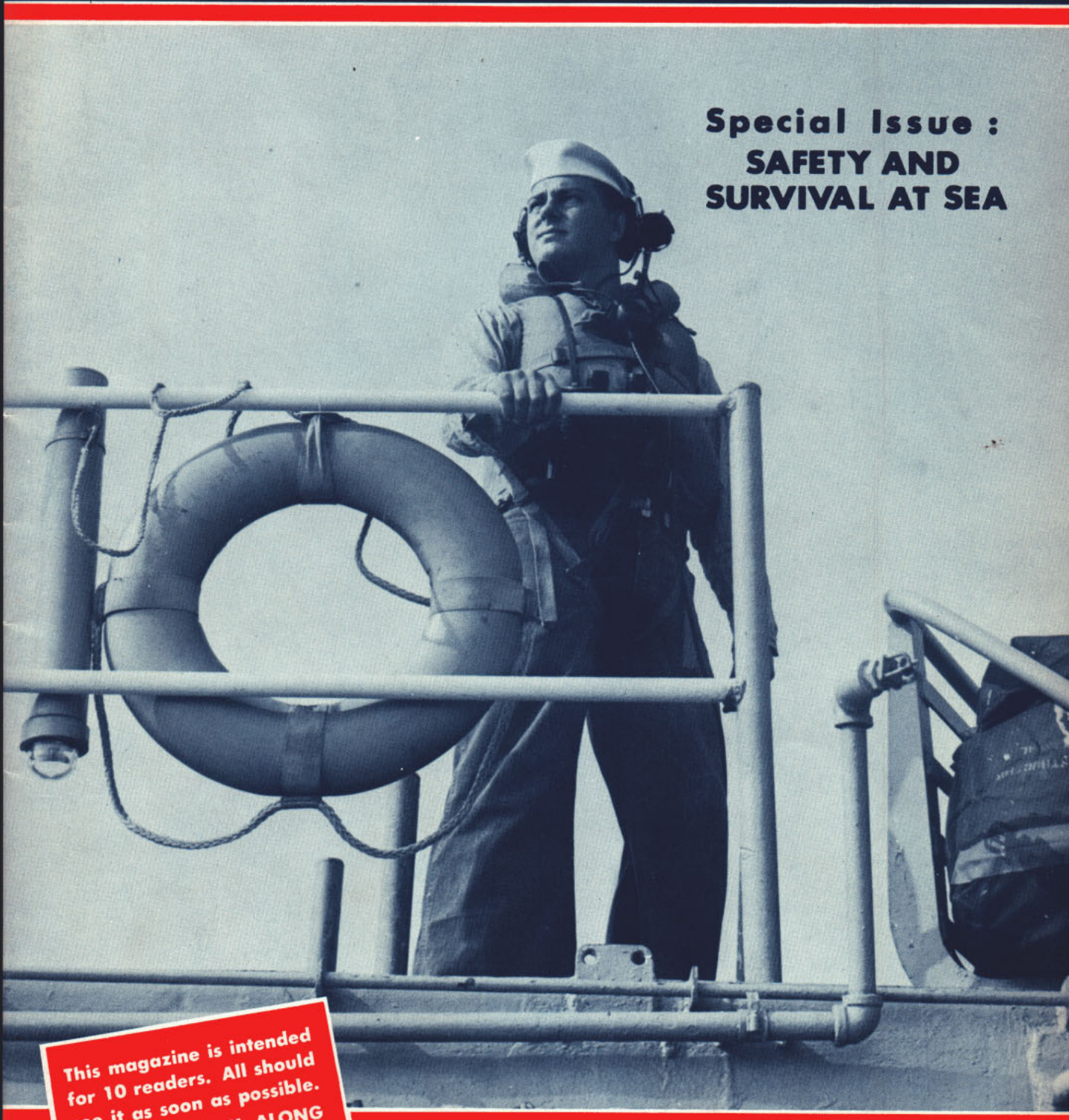


# ★ ALL HANDS ★

THE BUREAU OF NAVAL PERSONNEL CAREER PUBLICATION

**Special Issue :  
SAFETY AND  
SURVIVAL AT SEA**



This magazine is intended  
for 10 readers. All should  
see it as soon as possible.  
**PASS THIS COPY ALONG**

NOVEMBER 1964





# ALL HANDS

THE BUREAU OF NAVAL PERSONNEL CAREER PUBLICATION

NOVEMBER 1964

Nav-Pers-O

NUMBER 574

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• **FRONT COVER:** LIFE AT SEA can become hazardous at times, but by following shipboard safety rules, risks and dangers are greatly reduced. Here, a sharp-eyed lookout mans his post topside on a destroyer during man overboard operations. Photo is from an award-winning Navy training film on rescue at sea.

• **AT LEFT:** ROUGH GOING—Heavy seas toss ships as they refuel while underway, adding complications to a complicated job. Wearing lifejackets, hard hats and safety lines are among the safety rules in use at such times.

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



**FLIGHT DECK**—Fueling aircraft is dangerous if safety rules aren't followed.

them to protect his well-being.

Also, no matter how seaworthy your ship may be, it can be rendered helpless when pitted against the forces of the open sea in an emergency situation. It can go down. An explosion in the right place, an uncontrollable fire, and next thing you know you're shaking hands with Davy himself.

Following is a review of some safety precautions which should be taken in some areas. We emphasize the *some*. These are by no means meant to cover the spectrum of shipboard safety rules, nor are they listed in any particular sequence of importance. *All of them are important.*

If you think this is old hat, that with your experience there is probably little or nothing we could mention that you are not familiar with, you may be right. We hope so. But we suggest you review this section, refresh your mind on the subject—then help remind others when they become forgetful. The safe way is

# How High is Your

**S**AFETY LECTURES are for the birds—right?

Some of us feel that way. Then we see a droopy-eyed bird smoking in the next rack, and wish someone would give him a safety lecture.

It is important to donate some time to thinking about safety. When everything is going well—that's the time for each of us to check, and improve, our SQ—"safety quotient."

One good reason is that it's too late to start thinking safety-wise after our bird friend has set the compartment ablaze. Then we need to apply our knowledge of damage control—but that's another subject. Let's just consider some basic shipboard safety procedures here.

As individuals, we develop habits in our everyday life that eventually form a pattern. We might habitually do things the "right" way—or just the opposite. Even some men who ordinarily do things the right way slip now and then. So, if you don't know what safety procedures to follow for a particular job, you should learn them. If you think you do know, it

is still good to brush up now and then. It might save your life!

On board ship it is necessary to observe safety rules in almost every undertaking. Everywhere about you are potential hazards. Deck machinery is impartial as to whom it mangles if mis-operated. Toxic fumes are indifferent to whom they might poison. Flammable mixtures get a kick out of burning, bright and hot—that's how they assert themselves—and they don't care where or when they burn. Even the topside life line couldn't care less who topples over it at night—it will be relieved of the weight of whoever was sitting or leaning on it.

**T**WO OTHER overriding factors must be considered. Many men live and work close together on board ship. Consequently, an accident, even in a confined area, can have disastrous results for many men—and it can happen in a matter of seconds. Each man must accept the responsibility of protecting the safety of his shipmates the same way he would want

not always what may appear to be the commonsense way.

## Life Lines

Number one rule: Never sit or lean on the ship's life lines.

When life lines are removed for an extended period, emergency lines must be rigged.

When your ship is maneuvering alongside a dock, or during drills or evolutions, keep clear of life lines.

At sea, and in port under hazardous conditions of sea and weather, don't work over the side without a life jacket with a safety line attached. The line must be tended by another person on deck. If you have occasion to work outboard life lines in rigging or unrigging a brow, boat or other gear, or in ships' boats any part of which are outboard life lines, wear a life jacket.

Use a life line and safety belt when working on a boatswain's chair. The manila or sisal for your life line must be at least 3/8 inch in diameter.

Don't attach your life line to suspended staging; secure it at a rigid point. The reason for this is obvious.

When in port or when working over the side, make sure life buoys with a line attached are available.

A welding operator who must enter a confined space through a hatch should use a life line. He should use a safety belt and life line attached to his body in such a way that he cannot be jammed in a small exit opening.

#### Hatches

Never block access through doors, scuttles and hatches without permission from the department head responsible for them. When permission is granted to block off an access, do it in such a way that free access can be regained in a minimum amount of time.

See that broken, split or ill-fitting hatch boards are discarded or repaired at once. All hatch boards and fore-and-aft and athwartship beams should, insofar as they are not interchangeable, be kept plainly marked to indicate the deck and hatch to which they belong and their position therein.

When hatches are open, be sure that they are secured open. The regular prop or catch provided

## SQ?

should be used. When work is being done through an opening of one section of a hatch, pin or lock the remaining beams to prevent their falling.

Place suitable guards near all open hatches, cargo working areas or other open spaces.

Rig safety lines around the cargo hatch openings when cargo is not being worked. Do not draw tarpaulins across hatches unless the hatch boards are in place, except for temporary periods during rough weather.

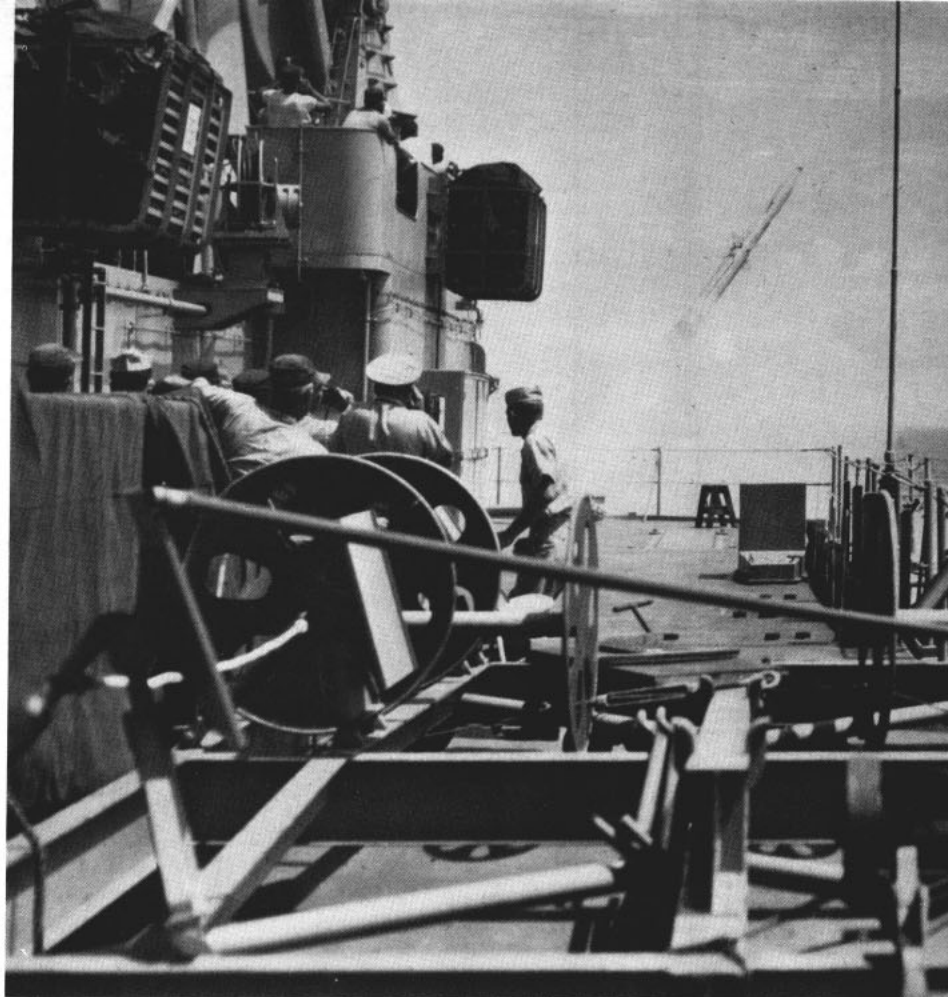
Inspect armored hatches fitted with balance weights and springs before closing to insure that such fittings are properly installed and operative. No device that impairs the free functioning of the dogging-down mechanism should be used.

