will be flown before this assignment is completed. Meanwhile, routine photographic assignments must be covered, such as construction projects, command activities and VIP arrivals, and ice breakout on the Ross Ice Shelf.

In order to get their job done, special care must be taken with the camera equipment. Before bringing them to the cold interior of Antarctica, the cameras are completely disassembled and lubricated with graphite so they will work in the severe cold. Once "on the ice," the cameras are kept in an intermediate room where the temperature is between the extremely low temperatures outside and the warm, comfortable temperatures inside the Photo Center. This is to acclimatize the cameras after use to prevent condensation on the lenses. Film also must be kept warm. The bitter cold often crumbles film as though it were a potato chip. Such are some of the problems of photography in Antarctica.

AERIAL NAVIGATORS and polar pilots of VX-6, probably more than anywhere else in the world, need to combine their talents to get the job done while flying with Operation Deep Freeze.

Antarctica, with its glaciers and endless white plains of blowing snow, poses one of the worst dilemmas for a pilot—not knowing where he is. He must depend, to a greater degree than ever, on the know-how and ability of the navigator to get him to his destination.

The polar navigator's tools are a set of charts, a sextant, good visibility, and the almost ever-present sun (the Antarctic in summer is the land of midnight sun,

BIRDMEN—Aircrewman R. Tippett, AMH2, readies for helo flight. *Rt:* LCDR M. Lusk keeps eye on instruments.

and at the South Pole itself the sun does not set for six months).

With the aid of a periscopic sextant, the navigator takes sun sightings. The sightings, when worked out mathematically and plotted on a chart, will give a line of bearing. This, however, is not an absolute fixed position, but simply tells the navigator that he is somewhere on that line.

Ordinarily the navigator then would "shoot" another celestial body, and where the lines cross would be his position. However, with broad daylight 24 hours a day, the sun is the only celestial body available in Antarctica.

The VX-6 navigators take sightings on the sun every 30 minutes, and by carefully plotting these lines of bearing, and using them in conjunction with radar, may fix their positions in the Antarctic quite accurately.

Pilots in other parts of the world use magnetic compasses to aid in steering their aircraft, but magnetic compasses are useless in the Antarctic, owing to the close proximity of the south magnetic pole. Therefore, gyro compasses are used to keep the pilot on a given course heading. The precession, or error rate, of this type compass cannot be allowed to exceed one and one-half degrees per hour.

The navigator, using his periscopic sextant, can determine his true heading by taking a sight on the sun. He resets his compass if necessary. This "deviation check" must be made once every 30 minutes, or any time the heading of the aircraft is changed more than 45 degrees.

The pilot has some special problems of his own. One of the most feared is the "white-out" landing. This is caused by the milky white glare created by the reflection of the sun off the snow and ice crystals in the air which tend to eliminate shadows and alter depth perception. The pilot now has to rely on his instruments

Flying Over the Ice

The first flight over the Antarctic continent was made on 26 Nov 1928 by Sir Hubert Wilkins, a British explorer. The pilot of the aircraft, an American, was Carl Eielson who had previous experience on the opposite side of the world—in the Arctic.

The navigator of the first aircraft to fly over the South Pole (on 29 Nov 1929) was Rear Admiral Richard E. Byrd.

A C-47 *Dakota* was the first plane to land at the South Pole.

Since that time the aircraft used for exploration in the Antarctic have increased in size and efficiency. Today, the huge, ski-equipped *Hercules* of VX-6 fly routes to all American stations on the continent. These aircraft carry everything anyone needs anywhere on the continent. Besides operating as a cargo plane, the *Hercules* teams up with a *Super Constellation* to photo-map sections of the Antarctic.

Other aircraft used today in scientific exploration are the LH-34D *Seahorse* helicopters.

During the Deep Freeze '67 season, the Air Force, for the first time, landed a giant C-141 jet *Starlifter* on the frozen Ross Ice Shelf.

Although man must do the actual exploration, aircraft of all types help him, and will continue to help, as long as scientists have work to do in Antarctica.

TIME FLIES—Over 20 years have passed between photos of R4D taking off and *Hercules* landing in Antarctica.

and aid from ground radar. It is difficult and demands all the skill and patience of the pilot in control.

As VX-6 carries out its mission of aerial reconnaissance for scientific traverse parties and photo-mapping the continent, it also carries out a collateral duty, that of performing search and rescue operations. This has earned the squadron's pilots the title, "Angels of the Antarctic."

LIFE IN THE SMALL polar communities and on the snow trail has improved since the days of Roald Amundsen and Robert F. Scott. It is still rugged by ordinary standards, but the men of Operation Deep Freeze claim one can live in reasonable comfort in the regions of the South Pole.