#### Ladders

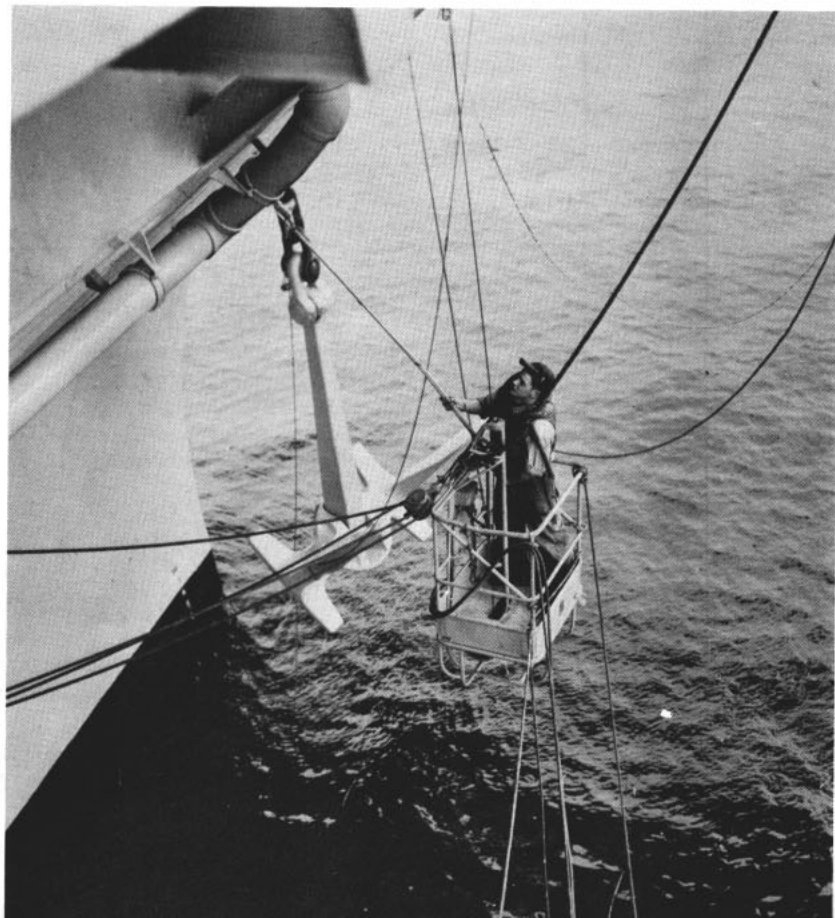
Don't race down ladders at break-neck speed. Use the hand rails. That's what they're there for.

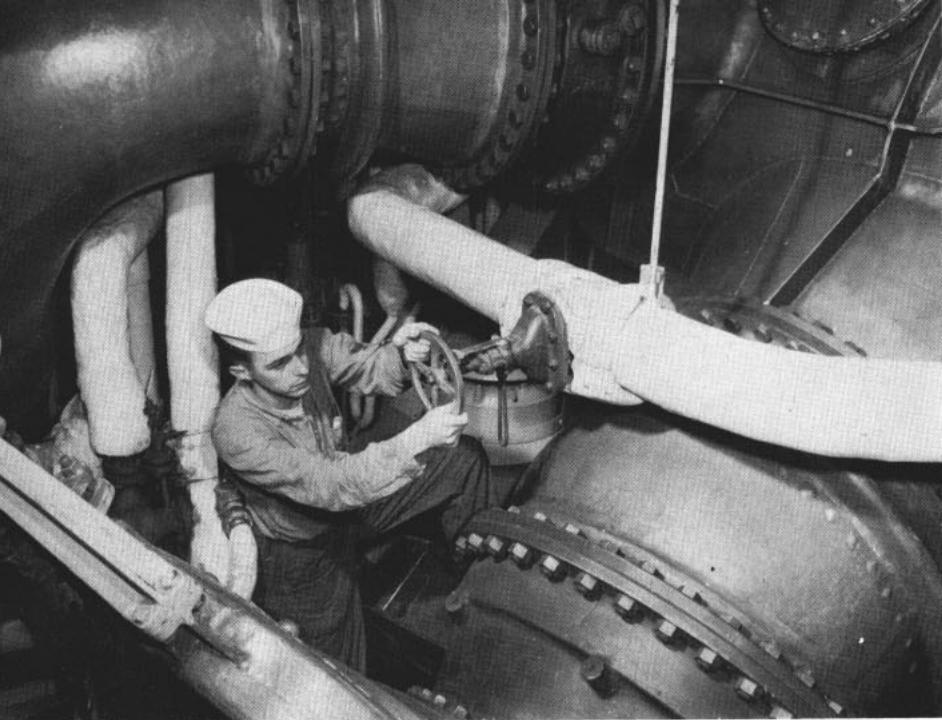
Ladders are not storehouses. Keep them uncluttered.

Don't unship ladders without permission from the department head in charge. Ladders can be bad luck.



**GOOD RULES**—Shipboard safety rules are designed to make life at sea as safe as possible. Below: Life lines and safety belt are a must in a boatswain's chair.





**PLAY IT SAFE**—Follow all safety rules when working in the engine rooms.

Perform work on ladders during hours of least traffic.

**Proper Ventilation**

Test the atmosphere of a compartment that has been sealed off, or which is normally kept closed, before entering. Some ships carry carbon monoxide indicators—if your ship has one, use it.

If vapor-producing materials are stored in the compartment, first test the atmosphere for the presence of explosive vapors (with a combustible gas indicator).

Use a flame safety lamp to determine whether the oxygen in the atmosphere is sufficient to support life.

If any dangerous condition is detected by the tests, ventilate the compartment. A satisfactory test must be made before anyone may enter or stay in the area.

If possible sample atmosphere without entering the compartment, otherwise attach a safety line to your body and have it tended by a responsible person outside and wear an OBA or air-supplied mask.

If your ship is not supplied with carbon monoxide indicators, carry out ventilation immediately after the flammable vapor test, if it has been determined that no explosive vapors are present. Use the portable ventilator set, and ventilate the closed space until there have been at least two complete changes of air. Then use the flame safety lamp to determine whether the oxygen content is sufficient to support life. If the test shows insufficient oxygen, ventilate

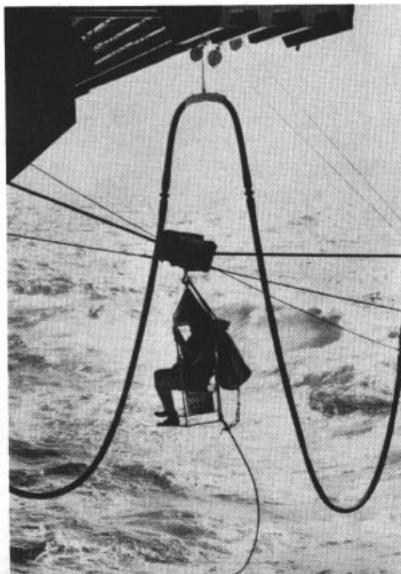
until a satisfactory test is made. Continue tests even after men have entered the compartment.

**Firerooms:** Never work in a dead fireroom unless adequate ventilation is provided. If the boilers in a dead fireroom are connected to a hot stack, be especially certain to ventilate before entering the fireroom.

**Boilers:** As a protection against toxic or explosive gases, ventilate boiler settings completely and test for the presence of toxic or explosive gases before permitting anyone to enter.

**Vapors and gases:** Take every precaution to prevent excessive contamination of the air by solvent vapors. Make certain you and others

**IN HIGHLINE transfer at sea all lines must be tended by hand and sufficient men should be kept standing by.**



under you know the dangers and hazards of vapors, gases, solvents and acids when required to work with or around them.

**Painting inside:** Forced draft ventilation should be in use when scaling, brush painting, spraying and using paint removers in an enclosed space and air-supplied respirators should be worn.

**Using torches:** A torch should not be used in a small unventilated space. It may heat up and thus become a source of danger, and it may exhaust the supply of oxygen. When such use is unavoidable, it may be necessary to use an independent oxygen supply and face mask.

**Welding:** Under conditions of improper ventilation, welding operations may create health hazards. These hazards are mostly due to one of the following:

- The presence of gases, dusts and fumes containing lead, zinc, cadmium and fluorine, or their compounds.

- The possible formation of oxides of nitrogen.

- Extreme heat.

During welding of uncoated ferrous metals in confined spaces, when individual ventilation devices are not available, some form of ventilating device should be installed.

**Storing compressed gases:** Compressed gases aboard all vessels, except cargo vessels, must be stowed only in designated compartments. Compartments containing compressed gases should be ventilated for 15 minutes before entry, if ventilation has been closed down.

**Storage batteries:** Be sure to ventilate a battery compartment which has been sealed off before turning on the lights, making or breaking electrical connections, or performing any type of work in the compartment. Make certain the ventilating apparatus of a battery compartment is operating properly before starting a charge. Stop the charge if ventilation is interrupted, except in an emergency. Do not resume the charge until the ventilation has been restored. Avoid sparks when removing or replacing batteries in compartments which may contain fumes. Use only tools with insulated handles for removing and replacing batteries. When using batteries with one terminal grounded, disconnect the grounded terminal before removing the battery and do not reconnect it until the battery has been replaced.

**Bilges:** The presence of fuel in the

bilges or in a free state in a boat is dangerous, since the fumes can be ignited easily. The free fuel may come from leaks in the fuel lines or units of the system, or may result from filling the fuel tanks too full. Fuel may flow through the vent holes because of the motion of the boat, or may run out because of the expansion of the liquid as it becomes warm. These fuel fumes must be disposed of by proper ventilation.

**Power boats:** Before starting an engine after fueling, or before starting when the engine has been idle for a day or more, take every precaution to ensure thorough ventilation. The same precautions should be taken if gasoline vapor is noticed when the boat is underway. Gasoline fires have occurred through ignition by sparks from some part of the electrical equipment while the engine was turning over; therefore, it is necessary to the safety of both personnel and material to stop the boat and clear out the gasoline vapors before continuing to run the engine.

#### Paint Fumes

The use of paints, varnishes, lacquers, cleaners, solvents and other finishing materials involves a marked fire hazard. Liquids containing volatile flammable vapors, if not cared for by adequate ventilation, may form explosive vapors.

Vapors and gases from cleaners, solvents and paints frequently have a harmful effect on the human system.

When a torch is used for paint removal, be careful not to ignite any flammable materials in the vicinity.

Containers holding paints, varnishes, lacquers, removers, thinners, cleaners or any volatile solvents must be kept tightly closed when not in actual use. They should be stored only in the paint locker.

Disconnect electrical equipment in enclosed spaces which are being painted.

#### Toxic Conditions

**Petroleum vapors:** Breathing the vapors from petroleum and gasoline products gives effects ranging from mild exhilaration, through irritation of the eyes, severe headache and complete intoxication, to unconsciousness and death. The effects become more pronounced as the percentage of concentration and time of exposure is increased. An added danger is that of accidents resulting from dizziness induced by small concentrations not otherwise harmful.



**ELECTRICAL HAZARDS**—Only qualified men should work on electrical gear.

The first symptoms of exposure to toxic vapors are headache, nausea and dizziness. If you note such symptoms, take them as a warning of the presence of dangerous amounts of vapors in the air. You can recover from these early symptoms promptly in fresh air. However, if anyone is overcome by vapors, he should receive immediate medical attention.

**Compressed gases and cylinders:** Particular attention should be given to location of cylinder stowage. Fumes from leaking cylinders might enter ventilating air intakes, and be transmitted to spaces where personnel may be affected or flammable gases may cause explosions. Chlorine and ammonia are toxic and will produce fatal results if breathed in large

quantities. In small quantities, they are irritants and cause acute distress by attacking the tissues of the lungs.

Aerosol insecticide and carboxide are toxic, where concentrations are present. Freon, in the presence of fire or red-hot metal, will decompose into phosgene gas, which is toxic.

The following refrigerants are toxic in that they can cause death or serious injury, depending upon concentration and duration of exposure or inhalation: sulfur dioxide, ammonia, methyl formate, methyl chloride, ethyl chloride, methylene chloride and dichloroethylene.

#### Electrical Hazards

When working on live circuits be as careful to avoid contact with low voltages as with high voltages. Work on live circuits should not be undertaken alone.

Never take a shock intentionally from any voltage. This is dangerous practice. Whenever it becomes necessary to check a circuit to see that it is alive, a voltage tester, voltmeter or other indicating device should be used.