There are plenty of problems, of course. Everything needed to sustain life in the Antarctic must be imported. When or if food runs out, the nearest grocery store to replenish the stock is approximately 2000 miles away. When a machine breaks down, it must be repaired on the spot with whatever is available.

Strange as it may seem, perhaps the greatest single danger to an Antarctic station is fire. In the wind, it takes only minutes to destroy an entire installation. Precautions are taken, and vital supplies are stored where they will not catch fire if a building burns. At many bases there is a refuge hut some distance from the main living quarters. This hut is stocked with food and other necessities.

Because it is frequently dangerous and difficult to go outside, the men stake out a trail in the snow between their different buildings. They can then walk safely from one place to another without getting lost in the dark period of the short night or during a hazardous "white-out." Along these marked trails, and sometimes in tunnels, the men store food and other supplies where they can get to them, no matter how bad the weather.

The dry cold of Antarctica can often be used for man's benefit. Food placed in tunnels keeps indefinitely in this natural freezer. Food spoilage and structural corrosion are minimal in the dry-cold environment of this continent.

OVER THE YEARS, much has been learned to make living here easier.

Today, instead of using wood and tar paper, the men of Operation Deep Freeze use specially prepared panels for the sides and roofs of their buildings. Outer layers of plywood and inner layers of aluminum or comparable light material, with a dead-air space between, create an excellent insulation from the cold. The panels come in standard sizes that fit together tightly. They can be erected quickly into buildings of all types. When completed, these buildings are almost air-tight and very easy to heat.

You may wonder what type of clothing men wear outdoors in the Antarctic. Is it very heavy, for example? Actually, on a still day when the sun is shining, men working outside may become quite warm. Frequently, they strip down to their shirtsleeves. Hardy souls have been known to take off their shirts and risk being badly sunburned.

Ordinarily, Antarctic explorers dress warmly. The principle of cold weather clothing is not so much the bulk of the individual pieces, as it is the number of layers. Between each layer is an air pocket which traps body heat and serves as insulation. Another important feature of Antarctic clothing is that the outer layers are windproof.

McMURDO MEN enjoy their meal in station's galley.

With present day clothing and equipment, men can live in the Antarctic quite comfortably and work on the trail at very low temperatures.

The Antarctic, however, remains a dangerous and unpredictable land. Men, if they are going to survive there, may never relax their guard. A moment of carelessness can easily result in the loss of life.

Cold, Colder, Coldest

Everybody knows one thing about Antarctic weather—it's cold! In fact, Antarctica has the coldest climate of the world. On the average, it is 30 degrees colder than the Arctic. The lowest temperature ever recorded was a shivering 128 degrees below zero. (Yet, as noted in the attached story, Navymen working outside have been known to remove their shirts, and risked getting a bad sunburn!)

During the Antarctic summer (being on the opposite side of the world, it extends from December through March), the temperatures along the coast often rise above freezing (32° F.). On the inland plateau, they rarely go above zero. In the darkness of the Antarctic winter, temperatures drop rapidly and remain far below the freezing mark.

Precipitation in the Antarctic is very light. The great Antarctic blizzards, about which everyone has heard, consist mostly of blowing snow. The actual amount of snowfall is comparable, in water content, to the rainfall in the Mojave Desert.

Another important feature of Antarctica's weather is the wind around the continent. Though sometimes a gentle flow off the polar plateau, it often roars across the continent at speeds in excess of 100 miles an hour. Such gale force winds prevent all land and air operations as all personnel are forced indoors to wait out the blow.

These Antarctic winds meet the prevailing easterlies of the southern hemisphere, resulting in a turmoil that makes the seas about Antarctica among the roughest in the world. Approaching the continent can be an exhausting experience, even in a modern ship.

Thus, the Antarctic weather is a combination of cold air, high winds and blowing snow. These three elements provide a pattern unlike any other in the world. It is a climate most treacherous and forbidding to man.

PANORAMA of the headquarters and drydock area of the Saigon Naval Shipyard located on the Saigon River.

Naval Shipyard Repair —Saigon Style

NEW JUNK—Yard's huge railway crane deftly lifts finished Yabuta junk into the bay for fitting out before joining river junk force.

CONSTRUCTION on the Saigon Naval Shipyard was begun in 1863 and for much of the time since then, it has been a major repair and supply base in Southeast Asia.

During World War I, it produced vessels for the allies before it was ceded to Indochina. It supported the French Fleet during World War II; was occupied by the Japanese until 1945 and partially destroyed during allied bombings during the same year. In 1954, the yard resumed production and passed from French rule to the Republic of Vietnam in 1956.