Keep a safe distance from any high voltage electrical circuit except when working on the circuit or equipment.

When painting or doing other non-electrical work near exposed parts of electrical or electronic equipment, have the electrician provide a suitable insulating barrier between the equipment and the work area.

Do not use gasoline, benzene, ether or similar flammable cleaning

**KNOTS**—Learn how to tie knots properly and remember—always use the knot that was designed to do the job.





**UP & DOWN**—Always travel at a safe speed when using your ship's ladders.

fluids on electrical apparatus. Do not use alcohol for cleaning electrical equipment as it damages most types of insulating varnishes.

Keep electrical equipment clean. Oil, grease and carbon dust can become ignited by electrical arcing.

Only qualified electricians should attempt work on electrical equipment and systems.

Do not use naked lights in an open boiler. Portable electric lights may be used, but hand electric flashlights are preferable. If portable electric lights are used, the bulbs must be adequately covered with wire or rubber guards. The electric leads must be thoroughly insulated.

When electric arc welding in a confined space is to be suspended for any substantial period of time, such as during lunch or overnight, remove all electrodes from the holders. Disconnect welding equipment from the power source.

Do not use electrical equipment or machines with frayed or otherwise deteriorated insulation.

Ground electrically driven portable machinery and fixed electrical equipment.

#### **Flight Deck**

Don't smoke or permit open flames within 50 feet of parked aircraft.

Stay clear of propellers, intake and exhaust ducts of jet engines.

Allow sufficient time to permit cooling of jet engines before inspection or work on them.

Wear protective clothing when working with contaminated parts (such as inside jet engines).

Make sure aircraft is properly secured with approved chocks, tie-downs or other approved securing means. Remove chocks with utmost caution when engines are in operation—at the proper signal. Make approach for removal of chocks from a safe direction, with due regard for the location of propellers and jet intakes and exhausts.

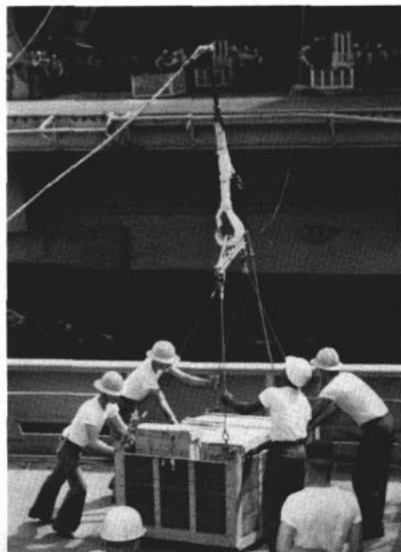
Only a qualified operator should be in pilot's seat when aircraft engines are started.

A fire guard must be stationed strategically near aircraft before starting engines.

Make sure correct signals are exchanged between pilot and person observing the engine from outside when starting aircraft.

Only authorized personnel should

**HARD HATS**—Wear protective headgear when work is going on overhead or where there are other dangers.



move any aircraft with towing equipment.

Do not tow aircraft without presence of wingwalker, when towing near obstructions. At night, wingwalker should carry a flashlight or luminescent wand.

Wash all accidental spills of aircraft fuel immediately. Avoid getting aircraft fuel on skin, as it may cause dermatitis and poisoning.

There should be no electrical equipment in the aircraft energized or being worked on, and no electrical apparatus supplied by outside power (such as electrical cords, droplights or floodlights) in or near the plane when refueling. For night refueling, approved explosion-proof flashlights instead of aircraft lights should be used.

Before using fuel hose, nozzle must be brought in contact with some metal part of the aircraft remote from the fuel tanks to make doubly sure that no differential in static electrical charge exists.

Connect the nozzle's independent static wire to a metal part of the aircraft at a safe distance from the filler openings and tank vents before removing tank filler cap (not necessary with pressure nozzle).

Fire-fighting apparatus and operator should be standing by during fueling operations.

Replace filler cap immediately after fueling.

Generally, obey all safety procedures outlined for flight deck personnel.

#### **Oily Rags**

Keep oily rags in closed metal containers, only. Keep the containers covered, and empty them regularly.

#### **Line Handling**

*Inspection:* Fiber lines that are to be used to support men should be inspected when first put into use, and thereafter as frequently as may be necessary to insure their safe condition. Look for abrasion, broken fibers, cuts, fraying and deterioration due to acids or corrosive substances. Any lines with defects should not be used.

*Winding the winch fall:* When possible, wind the winch fall so the lever moves in the same direction as the load being handled.

*Rigging:* Riggers and others using slings to attach lifts to hoisting equipment should use only the approved safe methods for properly fastening the slings to the load and to the hook. Only experienced men should do this work. The load should



always be carefully calculated in advance, and no attempt should ever be made to lift a load greater than the rated capacity of the equipment in use.

**Cylindrical loads:** When lifting loads such as piping, by strap, chain or wire rope wrapped around the load, the wrapping must be given at least two turns around the object.

**Multiple loads:** Two or more separately rigged loads should not be hoisted in a single lift even though the total load may be well within the full load capacity of the equipment.

**Knots and kinks:** The rigger in charge is responsible for seeing that chains or wire ropes are not kinked or knotted.

**Dragging rigging gear:** Chains or slings should never be permitted to dangle or drag under loads.

**Tag lines:** Use tag lines to guide loads being swung any distance.

A few other pointers:

- Don't attempt to ride a load that is being hoisted.
- Stay out from under suspended loads.
- Never exceed capacity of a line or wire rope when lifting materials.
- Line or rope should never be dragged over rough or dirty surfaces.
- Lines not in use should be stored in a dry, well-ventilated place supported on slats or hung in loose coils.

#### Protective Equipment

Use rubber gloves when handling acids.

Wear safety shoes to avoid crushed toes.

Wear gloves when handling sharp objects.

Do not weld or watch a welder unless wearing suitable goggles. Same goes when grinding or chipping.

Wear a hard hat that meets current specifications in use by the Navy when working in an area where work is being performed overhead.

Generally, use suitable protective gear for any job requiring its use.

#### Knots

A good knot must hold fast without slipping. If it's a knot in general use and not an ornament, it should be easy to tie. The best knot is one which has these advantages and is easy to untie as well.

There is always the right knot for a particular job. A bowline is a good knot—one of the best in its place—but it is not good for mooring to a



**ON GUARD**—Use protective equipment specified for job you are performing.

spar. You can't use a clove hitch on a boatswain's chair.

Learn how to tie knots properly, then learn which knots should be used where—and use the right knot for the right job in every case.

#### Highline Transfer

To transfer individuals singly at sea, the only approved rig is the manila highline.

All lines must be tended by hand.

Heaving in lines by hand, with a sufficient number of men standing by for emergency, is the only means by which proper caution can be taken against the highline parting from sudden strains by rolling ships. Manila is always prescribed instead of wire because wire cannot be tended by hand.

The burton method is a means of rapidly transferring four or five men

**TAKE CARE**—Ship's fiber lines should be inspected as frequently as may be necessary to insure safe condition.



in a skip box. It is used only when the situation demands quick transfer of a relatively large number of personnel and time does not permit individual transfer by the standard manila highline method. The danger, of course, lies in having winch operators on different ships controlling the transfer. Great care should be exercised under these circumstances.

Everyone assigned to transfer stations must become familiar with all phases of safety procedures and precautions.

Because transfer stations on receiving and delivering ships are in exposed locations, men working close to a ship's side must wear inherently buoyant life jackets at all times. If it is necessary to use inflatable-type life jackets, they must be inflated.

During rough weather, wear a life jacket in exposed areas topside.

When transferring anyone by highline over cold water, give him an immersion suit.

**A**RE THERE any safety rules you can add to this list? Most assuredly.

But if you feel we've skipped some of the more important ones, why not make a list of those that come to mind? At the beginning of each week, print one of your safety rules in large letters and display the card in your shop or work area. Then you can keep safety rules constantly in mind on your ship.

After all, that's the only way to achieve safety.

—Bill Howard, JO1, USN

# A SHORT COURSE IN NAVY SAFETY

Take a look at the figures shown here and see if you're included among them. If you are, you'll want to take the 5-minute course in Navy Safety, and then practice it on a 24-hour basis. Sure, the CO is responsible for the safety of his ship and his crew, but you can't expect that to include you unless you provide a little cooperation. In the day-to-day routine of your job, the way you think and the way you act will determine to a large extent the shape you'll be in when it's time to hit the sack. There are two good rules of thumb to follow: First, overcome your own ignorance of the basic rules of safety, and second, practice these rules. And remember this slogan: In the Navy, safety is no accident.



Ladders are not storehouses. Keep them uncluttered.



He who hesitates is sometimes saved. Walk, don't run.

Handrails are provided for only one reason—to be used properly.



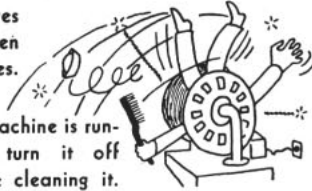
File drawers not in use are far better closed than open.

Buff the deck thoroughly. Wax can be slippery.



Keep your sleeves above elbows when working machines.

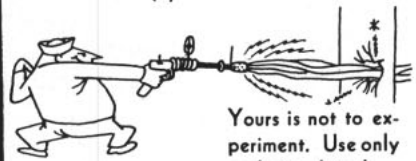
If a machine is running, turn it off before cleaning it.



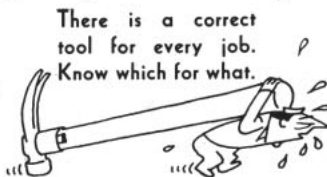
To avoid crushed toes, remember your safety shoes.



Rubber gloves are provided for acid-handlers. Use them.



Yours is not to experiment. Use only authorized tools.



There is a correct tool for every job. Know which for what.



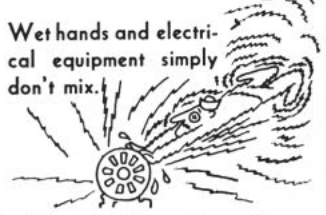
Overloading of hand trucks accomplishes nothing but harm.



File cabinets must never be overloaded. Never. Never.



Wearing jewelry around machines produces deadly results.



Wet hands and electrical equipment simply don't mix.



You are issued protective gear to protect you. Use it.

Sharp objects can amputate fingers. Wear your gloves.



Tools in less than good condition are dangerous tools.

Hanging others is frowned upon. Watch extension cords.



When working aloft, make certain your lifeline is secured.

Lifelines were not designed to be roosted upon. Don't.



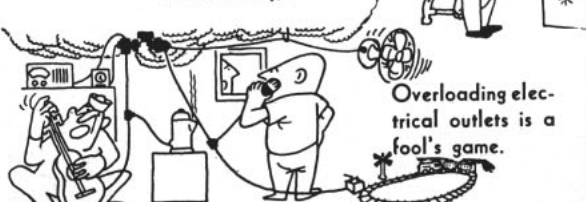
Three simple rules:  
1) don't overload,  
2) face forward and  
3) don't use for personal transportation.

Know your tools, e.g., a screwdriver is not a punch.



Keep a hand truck below you or be ready to scurry.

No container is indestructible. Try to remember.



Overloading electrical outlets is a fool's game.



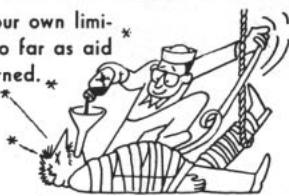
Taking unauthorized swims is strictly for the dim-minded.

Be certain you have sufficient light whatever you do.

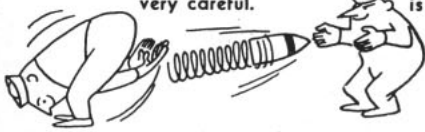


A lifeline around an open hatch is an excellent idea.

Know your own limitations so far as aid is concerned.



High explosives are precisely that. Be very careful.



Throwing blocks, crowbars, from ship to dock is stupid.

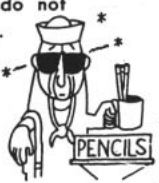


Machines left to run alone can cause serious damage.

Watch not the welder, if you do not have goggles.



While welding keep sleeves and pants rolled right down.



Welding tends to heat metal. Put up warning signs.

Acid not kept in lead or glass containers won't be kept long.



Woe unto him who does not read his safety manual.



Unless you have no need for oxygen, check ventilation.



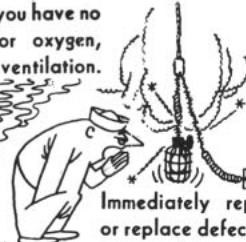
Tools do not belong in the back pocket. If you slip...



Like everything else there is a right way and a wrong way to lift.



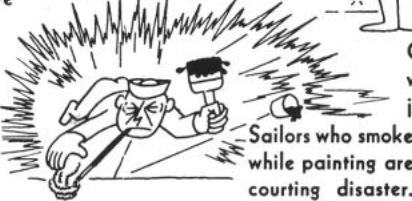
Immediately repair or replace defective electrical gear.



Use, keep covered, and empty regularly containers for rags.



Cleaning the deck with inflammables just isn't done.



Sailors who smoke while painting are courting disaster.



Someone is certain to stumble on a paint can left open.



Protective equipment is valuable. Keep it clean.



Your eyes are important. Protect them when grinding.



Munching on painted fingers equals lead poisoning.



Make sure that your support is safe and sturdy.



For the life you would love to keep, check all lines.



When taking a nap, be sure that you choose a safe spot.



The practical joker is a dangerous enemy. Shun him.



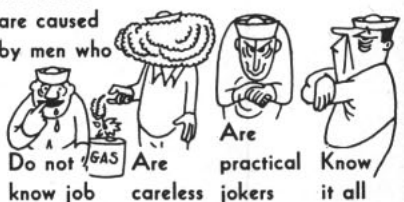
If you dig into a pile, you may or may not get dug out.



The most obvious rule of all is watch your step.



Accidents are caused by men who



Do not know job

Are careless

Are practical jokers

Know it all

In closing doors gentleness is a good rule of thumb.





**ON THE ALERT**—Sharp eyes and quick action by ship's lookouts can be the formula for saving a crew member at sea.

# Man Overboard—This Is

**G**REEN WATER over the bow, a slick deck, a moment's carelessness, and it can happen to you. You were working on the weather deck and suddenly you're swimming frantically to avoid the screws.

You hear six short whistle blasts (the universal danger signal—also used for man overboard). A lifebuoy

splashes into the water nearby and another is thrown over the fantail.

They saw you go over, so you've got it made. Just relax.

On board ship the lookouts keep you in sight while the recovery team readies the gear for your pick-up. They're a crack bunch, sharpened by practice. Each one knows his job.

The rudder is put hard left when the word "Man overboard, port side," reaches the bridge. The quick turn swings the screws away from you and reduces the ship's speed.

The OOD alerts the task commander. Other ships clear the area, leaving your skipper room to maneuver safely. In CIC your position is plotted on dead reckoning gear.

Your ship completes its turn and approaches you. A whaleboat splashes into the water. Soon, practiced hands pull you over the gunwales and someone throws a blanket around your shoulders. The boathook fishes out the life ring and it's all over.

You were lucky. The seas were fairly calm, and it was daylight. But while you're shivering in the boat you can't help but wonder what the results would have been at night, or in heavy seas or, perhaps, in shark-infested waters.

**Y**OUR CHANCES might have been better than you think.

Darkness, for instance, causes few major problems if the seas are calm and someone sees you go over. Almost immediately after the alarm is

**TAKING CHARGE**—Ship's skipper directs recovery operations from the bridge.



**ALL HANDS**



REMAIN CALM and wait for pickup.

# No Drill

sounded a searchlight will focus on you or on a nearby life ring. The OOD can then use that spot as a point of reference and complete his turn as he would in daylight.

A reasonably accurate 360-degree turn, however, is next to impossible when spotlights are limited by rain, fog, or rough seas. If the OOD has no reference point, his circle is likely to be imperfect—with disastrous consequences.

So a Williamson Turn will be used. This maneuver is almost guaranteed to return the ship to the exact spot where the turn was begun, regardless of weather or visibility. However, it takes a few minutes more than coming right around.

Once the turn has been successfully completed, the spotlight crew has a relatively small expanse of water to search. Your chances of being found are reassuring, especially if you're wearing a life jacket equipped with a light or if a man overboard signal marker was tossed overboard.

While the search proceeds, all unnecessary equipment will be secured and silence maintained on deck. That's your cue to raise hell.



SING OUT 'Man Overboard' and toss the nearest life ring into the water.

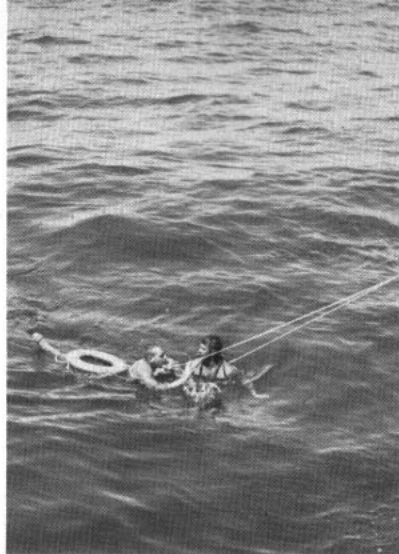
Methods of pick-up, once you have been located, will depend upon the equipment at hand, and weather conditions. If you're a very lucky sailor (under the circumstances), and are serving with a large task

force or a carrier, there is often a helicopter. Helo rescue can sometimes be completed within seconds of the accident. Failing a helicopter, a motor whaleboat may be used.

Unfortunately, darkness and bad

THE RESCUE—Swimmer leaves ship's whaleboat to assist shipmate into boat.





**RESCUE SWIMMER** with safety line attached takes horse collar out to victim who is then pulled aboard ship.

weather often preclude the use of either method. You may be recovered over the side.

Over-the-side pick-up entails maneuvering the rescue ship within a shotline's distance of the victim, sending out a swimmer with a line, and pulling in the man as though he were a fish on a hook. This is simplest for a small ship, so if you fall from a carrier or a cruiser, a nearby destroyer may be assigned rescue duties. They're mobile and fast.

**YOU** CAN—and must—depend on your ship. But despite the skill of the rescue team, you can expect to be on your own from ten minutes to two hours. During that time, survival will be up to you.

If you fall, the ship's screws will be your first danger. Although the OOD may succeed in swinging the stern away from you if notified in time, don't depend on it. Strike away from the side immediately.

Luckily, the impetus of your fall will probably carry you several yards from the side, so the safe zone will not be far away.

Once your ship has passed, conserve your energy. If you don't have a life jacket, improvise one by inflating your trousers (see box, page 16). Don't swim unless you have a definite objective, such as a life-buoy or a smoke flare. If you must swim, vary your strokes and your strength will last longer (see center-spread, page 18).

Although an expert swimmer will have an easier go of it, a Class III man can survive—if he doesn't panic.

The *Survival Training Guide* (NavWeps 00-80T-56) offers some advice about swimming in heavy seas. Swim on your stomach, with

your back to the wind. Let the waves break over your head. To rest, float face down and take a single breast stroke when you need to breathe.

If there are sharks in the area, experts advise you to float on your

back, moving your arms just enough to keep your head above water. Don't panic and thrash around, it will only attract sharks. The idea is to remain as inconspicuous as possible.

Should you be attacked, the shark

## In an Emergency, Navy Comes

Almost everyone has heard tales of helicopter crewmen who have gone into the water to recover injured airmen. Not so well publicized are the whaleboat crew members, who often do the same.

Two recent incidents come to mind,—one, by air (via helos) and two, by sea (via boats).

The story of the whirlybird rescue took place in the Med. The incident began during a daytime launch on board *uss Enterprise* (CVAN 65), when a *Vigilante* hit the water about four miles from the carrier, just seconds after the pilot and observer had ejected.

The *Enterprise* angel already was airborne and in the plane guard position just outboard of the carrier's island. The helo immediately left its station and sped toward the scene of the accident.

The downed pilot was located first, near a smoke flare. When the helo hovered overhead he signaled the crew with a double thumbs up. This may be translated: "I'm fine—check my observer."

After a short search the helo crew spotted the observer floating face down, his parachute billowing around him.

Airman J. S. Mitchell, one of the two helo crew members, fastened himself to the winch line and was

lowered into the sea by the second crewman. Mitchell lifted the unconscious man's head above water and cut the parachute shroud lines with his free hand. He then attached the limp body to the hoisting line and watched while it was lifted into the open door of the helicopter.

The man was obviously in serious condition, so the helo immediately returned to the carrier where a doctor was waiting on the flight deck. Airman Mitchell and the *Vigilante* pilot waited in the water several minutes before being picked up by a planeguard destroyer.

The injured observer lived to become a happy statistic—the 644th man to be rescued by Helicopter Squadron Two, the angel's parent command.

About 50 per cent of the aviators who crash and are rescued at sea are recovered by helicopters, and the remainder are picked up by destroyers and whaleboats.

Helo crewmembers are the first to admit that they take their half off the top: They perform the daylight, fair-weather missions. But because helos are severely handicapped by darkness or bad weather, the more complicated rescues usually fall to whaleboat crews.

Which brings us to our second story—with a different twist.

watch (a member of the man overboard team) is armed, and may be able to shoot them.

**C**HANCES ARE GOOD you'll hear the ship's man overboard whistle before you've even cleared the stern. But if not, don't give up. You'll probably be missed soon and, with the aid of your improvised life jacket, you can stay afloat for a long time.

The story of Carleton Ingerson, who found himself in just that situation may be reassuring. While a catapult spotter on the flight deck of *USS Saratoga* (CVA 60), the airman was blown over the side by a jet blast.

It was night and no one saw him go. Jets were turning up on the cats, so his cries went unheard. While he watched from the water, *Saratoga's* running lights receded toward the horizon. He was a very lonely little man for a while.

But, as an important member of the flight deck crew, his services



**FROM THE AIR**—Helicopter picks airman from water just minutes after crash.

were soon missed. The captain was notified and retraced the ship's course on the assumption that Ingerson had gone overboard.

One hour and 25 minutes after the accident, the airman was located by a searchlight and taken aboard a

destroyer in the task Group.

Carleton Ingerson's story also illustrates the importance of sounding the alarm—even when in doubt. The man who informed the bridge of Ingerson's absence should not have been embarrassed if the airman had

## on the Double — By Air and By Sea

It was night. Off the coast of New Jersey two ASW helicopters from *USS Randolph* (CVS 15) were conducting a sub hunt. They were assisted by the destroyer *Mullinnix* (DD 944).

Once again everything seemed under control. Then one of the helos disappeared from the *Randolph* sky radar.

A few seconds later a new blip appeared on the *Mullinnix* surface radar. Presently that, too, disappeared.

Helo 54 was down in 44-degree waters. Life expectancy of the crew? Between one and two hours.

On the destroyer, word was passed to station the recovery detail. Among those who mustered at the whaleboat were LTJG William Reisner, boat officer, and Signalman Third Class J. I. Amerson.

The boat was lowered and the coxswain shoved off in the direction of a signal marker near the crash scene. 54's sister helo was hovering over this marker. When the whaleboat approached, the helo began moving toward a small white light some 300 yards distant. The boat followed.

The small light proved to be the emergency flashlight attached to one downed airman's Mae West. Two others were floating nearby.

The boat's approach to the first victim was complicated by confused seas and the propwash from the helo escort. When the coxswain finally succeeded in nearing the man, LTJG Reisner extended the boat hook. The helo crewman grabbed the hook and was hauled into the boat.

An identical approach was used for the second man, but the victim did not move toward the extended hook. The coxswain was unable to approach near enough for the boat crew to grab the airman.

Amerson jumped into the water to recover the unconscious man. But the seas were becoming worse, and he had trouble making headway toward the victim. To make matters worse, the whaleboat began to drift away.

LTJG Reisner went in to help, and the two men managed to bring the victim to the boat.

The third man was conscious, and his rescue posed no problem.

After all three men were in the boat, the rescue crew learned there was still another crewman in the water. The search began again, and the last man was located some 250 yards from where the other three survivors had been found.

Like the second, this man was unconscious. Once again, Amerson went over the side and pulled the airman back to the boat.

All four victims were on board the *Mullinnix* thirty minutes after their helo had hit the water: Thanks to the quick work of recovery, the helo crew escaped with minor shock and exposure.