Today, the multimillion-dollar Naval Shipyard in Saigon is not only the biggest between Singapore and Hong Kong, but also one of the largest facilities of its kind in the entire Far East.

The shipyard's workers are capable of overhauling and repairing all the ships of the fast-growing South Vietnamese Navy, thereby making possible its day and night patrol of the country's 1400-mile coastline as well as inland waterways where Viet Cong troops and supplies would otherwise be smuggled.

This 53-acre facility, the largest industrial complex in South Vietnam, is located on the southwest bank of the Saigon River about 30 miles from the South China Sea.

The site was selected for three reasons: big ships could navigate the Saigon River; the site was easy to defend; and both workmen and materials were readily available in the area.

In the 87 buildings which make up the shipyard, 1700 men work six days a week repairing and overhauling vessels which range from the 3640-ton, 328-foot LST (the largest vessel in the Vietnamese Navy) to the smallest, the 10-ton, 35-foot troop landing craft (LCVP).

THE VIETNAMESE NAVY has no capital ships such as cruisers and destroyers, nor does it possess any submarines. Its total strength in naval craft today consists of 64 ships—all landing and patrol craft—and just over 500 boats of the small personnel and patrol class. The total strength of the Vietnamese Navy will soon be increased by United States-supplied river patrol and fast patrol craft which are scheduled for delivery in the near future.

Repairs that are not made in the drydocks are made in the yard's shops. The foundry and blacksmith shop, for example, has forges and electric furnaces where workmen can cast spare parts and form metal shapes. Motors and generators are rewound in the electric shop and voltage regulators are repaired and obsolete shipboard wiring is renewed there, too. Workers rebuild damaged propeller blades in the pipe and copper shop and also repair or replace sections of corroded and deteriorated piping of all kinds.

Wooden boats are repaired in the carpentry shop which also produces furniture to conform to the ship interiors.

The hulls of steel ships and boats are repaired in the hull and welding shop which has an 80-ton press capable of forming steel plates four inches thick, while in the machine shop, which has more than 80 major machine tools, spare parts are made and bearings, shafts, pumps and compressors are also repaired.

The yard's engine shop can overhaul everything from small outboard engines to 1800-horsepower diesels, fuel injection systems and associated auxiliary equipment. Another shop where sizeable jobs are done is the ordnance shop which repairs shipboard guns from 30-cal. machine guns to 3-inch cannons.

Binoculars, sextants and other navigational equipment are repaired in the optical shop and workmen tailor canvas covers to protect exposed deck guns and equipment in the rigging and canvas shop.

In addition to the various shops, the shipyard has a large graving dock which can accommodate a ship up to 520 feet in length and 63 feet in beam.

A smaller graving dock serves ships up to 119 feet in length and 26 feet in beam.

The shipyard also has a 30-ton floating crane, a 15-ton railway crane, four small 12-ton mobile cranes, four marine railways and various sizes of hoisting facilities in most shops.

FUTURE PLANS for the shipyard include a chemical laboratory where products of combustion and corrosion can be analyzed and a lab where metallurgists can identify metals and test them for tensile strength, corrosion resistance, hardness, ductility and other properties.

With such capability, it is easy to see why the shipyard is solidly booked for months ahead. When a ship is overhauled once every two years, it is stripped of its main propulsion and auxiliary equipment and all badly worn parts are replaced. Some units are rebuilt and reinstalled.

The year 1965 was the busiest year the yard has seen under Vietnamese management. During that year, 23 ships and 151 boats were overhauled and about two and a half million productive man-hours were recorded.

Although the Saigon shipyard is humming, there are also problems. Inadequate pier space, a lack of weightlifting capacity on the water-

ADVISORY CONFERENCE—CDR Cameron Mixon, Jr., USN advisor, discusses industrial techniques with yard captain, Doan Bich (rt.) and planning officer.

METAL PARTS for ships and boats are welded by apprentice (above). *Below:* General upkeep of ships is maintained by crew and scheduled yard periods.

NOT SO HIGH, BUT DRY—Minesweeper is drydocked for hull work (above). *Below left:* Shipyard machinery will be busy, following new on-the-job training program. *Right:* 100-ton drydock used for small Vietnamese boats.

front and an acute shortage of skilled workmen head the list. Some of the equipment still being used, for example, was originally installed by the French from 30 to 50 years ago. Through the combined efforts of the shipyard management and U. S. Navy advisors, up-to-date equipment is being installed in the shipyard.