**Whaleboat crew goes to the rescue during demonstration.**

## The Williamson Turn

Navymen familiar with the Williamson Turn know it will help to return a ship to the same location as when the maneuver was begun. This maneuver is most useful when a man is overboard at night, in a choppy sea, or in low visibility and he is not in sight when the alarm "Man overboard" is sounded.

A man overboard faces three immediate dangers: mangling by the ship's propellers, drowning, or abandonment because he can't be located.

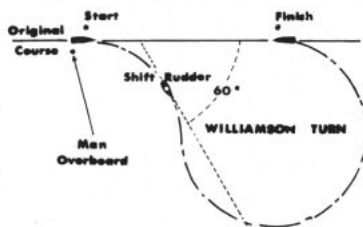
The Williamson Turn (named for CDR John A. Williamson, USNR, who developed it in 1942) reduces these dangers by swinging the ship's screws away from the victim, and assists in returning the ship accurately to the approximate area where the man fell overboard.

When the officer of the deck receives the word that a man is overboard, he orders hard rudder toward the side from which the victim fell. As the ship's stern swings away from the victim, maximum engine speed is usually ordered and the compass heading watched closely.

The rudder is held hard over until the ship's head nears a specific angle (usually 60 to 70 degrees) from the original heading. When

the ship's head nears the 60-to-70-degree differential from the original course, the rudder is then shifted full over to the other side.

The rudder is held hard over until the reverse of the ship's original course is approached and the ship is steadied up on this reciprocal course. The engines are slowed or stopped. At this point the ship should be about the same distance



from the victim as the ship's tactical diameter. A sharp lookout must be maintained, as a person in the water presents a very small object and is very difficult to see even in clear weather.

The Williamson Turn must be used with discretion. It wouldn't be particularly smart for the conning officer to order the ship turned at maximum speed into a heavy sea or when there is danger of a collision.

The Williamson Turn is not al-

ways the best maneuver to execute, even under favorable conditions. If the visibility is good and the sea is calm, particularly when the man overboard is in view from the bridge, the victim may be reached much faster simply by continuing the turn and conning the ship to the best position for recovering the man. In some ship types, recovery might even be faster by reversing the engines and backing down to the victim.

In many ships, the Williamson Turn is only one of many procedures carried out to insure the safe return of the man overboard. Sounding alarms, dropping lighted lifebuoys, maintaining a constant visual contact on the person with binoculars, stationing additional lookouts, illuminating the area with searchlights, maintaining a plot of the ship and victim's positions on the DRT, manning lifeboats and requesting aid from nearby ships or aircraft are part of established Navy procedure.

When the weather is rough, at night, or in poor visibility, the Williamson Turn frequently assures the man overboard a better chance of telling his grandchildren of the night he was pulled from the sea by a rescue crew.

later been found in the gedunk.

**I**F A BUDDY falls overboard, it may be up to you to trigger the rescue operation. If you see—or think you see—a man fall yell, "Man overboard, port (or starboard) side!" Keep yelling until you know you've been heard. In the meantime, throw over a lifebuoy.

Above all, don't hesitate. If you

do, the OOD may receive the word too late and be unable to swing the stern in time.

When the alarm is sounded, but doubt exists, the ship will proceed on the assumption that there is, indeed, a man overboard. But at the same time, the OOD may hedge his bet and call a muster.

Everyone must muster in person. If all hands are on board, the search

may be called off. But if a man is absent, it must continue indefinitely.

And may the Great Sea King help the missing seaman if he is later found asleep in the fan room.

So much for shipboard muster.

A positive attitude is invaluable in an emergency. Unfortunately, it is also a sad but inescapable fact that not all rescue operations end happily. Superb seamanship, meticulously laid plans, your own attempts to remain afloat—may be thwarted by a fluke of luck.

Consequently, there are safety regulations. Don't lean on life lines. Don't go on deck in bad weather if you don't have to. Don't work without a life jacket if there is danger of falling overboard. Don't, don't, don't. The rules will occasionally cramp your style (a life jacket can be a hot and uncomfortable burden), but they may also save your life.

Granted, your boat crew needs the practice. But that's why they have Oscar.

—Jon Franklin, JO2, USN

**KEEPING TRACK**—CIC watch team plots relative position of man overboard.







# Think—and Swim

**S**WIMMING can be great sport when you're on liberty at a place like Waikiki Beach or Acapulco. But, when you're playing the title role in "Man Overboard" or you're trying to help a shipmate in trouble in the water, it becomes a matter of life and death.

At any time, some sailor somewhere may have to swim for his life. While you may feel that the chances are very slim that you will ever find yourself in a situation where you will have to "swim for your life" it's a good idea to know what to do—just in case. It will be too late to learn after you are in the water.

The swimming skills and lifesaving techniques you have already learned in recruit training may someday save your life or help you to save someone else. Remember these skills and practice them whenever you have the opportunity. The chart on the following pages points out the important things to remember if you are to survive at sea. Study the chart and combine the information on it with the knowledge you already have and you won't go wrong.

These pointers are not intended to teach you how to swim. They are aimed to indicate basic factors or problems you may have to face, and explain how to face them.

**How To Breathe**—No matter how far or how fast you can swim you will never feel quite safe in the wa-

ter until you have mastered the proper breathing techniques.

In swimming, almost all the breathing is done through the mouth. The inhalation is taken entirely through the mouth and the air is exhaled by the mouth with some coming out through the nose. If you keep your face flat in the water there will be no tendency for the water to enter your nostrils and you will avoid that "smothered feeling."

If you are a good swimmer you have probably already acquired "rhythmic breathing." This is nothing more than breathing in series—inhaling through the mouth as your head is rolled to the side and exhaling through your mouth and nose as you turn your face downward beneath the surface. If you don't hold your breath, the series will be uninterrupted. While simple in itself, rhythmic breathing is of great importance to the swimmer, since it is relaxing, and because adequate ventilation of the lungs at regular intervals is essential to continuous swimming.

**Learn To Relax**—In a survival situation, the ability to relax is half the battle. There is no need to panic, for water will support almost all your weight. Some swimmers mistakenly believe that it is necessary to keep the arms and legs moving to stay afloat. They don't realize that the body's natural buoyancy will serve to keep them on the surface. Much

effort is wasted by struggling to stay afloat—effort and energy that could be used to make progress in swimming to safety.

A safety factor of great value is also the ability to float or rest in a floating position on your back. After swimming for some time you may become tired and need a rest—at such a time, if you have the ability to turn on your back and rest in a floating position, it may be a factor in saving your life.

**Jellyfish Float**—Another means of resting is the "Jellyfish Float." After taking a deep breath, submerge your face and slowly slide your hands down your legs until they reach your ankles. Don't try to bend your knees or lift your feet. As a rule, even before your hands reach your ankles, your upper body—which has of course been gradually submerging—begins to buoy you up and your body is suspended at the surface with your rounded back showing above the water.

The "Bobbing Jellyfish" is an amazingly simple skill and is based upon your ability to control your breathing and to do the Jellyfish Float described above.

It is a survival skill designed to save your life if you are forced to remain afloat without aids while you are waiting to be rescued.

Here's how it is done:

- Assume a Jellyfish Float posi-



**NOW'S THE TIME**—Swim call is a time to brush up on survival swimming tricks.

tion. Allow your arms to hang suspended toward the bottom, drop your head so your chin is on your chest. Allow your legs to hang free and relaxed. Hold your breath. Remain in this position as long as it is comfortable.

- When you need a breath of air, simply move your hands up and forward below the surface and, at the same time, exhale through your mouth. Note that your hands are extended forward just below the surface at the end of this phase. You then press your hands down and back as in a Butterfly Breast Stroke and, at the same time, lift and turn your head to one side, inhaling through the mouth when you rise to the surface.

- To go back down, slowly allow your hands to move back to their free hanging position, return your face to the water with your chin on your chest and you will hang suspended like a jellyfish. When another breath of air is desired you just "bob up" as before.

- If, in returning to the Jellyfish Float position you should go down too deep after taking a breath of air, you may use a modified flutter kick or scissors kick with your feet to put you near the surface. However, in

most cases, if a swimmer secures an adequate supply of air in his body, he will remain at the surface in a satisfactory floating position.

**Leaving the Ship**—Should you ever find yourself in an abandon ship situation, don't jump—unless the ship is low in the water, or jumping is the only way off. If it's at all possible, use ladders, cargo nets, lines, hoses and such to lower yourself. This can prevent injuries from awkward landings or from landing on unseen objects or other men already in the water.

**Swimming Through Fires**—It is not advisable to attempt to swim through burning oil, flames or debris—but it is possible to swim under them. If you ever find it necessary to jump into oil or flames, remember to jump feet first from the side of the ship facing the wind. To make the jump, take a deep breath, hold your nose and keep your feet close together as you learned in recruit training. A kapok jacket or inflated life belt should never be worn when it is necessary to swim under water. Clothing should be worn as a protection against flames or debris, but shoes should be removed, because they slow underwater progress.

You should stay under water as

long as possible. When you need air, come to the surface with your arms above your head. When your hands break the surface, you should immediately begin beating away the burning oil with a circular thrashing motion. When your head breaks the surface, turn your back to the wind to help protect your face from the smoke and flames, and keep beating away the burning oil. Take a deep breath and submerge, using a feet first dive. Swim underwater as before, to the windward, until you are out of the burning oil or it is necessary for you to come up for air.

**Avoiding Cramps**—Violent movement in the water, long swimming or continuous swimming in cold water may cause muscular cramps. These are most likely to occur in the arch of the foot or in the calf of the leg. Their greatest danger is that they will induce panic. The swimmer who is seized by a cramp should take a deep breath, bend forward in a Jellyfish Float position and slowly but firmly knead the cramped muscle. After releasing the cramp the swimmer should change his stroke before continuing to swim. Next time you go swimming, practice this method of curing a make believe cramp—it might save your life someday.

**Clothing—Help or Hindrance?**—If it is necessary to remove your clothes while in the water to make better progress, remove the heaviest articles first. By using the jellyfish float the shoes (if you still have them on) may be taken off.

To remove trousers you could assume a back float position, unfasten them, slide them down over your hips and flutter kick out of them. Another position frequently used to remove trousers in the water is the Jellyfish Float position. Remember that clothing is a real protection against exposure and only clothing which seriously interferes with your ability to keep afloat should be removed.

Your clothing can also come in handy to keep yourself afloat. Your jumper or shirt may be inflated by tying knots in the cuffs and collar, blowing air in the opening and holding it under water. Your trousers make even better buoys than your jumper.

After the trousers are removed float them on the surface with the fly up, tie a single knot in each leg, then take one side of the waist in each hand and work the garment around on the surface until the legs

are at the back of your head and neck. Then flip the trousers over your head and bring the waist down smartly on the surface, trapping a good pocket of air in each leg. Next, gather the waist together under the water and hold it in one hand and you will have a fine pair of water wings or "water legs."

Before publication this article was checked by the American Red Cross, which had these comments to make on using your clothing to keep yourself afloat:

In many cases the shirt may be inflated while the individual continues wearing it, by fastening the collar and cuffs and securing all the buttons, then blowing air into the opening between the buttons (held open with one hand) while holding the tails of the shirt underwater with the other hand.

Another way to get air into the shirt, which is more efficient, is to float on your back and scoop air under the front of the shirt with one hand, the other hand grasping the body of the shirt below the last button and stretching it out from your body. Then hold the tails of the air-filled shirt beneath the surface of the water.

The scooping action can also be used to fill the trousers with air, and it may be easier than flipping wet trousers over your head. Be sure that the fly is fastened, and that the entire waistband is kept beneath the surface of the water.

**Helping Others in the Water**—In your efforts to reach a life raft or lifeboat keep a lookout for your shipmates. Some of them may be wounded or otherwise unable to swim to safety and you may be able to help them. But be sure you know what you are doing before you start. A drowning person is usually far advanced in the stages of panic—his one idea is to keep his head above water so that he can breathe. Nine times out of ten a drowning person will try to grab some part of the rescuer's body or clothing in order to stay afloat.