Until comparatively recently, Vietnamese naval ships had only one berth for dock trials. Unless in drydock, ships being repaired were moored four and five abreast alongside pontoon piers. Repair parts, tools and other equipment had to be carried by hand or lifted aboard with floating cranes which, of course, tied up a considerable amount of manpower just to move items on and off ship.

This situation was improved considerably when a 750-foot wharf was finished in August 1966. Another 400-foot pier was put into use in May of 1967. These wharfs ended the yard's reliance on floating cranes and manpower.

LABOR HAS BEEN and will continue to be a problem at the shipyard although something is being done about this, too. In June 1967, U. S. advisors organized an on-the-job training program to increase the output of the skilled workmen at the yard.

Carpenters, still available on the Saigon labor market, are being retrained to become shipfitters by en-

larging their skills to include working with metal as well as wood. During their training, the erstwhile carpenters are taught welding techniques and the use of electric arc and oxygen-acetylene equipment.

Although much of the recent improvement in the shipyard has been confined to the shops, Vietnamese officials have, in the past 11 years of United States assistance, introduced closer management controls, more efficient shop practices and more accurate accounting procedures as well as substantially improving the productivity of the labor force.

Nowadays, the shipyard not only repairs and overhauls ships, but also builds 50-foot, 12.5-ton *Yabuta* junks for coastal surveillance work. These junks were introduced in Vietnam by a former Japanese employee and are equipped with U. S.-manufactured 130-hp diesel engines and have a top speed of more than eight knots.

Each *Yabuta* is armed with 30-cal. and 50-cal. machine guns and has a seven-man crew. The junks are capable of extended patrols in search of would-be Viet Cong infiltrators in coastal waters.

A junk usually can be built in seven weeks but, in the past, as many as three *Yabutas* have been completed at the Saigon shipyard in a single week under a full production schedule.

—Byron S. Whitehead, Jr., JO1, USN

Hatchets and planes are used to complete one junk every seven weeks.

A Vietnamese shipyard employee uses French drill 30 to 50 years old. *Rt:* Welder trained by on-the-job program. *Below:* Sao log is trimmed into beam.

Young carpenter narrows a Sao log which will later be intricately carved before being used as beam in junk.

OBA know-how gained through practice will save lives in a real emergency.

Put on OBA. Tighten straps for comfortable fit.

Next, ready canister chemical for insertion.

What Do You Know About OBA?

HOW DOES an OBA work?

The question is not academic. The right answer might save your life.

Accident reports following the fires aboard the carriers USS *Oriskany* (CVA 34) and *Forrestal* (CVA 59) maintain that there were some among the would-be firefighters who could not enter smoke-filled compartments for the simple reason that they did not know how to use this piece of firefighting gear.

The number of Navymen thus ill-prepared is not known. But it really doesn't matter.

One is too many.

This article is meant for you, if you:

Pull metal tab straight across top of cap.

EARLIER MODEL OBA shown back in 1956 as a repair party assembles firefighting equipment during drill aboard ship.

- Have not put on an OBA and activated a canister within the last few years.
- Do not know where the OBAs are stowed aboard your ship.
- Do not know why a gas mask and an OBA cannot be used interchangeably.

If you fit into one or more of these categories, perhaps the information that follows will jog your memory. It will not, of course, substitute for practice with an actual OBA.

The Oxygen Breathing Apparatus is designed to circulate air repeatedly through a closed system. During the air's round trip through the OBA, two important things happen to it. First, the carbon dioxide is removed from the exhaled breath; then oxygen is chemically generated, and added to the air which is to be inhaled.

Unlike a gas mask, which continually brings in outside air and filters out dangerous particles, the OBA keeps circulating the same air over and over again. The fact that outside air is inhaled through the gas mask's filter nullifies its use in firefighting. The air in the vicinity of a fire is rather short on oxygen. A gas mask does not generate oxygen. An OBA does.

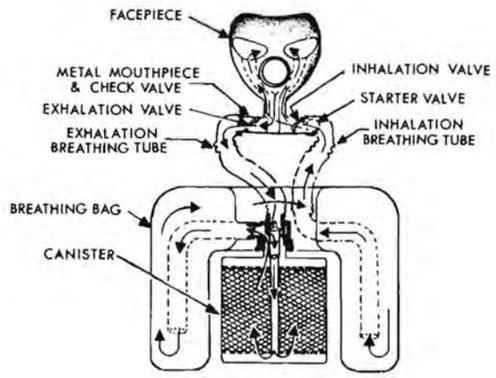
The OBA's essential components are an airtight facemask, an exhalation tube into which the wearer breathes, a removable canister containing the oxygen-producing chemicals, a breathing bag which stores the rejuvenated air and cools it, and an inhalation tube leading back to the facemask.