As the rescuer you should try to reason with the victim while you approach him. Tell him exactly what you are going to do and how he can help. Be sure you don't panic yourself—if he sees that you are relatively calm it will help to put him a little more at ease. However, if the drowning man does grab you, dive under the water, taking him down with you. Underwater, a man who

is panic-stricken will usually let go. Under no circumstances should a drowning man be struck. His system has already had sufficient shock to cause severe physical reactions and the added shock of a severe blow would only make him worse—it might even cause heart failure.

There are several methods of carrying the victim to the lifeboat or life raft. Select the method which best fits your own abilities, the condition of the victim and the distance you will have to carry him. Here are a few brief descriptions of the most common lifesaving carries:

• **Hair Carry**—This is easiest because it allows the most freedom of movement on the part of the rescuer. The rescuer should turn on his side, slide one hand up the back of the victim's head to the top and grasp his hair tightly, leaving the rescuer's other arm and his legs free for swimming with a side stroke. The rescuer may swim on either side, changing hands whenever it is necessary to rest.

• **Head Carry**—The rescuer should swim on his back, holding the victim's head above water with both hands meeting under his chin.

• **Cross Chest Carry**—The rescuer should turn on his side, place his arm over the victim's shoulder, across the chest and under the opposite arm. The victim's body should be supported on the rescuer's hip and the rescuer should swim side stroke using his free arm and both legs. This carry may be done on either side, but should not be used for long distances because it is very tiring.

• **Tired Swimmer's Carry**—If the victim has enough control of himself to obey orders, he should be told to turn on his back with his feet toward his rescuer, spread his legs and place both of his hands on his rescuer's shoulders with his arms still. The rescuer then assumes the position for the breast stroke and swims, pushing the victim ahead of him as he goes. The breast stroke is useful because it leaves the arms and legs unhampered for swimming and is only slightly more tiring than ordinary swimming.

The Red Cross points out that one of the safest ways to attempt a rescue is to push some sort of floating support to the victim, if possible. Otherwise, the next best thing would be to extend an object such as a stick, shirt or short length of line to him and pull him to a floating object,

or to make a swimming approach from the rear of the victim, grasp his hair or open collar and tow him to safety if the distance is short.

Once you reach some type of floating support it is even possible to perform mouth-to-mouth resuscitation, if necessary in the water. (See page 29).

**Lifeboats and Rafts**—Once you have reached the lifeboat or raft you are just about as good as saved. The Navy, Coast Guard and Merchant Marine have equipped all lifeboats, rafts and planes with survival equipment adequate for emergencies at sea. It would be a good idea for you to become familiar with the boats and rafts on your ship, and the equipment they have on them (see page 26). By this time the Search and Rescue teams will be out looking for you (see page 46).

With the swimming skills and lifesaving techniques you learned in recruit training, the modern survival equipment on lifeboats and life rafts and the speed and accuracy of the Navy's search and rescue planes, the chances of survival at sea today are pretty much in your favor if you keep your head. If you remain calm and keep your spirits up you will find the battle for survival a fairly easy victory. Just remember that although you may have to abandon ship there is no need to abandon hope.

**SWIMMING for fun can pay you double in experience gained and sense of confidence acquired in the water.**



## ENTERING THE WATER

There are many ways of entering the water, some right and many wrong. Remember, your actions influence others. Obey orders. Keep calm. Don't get into the water sooner than necessary. Your method of entering the water may vary according to whether you are on a ship, plane, small craft, or life raft.

### CLOTHES



Keep your clothes on. You may need them later. Stow your hat inside your shirt. Shoes can be taken off in the water and saved by tying to yourself or floating driftwood. They may come in handy later. Shirts and trousers can be inflated to improvise floating aids. Discard chin-strap helmet before jumping.

### LIFE JACKET



Fasten securely. If it is the pneumatic type, do not inflate it until you are in the water and well away from the ship. If it is the kapok or cork type, be sure to hold it down while jumping. (See below.)

### CLIMBING DOWN



If possible, lower yourself into the water by sea ladders, cargo nets, knotted lines or even fire hose. A pair of gloves for climbing down will help to prevent badly skinned hands. Don't rush the other fellow, and once in the water, get out of the way of those following you.

### JUMPING



DON'T dive head first! If you must go overboard in a hurry, jump feet first. Even jumping is dangerous and should be done only when necessary. Jump to the windward from the lowest possible part of the ship and from the bow if the propeller is still turning. Consider the possibility of submerged objects, floating debris, and other personnel in the water. Look straight ahead when starting your jump and don't look down while in midair. (It may throw you off balance.) Keep the feet tightly together and the body straight. Grasp the nose with one hand and hold the opposite shoulder with the free hand over the hand holding the nose. Return to the surface by looking upward and swimming toward the surface. If the surface of the water is covered with burning oil, swim through it by splashing a path in the water ahead of you. Remember to swim into the wind to protect yourself from the ship drifting down on you and from burning oil. If explosions are likely—swim on your back. Stay close to others until help arrives.



Know and check your ship's safety equipment before an emergency happens. Be prepared for the rare occasion which compels you to take to the water. Learn skills to help you

## STAYING AFLOAT

Remember it is simple to stay afloat. The most important survival skill is the ability to remain afloat with little or no effort for an extended period of time. Relax—don't waste energy. Learn to control your breathing—it's the number one survival skill. Inhale through the mouth—your face away from the breaking sea. The chances of survival are increased and fears are lessened when one has confidence in his abilities to remain afloat.



### FLOATING AIDS

Debris can be a friend—not always a foe. In addition to your life jacket—oars, wooden boxes, kegs, and other floating debris will keep you afloat. Learn to inflate your shirt or trousers.



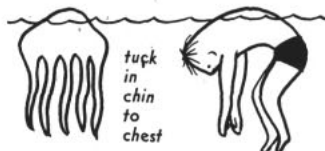
### BOBBING JELLY FISH FLOAT

If you have lost your life jacket and no floatation device is available, this valuable skill will keep you afloat. While its primary advantage is that of affording a long range resting position, this method of floating is also useful for removing clothing, treating cramps, and scanning the bottom. See text and illustrations below.



assume jelly fish float position—hold breath

exhale



to rest, remain in this position as long as possible



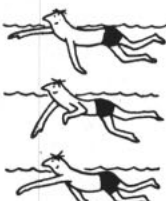
move hands forward

(This skill can be modified to attain some forward motion by extending

## DISTANCE SWIMMING

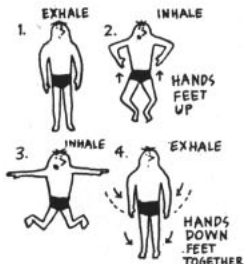
A variety of strokes is desirable to enable you to maintain yourself in the water to reach land or floating objects. Any one of these quiet, steady strokes, shown below, may be used exclusively or alternately with others as a restful change. They are adaptable to carrying equipment, to saving others, or in case of injury. All of these strokes are recommended as energy savers, and will enable you to cover long distances with a minimum amount of effort.

### HUMAN STROKE



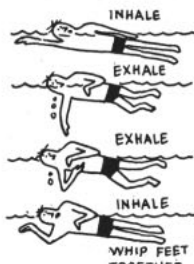
prone position reach and press down flutter kick

### ELEMENTARY BACK STROKE



on the back draw up arms—extend—press back inverted breast stroke kick

### SIDE STROKE



side position reach and press scissors kick

### BREAST STROKE



prone position reach and press wide breast stroke-kick

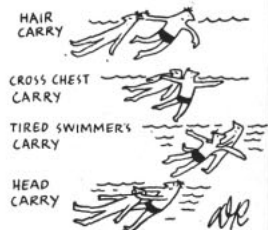
## RESCUE OF OTHERS

Successful aid to your shipmates depends on your presence of mind, knowledge of life-saving skills, and strength to carry them out. It may be that just shouting instructions and sharing your know-how in staying afloat will

### APPROACHES



### SWIMMING RESCUES



# SWIMMING

stay afloat long enough for help to come and for you to be able to help others. Don't be the "man overboard!" know your ship's safety regulations.



## UNDERWATER SWIMMING

If there is danger on the surface, swimming under the water can be an exceedingly effective protection. Such hazards as floating debris, flaming oil, strafing and flying missiles can be avoided by swimming a few feet below the surface. This is an invaluable skill for recovering objects and for lifesaving tactics.



### TREADING WATER

Maintain a vertical position in the water, submerged to the chin. The usual arm motion is sculling (hands moving as though you were smoothing sand). The legs move in a vertical flutter kick, scissors kick, or breast stroke kick.



### SUBMERGING

If you are swimming along the surface and find it necessary to submerge quickly the feet-first surface "dive" is recommended. Start with the body in vertical position, arms extended along the surface of the water . . .



THEN press down on the water with your hands, at the same time snapping the legs together in a vertical scissors kick. This action will lift you higher out of the water. Keep your body straight and your feet together and the weight of your body will start you down . . .

AS YOU DROP BELOW the surface, and your head is submerged, sweep your arms (with the palms up!) in a wide arc to the side and overhead to force yourself deeper into the water . . .

TO LEVEL OFF to swimming position, curl up in a ball by bending forward at the waist, pull the knees up, reach forward and start to kick. Keep the chin tucked into the chest to insure remaining under water.

### FLOATING ON THE BACK

Keep head back, face up, ears in the water, back well arched and arms outstretched to the side or overhead back in the water. Remember to keep the palms UP and chest high. Position of the body can be controlled by moving arms forward and backward. Relax legs. Develop a definite breathing pattern.



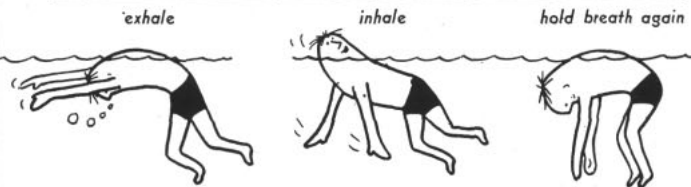
### BREATHING AND SURFACING

TO SURFACE and replenish air, lift the head and swim upward. Break the surface of the water and inhale through the mouth, submerge immediately as above. Exhaling is done through the nose and mouth at intervals while swimming to reduce internal pressure.

BURNING OIL ON THE SURFACE can be cleared by splashing vigorously with the arms in a swirling motion as you break the surface.



### STROKES TO USE

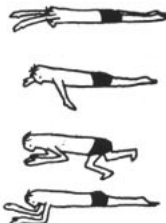
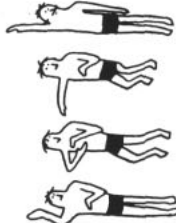
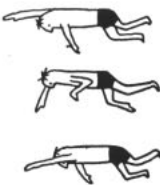


slowly below the surface... .. press hands down and back... lift and turn head to breathe...  
(your arms forward and doing a scissors kick as your face goes back in the water.)

#### HUMAN STROKE

#### SIDE STROKE

#### BREAST STROKE



**IMPORTANT!** If you're not a capable swimmer, don't enter the water to attempt a rescue.

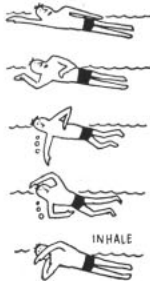
do the trick. Possibly words of encouragement may be all that is needed. But—if a shipmate is exhausted, in a state of panic, or unconscious, your practice of proven lifesaving techniques may save his life.

## SPEED SWIMMING

While the over-arm strokes are tiring to average swimmers because the arms must be brought out of the water, they are of value when bursts of speed are needed. Because of falling debris, ship's suction, burning oil, and other personnel jumping into the water, the area near a sinking ship is dangerous—you'll want to get away as soon as possible. A speed stroke is imperative also for rescue work, to escape enemy action, and to catch up with a lifeboat or raft.

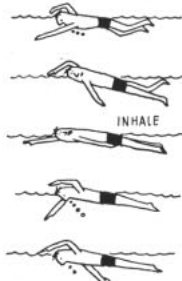


#### OVERARM SIDE STROKE



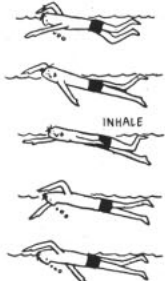
side position  
single over arm  
scissors kick

#### TRUDGEN STROKE



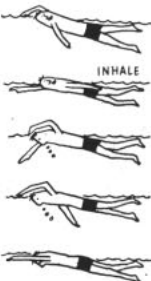
prone position  
double over arm  
scissors kick

#### TRUDGEN CRAWL STROKE



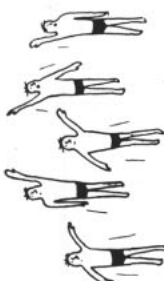
prone position  
double over arm  
scissors and flutter kick

#### AMERICAN CRAWL STROKE



prone position  
double over arm  
flutter kick

#### BACK CRAWL STROKE



on back  
double over arm  
flutter kick

# Life on the Ocean

**Y**OUR PLANE goes down, or you're forced to abandon ship. In either event, you're lost at sea with only a liferaft or boat and a few pieces of survival equipment. So, what next?

The shipwrecked seaman or downed aviator of today has a much better chance of survival than his predecessor of only a few years ago. Your period adrift is likely to be relatively comfortable and of shorter duration.

Statistics show that as a result of teamwork between planes and rescue ships, most survivors are picked up within three days—and many within a few hours.

However, many men have died at sea simply because they didn't know *how* to survive. Carelessness, ignorance, poor management, and loss of hope on their part have cost them their lives. Don't let this happen to you.

You have a lifeboat or raft equipped with survival equipment adequate for emergencies at sea. You need only survive, and wait to be found. The Navy knows you're missing, and is looking for you.

Now get down to business.

**D**ON'T DELAY before organizing. Your own ideas and planning are

required to make the most of the equipment you have. Take a careful inventory of your provisions, and store them where they will be safe, even against high seas. Secure your gear to the floor of the raft or boat. Any equipment not lashed down is liable to be lost.

If there's more than one life craft in your area they should be lashed together. Plans should be made for rationing food and water. No one should eat or drink during the first 24 hours.

Arrange watches and cooperate in standing them. Save your clothes. Although it may be warm during the day, you may need something to wear at night.

If your lifeboat has a sea anchor, trail it to keep the craft headed into the running direction of the waves to help prevent it from capsizing.

Don't get unduly excited, and don't rush. Do things slowly to conserve your energy.

## Signaling Equipment

Your signaling equipment is important, because lifecraft are not easily seen from aircraft more than 3000 feet above the water. It is also difficult to spot a lifeboat from a surface ship, particularly when a sea

is running. Stow your signaling gear in such a manner that you can reach it in a hurry.

● **Mirror**—Your signaling mirror enables you to reflect a beam of sunlight eight to 10 miles toward a rescuing ship or aircraft. It may be a bit tricky to use, so follow the directions carefully.

● **Pyrotechnics**—If you have pyrotechnic signals, such as the Mk 13 Model 0 day smoke and night flare, remember that under most conditions they can't be seen beyond two to four miles. You should actually be able to see a rescue craft before you use a pyrotechnic signal.

● **Flashlight**—This is one of the most commonly used night signals for survival. It should be kept out of the water to insure good service and maximum life. Conserve the batteries as much as possible by using the flashlight only when it is really necessary.

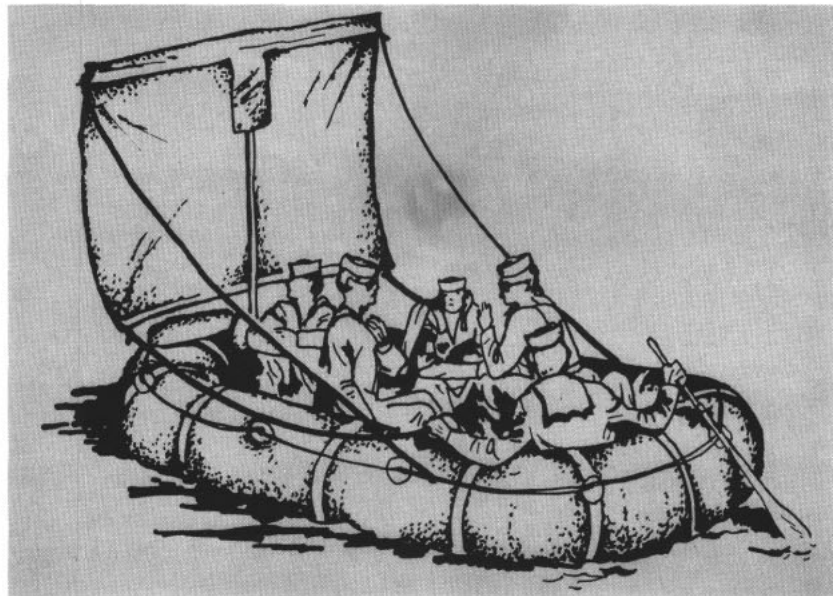
● **Whistle**—In a fog, or at night when visibility is low, your whistle may be the best means of attracting attention.

● **Fluorescein dye marker**—This powdery substance may be sprinkled on the surface of the sea to color the water a yellow-green. This makes it easy for nearby searchers to spot you.

● **Tarpaulin**—A brightly colored tarp will help attract attention and may be used for collecting water and protecting you from over-exposure.

## Water

If you have water you can survive as long as 21 days without food. Water is the most important single factor in determining your survival. The amount you'll need varies with weather conditions, physical exertion and your individual resistance. Under average conditions a man needs at least one quart of water a day, but survivors have been known to live for 10 days or more on as little as two or three ounces of water per day without causing any apparent body damage. One Chinese seaman drifted 133 days in the Atlantic, subsisting on fish and rain water, and walked ashore when rescued.



LIFE RAFT WITH TARP RIGGED FOR SAILING

# Wave

Without water, a man in good health becomes delirious in approximately four days. Death will occur in from eight to 12 days.

If you use your water intelligently, you may come through in reasonably good condition with a supply on which another person might die of thirst. If you are extremely thirsty, sip slowly and don't take an excessive amount. If you are hot from the sun, avoid drinking cold water if you have it, or an excessive amount of any water.

If your supply is low, and you must do some form of labor, you will lose less through sweating if you drink small amounts at fairly frequent intervals than by taking a lot at a time. But, if water is plentiful, drink all you can hold because your body can store it. Little of the water taken in large quantities when you are dehydrated is lost.

But water does evaporate through the skin. (Some survivors have prevented such evaporation by remaining in the sea for hours at a time.)

Use your life craft's drinking water kit, or collect rain water. The drinking water kit consists of a metal container in which briquets of salt-removing chemicals, a plastic processing bag and mending tape are packed. The processing bag is large enough to permit one briquet to be inserted. The quantity of sea water to be added is governed by a line marked on the bag. Each briquet will make about a pint of water.

Collect rain water in any available receptacle, using clothing, parachute or sails. Devise methods before there is an actual need. If a shower promises to be light, take steps to get every drop you can. Wet your cloth or canvas catchment in the sea so that the fresh water will not be absorbed by the fabric. (The amount of salt water contaminating the rain water will be negligible, but the amount of fresh water lost through absorption if you fail to first wet your canvas will be considerable.)

In a driving rain, a piece of canvas or any large flat surface held at an angle to the wind will catch water.

Water containers can be made



AT 'SEA'—Navymen demonstrate 12-man life raft and signaling equipment.

with an improvised awl and some canvas. To make the bucket watertight, reinforce the seams with a narrow canvas binding calked with fish slime, then let it dry into the seams.

When the going really gets rough, the blood of birds and the blood and body fluids of fish are drinkable and nourishing.

## Food

If you lack water, don't eat. Your body uses water in digesting food and eliminating waste products.

Liferaft rations are packed in individual cardboard boxes with 15 wrapped servings per box. Each carton contains a carefully selected list of items, including not only various types of foodstuffs but also cigarettes, chewing gum, candy and safety matches, all in watertight wrappings.

Remember to abstain from both

food and water for the first 24 hours. After that, ration what you have; and when that is gone live off your body fat and protein.

One pound of body fat will provide your system with an equivalent of two good meals. The rate at which body fat and protein are converted to heat and energy will depend on air temperature and your activity and mental state. You can live longer on your stored energy by relaxing mind and body and guarding against exposure to extreme temperatures.

The condition of your body will determine whether you can or will eat starvation foods. The sea is far richer in different forms of life than the land or fresh water, and if fresh water is available there is little danger of starving to death. The trick will be to tap this wealth of food.

● **Fish**—Fish caught at sea are good to eat cooked or raw. Poisonous fish

are seldom found in the open sea. However, don't eat jellyfish; they contain stinging cells which are poisonous.

The heart, liver and blood of fish are good to eat, though in some fish they are less palatable than the flesh. Intestinal walls are edible. Intestines should be avoided unless they can first be cooked. The stomachs of large fish may contain small fish which are good to eat.

Fish spoil quickly in warm weather. Clean and eat them without delay and dry what is left. If the sun is hot, fish can be partially cooked by cutting them into thin slices and placing them on a dry metal surface.

Many species of fish are confined to certain depth zones. Some range through a wide variety of depths, while still others migrate from zone to zone at different times of the day. Watch for schools of fish breaking water. Schools of small fish are good indications of the presence of large fish (and vice versa).

If you're lucky you'll have fishing tackle, but even if you don't, the situation is not hopeless. Small fish can be caught with a skewer or gorge hook made of wood or metal and a short line improvised from shoe laces, canvas or clothing. If you have hook and line, but no bait, a strip of leather cut from the tongue of your shoe, a button, or a piece of canvas fastened to the hook and trolled behind your boat may prove effective.

Flying fish are probably the most available source of food if you have no equipment. Some may glide into or against your boat. At night they may be attracted by a light and scooped into a net. Shine your light



SEAWEED CAN BE COLLECTED AND EATEN

on the side of your boat or on any surface that will reflect it.

Fish are more apt to see and strike a moving bait than a still one, so keep your bait moving to resemble a small fish.

Many small fish are attracted by shade. Lower your sail or tarp into the water. Fish may gather under it. Many species come to the surface at night, so fish shallow and use a drag net. But, try fishing at different times of the day and night at all depths. Don't give up. Sea life is not evenly distributed, and sooner or later you will have luck.

● **Birds**—All sea birds are edible and nourishing, though they may have a fishy flavor and musty odor. Part of any bird may be used for bait.

Birds may be scarce on the open sea, particularly in the North Atlantic. In the North Pacific most seabirds are found near the coasts.

In the southern oceans many species of birds may be seen and caught hundreds of miles from shore. Land birds migrate miles over water following schools of small fish, and may alight on your lifecraft to rest.

Gulls, albatross, terns and gannets can be caught by dragging a baited fishhook behind the boat, or lured

within shooting distance in the same manner. A flat sharp edged triangular shaped piece of metal or shell dragged behind the boat will attract gulls and albatross. A shiny or colored object is most effective and a bait of fish or intestines adds to its attractiveness. The bird dives, seizes the lure, and the sharp points catch in its bill and hold fast.

Birds settled on your boat may be captured if you make a loop with two pieces of line and place some fish entrails or similar bait within the loop. When a bird is attracted to the food, pull the loop about its legs.

Whatever bird you catch, use all of it. The smaller feathers can be used to make a fly or lure. A spinner can be fashioned from the long plates of the bill. The bones can be used for skewer or barbed hooks and quills stripped to make string. The skin is highly nutritive, but if warm clothing is the pressing problem, skin the bird down the back, dry in the sun and use the thick downy breast feathers for a cap, ear muffs, scarf or shoe lining.

● **Sealife**—Small forms of life drifting about in the sea furnish food directly or indirectly for all the larger types. This drifting life is most abundant in northern seas, and in some areas is so dense it colors the water. The small creatures may be used as bait for fish. Don't eat them, though, as they are salty and contain sharp spines that will injure your stomach. They may be gathered with a tow net or improvised dip net.

A grapple for collecting and pulling in seaweed, which is edible, can be made from four heavy slivers of wood. Cut three notches near the end of the heaviest sliver, seat the other three pieces, then lash them into position. Make the line fast to the shaft by cutting three or four notches near the end and tying it tightly with canvas thread.

#### Health and Survival

Environmental hazards take a heavy toll of stranded men even when food and water are available. If you're able to evaluate the hazards, and know how to cope with them, your hardships will be lessened and your survival time lengthened.

Shelter and sleep are necessary. You will tire as quickly from loss of sleep as you will from lack of food. And, being in an open boat in the



COMPONENTS OF A CHEMICAL DESALTING KIT



sun from dawn to dusk is too much exposure for the average man. Rig a tarp or sail against the sun and get under its shade. Enough sun will be reflected from the water during the day to burn your skin. Don't add to this by needless direct exposure.