The OBA facemask is made of rubber, with plastic eyepieces, a speaking diaphragm, and a rubber mouthpiece. A short tube just below the speaking diaphragm contains the inhalation and exhalation tubes, and check valves for each.

The breathing bag, which must be filled before the OBA can be used, collects air and retains it long enough for it to cool.

Note metallic-foil seal in neck of canister.

Loosen bail. Swing out and insert canister.



The most important feature of the OBA, of course, is the canister containing the oxygen-producing chemicals.

The canister consists of five layers of chemicals separated by wire mesh screens. When moisture and carbon dioxide from the wearer's breath enter the chemicals, oxygen is released and the carbon dioxide is absorbed.

The canister has a lanyard on the bottom which, when pulled, fires off a fast-burning chemical which produces pure oxygen as it burns.

Called a "candle," this chemical cake produces enough oxygen to last from two to four minutes. While the OBA-wearer is breathing this supply of oxygen, his exhaled breath starts the chemicals in the main portion of the canister working.

For a full understanding of the principle of the OBA, it might be helpful to trace the course the air takes within the closed system. We'll follow the air from the time it is exhaled from the lungs. The air flows down through the exhalation tube to the canister of chemicals, where it is led through a central pipe to the bottom of the canister.

The air then rises through the chemicals in the canister, losing carbon dioxide and moisture, and gathering oxygen as it goes.

The air travels up into the breathing bag, where it is stored until the wearer inhales it. This delay gives the heated air time to cool.

The most obvious thing you must know about the OBA, of course, is where to find one when you need it. Copious knowledge about its internal workings will do you little good if you can't find one in an emergency.

OBAs are stored in the damage control repair stations, which are also called repair lockers, and in various other places throughout the ship. A destroyer usually has three such storage facilities, while larger ships have correspondingly larger numbers of them. If you do not already know where they are located aboard your ship, you should make it a point to find out.

Before you can use the OBA, there are certain steps that you must take to get it activated. The process sounds long and involved, but actually takes only a few practice sessions before it becomes second nature to a potential firefighter.

First, of course, you have to put on the OBA and tighten all straps so that you have a snug but comfortable fit. Now you're ready to insert the all-important canister.

Before putting the canister in place, you first must remove the metal protective cap to expose the metallic-foil seal in the neck. This is done by pulling the metal tab straight across the top of the cap and down, as if you were opening a can of your favorite beverage.

When canister hits stop, swing bail back and tighten.

Squeeze tube, check tightness of facemask.

In using a quick-starting canister, you remove the rectangular cover on the bottom of the canister and let it dangle from the lanyard. The swinging bail which holds the canister in place has a handwheel. Loosen it, and swing the bail outward. Now you can insert the canister into the canister guard.

There is a "canister stop" near the top of the canister guard to keep the canister from going all the way up and puncturing the seal prematurely. When the canister hits the stop, swing the bail back in place under the canister and turn the handwheel enough to hold the canister in.

To activate the canister, push the canister stop in as far as it will go, then turn the handwheel until the canister travels up and seats against the main valve.

When you have put the facemask on and adjusted the straps to fit your head, you are ready to get the chemical reaction started in the canister.

The quick-starting canister is easy to get started, as its name implies. Pull the lanyard on the bottom of the canister with a steady pull away from the body. This removes the cotter pin from the candle and fires it off.

Starting the candle may be accompanied by a slight amount of harmless smoke. The breathing bag will immediately fill with oxygen and you may proceed with your work. While the candle is providing oxygen to the breathing bag, it might get too ambitious and overfill your bag. In this case, vent the bag by depressing the starter valve (on the cross tube just below the facepiece) and letting some of the oxygen seep out.

The length of time your canister will last will vary according to the amount of work you are doing. So that you can tell how much time is left in the chemicals in your canister, a timing device is provided as a part of the apparatus. The dial, calibrated in minutes, is normally set as soon as the canister has been activated.

Firefighting party dons OBA during shipboard drill.

When you have inflated the bag, set the timer for 45 minutes. When the pointer returns to zero, the bell will ring. You will then have 15 minutes to get out of the compartment. If there is an increase in resistance of breathing, or fogging of lenses on inhalation before the bell rings, immediately return to fresh air.

Get a new canister from the nearest repair locker and change canisters. Be sure not to handle the expended canister, as it will be very hot. Swing the bail out, and let the used canister drop out by itself.

That's about as much information as this article can give you. There is no substitute for practice.

Pull lanyard, starting the oxygen cycle.

Set timing device. (Usual time is 45 minutes.)