Sunburn prevention is easier than treatment. Many men fail to realize that the effects of serious sunburn are not felt until several hours after exposure. If you wait until your skin turns pink, or feels hot, before you cover it, you're already burned. Hazy and overcast days are sometimes the worst because there is much reflected light and little warning of sunburn. Your best protection is to keep covered as much as possible. If you get burned severely, use the burn ointment and dressing in your first aid kit.

Sunstroke is the result of direct exposure to the sun. It is normally preceded by dizziness, nausea and headache. Your face will be flushed, your skin hot and dry and your body temperature high. The best preventive is to keep your head covered or wet, and cool your body by splashing water over your clothing. For treatment, shade yourself from the sun and lie with your head higher than the rest of your body.

If you're in a cold climate squeeze out and dry your clothing and socks as soon as possible. If your feet swell, remove your shoes. Otherwise keep them covered.

#### Cold Weather Survival

Survival in extremely low temperatures is a matter of balancing heat loss and bodily heat production. You can balance heat loss to some extent by food intake and exercise but, since there is a limit to the amount of food you have and to your muscular activity, your main reliance for warmth must be in the reduction and regulation of heat loss. You do this by wearing the proper clothing.

Your best clothing bet consists of a number of light garments that can be taken off or put on as the need arises to regulate heating and chilling. None should be tight enough to reduce blood circulation. Never expose any more of the body than absolutely necessary, since enough heat can be lost from uncovered hands, face and head, or poorly insulated feet, to chill the rest of your body.

Ideally, outer garments should be windproof, but not so airtight they cause excessive heat production and



**ABANDON SHIP**—Greek sailors leave their sinking merchant ship in whale-boat. They were picked up by U. S. Navy ships answering call for help.

sweating. Inner garments should act as insulators. They should be form-fitting, light, soft, and loose enough to permit escape of perspiration.

Freezing of your face, feet and hands is an ever-present danger if you're exposed to low temperatures. Don't rub frozen parts, or expose them to heat rapidly. Rubbing will break the skin and lead to infection. Thaw frozen parts slowly.

Frozen flesh is white and stiff, while milder frostbite is dark red. Wrinkle your face frequently to determine whether any part is frozen. The ears are especially susceptible to frostbite. Press your warm hands against your ears. When fingers become cold or frostbitten warm them against the skin of your body. Cup

your hands around your toes if they become frozen.

Dry feathers may be placed inside your shoes or between socks, providing insulation against frostbite. A cloth tied over your face below the eyes and hanging loosely at the bottom will protect your face and allow your moist breath to escape.

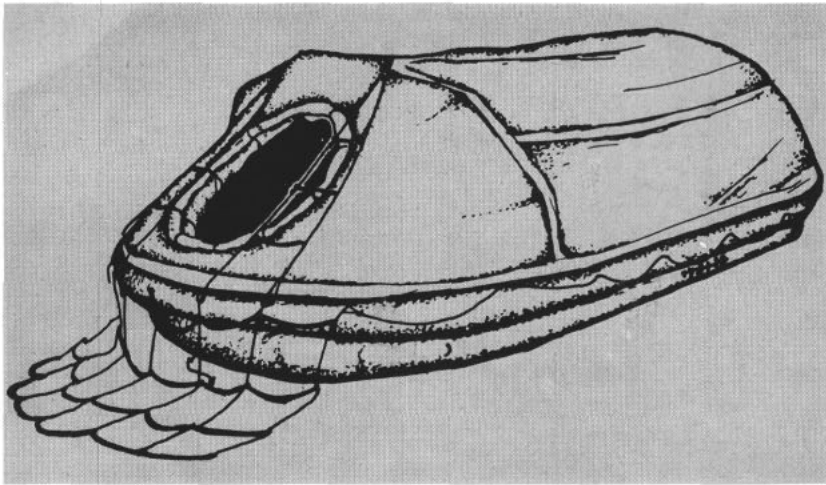
Frostbite is more likely to occur if the wind is blowing.

Long exposure to salt water may result in sores and swelling. Application of fatty substances will help prevent salt-water sores.

Immersion foot may be caused by continued wetting of the feet in cold or icy waters (60 degrees F or below). Pain is followed by swelling

**ALL TOGETHER**—When more than one life raft is in the area tie them together.





FIFTEEN-PERSON LIFE RAFT WITH WEATHER SHIELD

and numbness, and blisters and sores may develop. The best preventive is to keep your feet as dry as possible and to exercise them regularly. Don't wear tight boots, or socks that bind your legs. In treating immersion foot keep your legs above body level and apply cold compresses or packs, keeping a layer of dry material between the compress and your feet. Don't rub or apply direct heat, and avoid breaking the skin.

Exposure to wind, cold, glare, salt water, or a combination of these may result in eye inflammation, the first sign of which is a feeling of sand in your eyes. Protect your eyes at the first sign of soreness.

Since you're living off the sea and have little choice of food, vitamin deficiency diseases are likely to develop. Under extreme conditions there is nothing you can do about it. Although vitamin deficiency may be painful and appear serious, it disappears almost miraculously when you reach land, or are found, and obtain fresh fruits and vegetables.

#### Finding Land

While waiting for your rescue ship or aircraft, keep your eyes open for signs of land.

- Drifting wood or vegetation is an indication that land is near.

- Large numbers of birds also indicate land is nearby. Except for a few species, most sea birds sleep ashore. During the day birds fly all over in search of food, but when evening approaches will return to land. If the flight of birds in the late afternoon is observed, and their line of bearing followed, it will probably lead ashore.

- Fixed cumulus clouds in an

otherwise clear sky are likely to have been formed over high or mountainous land. Take note of any stationary cloud, especially if moving clouds are passing by it, for this indicates land lies beneath it beyond the horizon.

- Watch for any green reflections on the underbelly of the clouds. In a lagoon the water is not only warmer, but shallower than beyond the reef, and its color more green than blue. Reflecting upwards, green waters color the clouds above.

- The waves may guide you ashore. When the wind blows constantly from one direction, as in the South Pacific, it sets up a swell at right angles. But when rollers hit an island they form a "V" around it. If you find rollers not at right angles to the wind, odds are that (barring local squalls) land is near.

#### Sharks

The danger of being attacked by a shark, barracuda, or some other large form of sea life depends on the locality and conditions. Sharks may be timid and wary, or they may be deadly dangerous. They are curious, and will investigate any object in the water. They are likely to attack only the dead, or the wounded and bleeding. Blood in the water attracts and excites sharks. Any flow of blood should be stopped as quickly as possible. Light colored bodies apparently attract sharks. Dark colored clothing is a good protection.

Be careful when cleaning fish at the edge of your raft, and don't trail your hands or feet in the water when sharks are present.

Cuttlefish, squid and octopus have long, powerful tentacles, but those

large enough to be dangerous live in the ocean depths and are rarely encountered.

Barracuda are found in most tropical and subtropical seas, usually along coral reefs and near shoal waters. Danger from them is greater in murky water on reefs than in clear water. They are seldom encountered in the open sea.

The electric ray, or torpedo, is found both in open water and along sandy and muddy bottoms, both in tropical and temperate seas. The torpedo can give a paralyzing shock but, fortunately, is rarely encountered.

Jellyfish and Portuguese men-of-war have long tentacles that produce painful stings and severe swelling which may last several hours. The greatest danger is not from the stings themselves, but they can cause a man in the water to develop cramps, panic and lose energy, which may result in drowning. Objects on the surface resembling large bubbles should be avoided. If stung, make every effort to relax.

Whales, dolphins and porpoises are not dangerous to man.

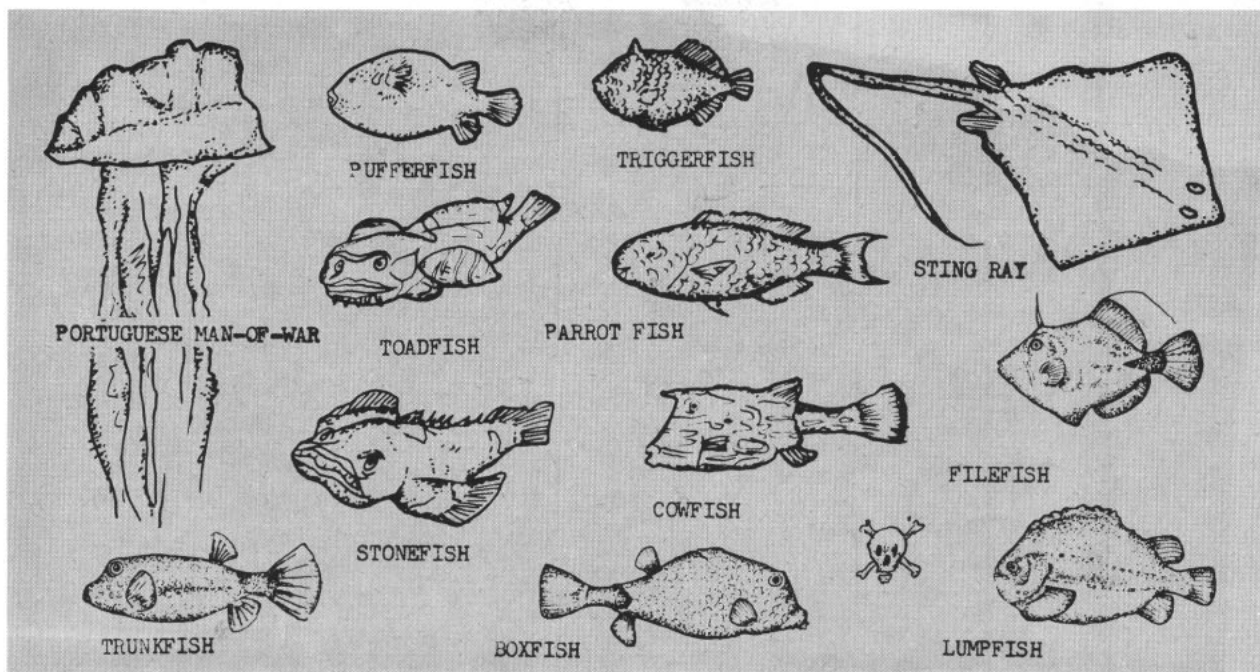
#### Keep Your Head

If you're in a group help, don't fight your shipmates. They are not your rivals in a struggle to survive. They are men with the same problems you have, and usually are willing to lend every assistance—in some cases at the risk of their own lives.

Continue to obey the chain of command. The establishment of leadership in a lifecraft improves your chances of rescue. The leader should set up definite procedures and schedules for rationing the available food and water, and should provide tasks to keep the group occupied. He should see to it that the ill and injured are given the best possible care, that lookout duties are taken care of, that the fullest possible use is made of signaling gear, and that as high a degree of morale as possible under the circumstances is maintained.

Morale is an important point, and good morale will help ward off certain symptoms that are to be expected of men lost at sea. Combat them in yourself and, when you observe them in others, cooperate with your leaders in helping to stop them.

A man may stand still and weep or scream for help, or fight for a place in the boat, or become sick at



**DANGER—THESE FISH ARE POISONOUS, LEAVE THEM ALONE—DANGER**

his stomach. Obey orders and keep busy. There is less chance you will get into such states if you are occupied.

A man may become pale, tense and agitated, and may stutter. After some time he may become delirious, or may exhibit behavior dangerous to himself and others. He may suddenly attack other men in the party. He may dive off the raft "to go below for a cup of coffee." He is liable to drink sea water or eat the few rations left on the raft. Morphine may help, or cheerful conversation may keep him interested. When neces-

sary he must be held in restraint until his symptoms subside.

The majority of survivors do not reach such states. Many, however, will exhibit at least a strained emotional attitude. At first, on board your life craft, there may be signs of relief, elation and excitement. As time goes by, other feelings take over—uneasiness over your growing physical discomfort and speculation as to your chances of rescue. These attitudes may worsen into irritability, preoccupation, and withdrawal from the rest. Ideas of food and drink dominate your thinking.

True, living without equipment in an open boat on the high seas is perhaps the severest test of morale, but giving way to panic or despair is a certain way to kill yourself. High morale will bring you through. Don't let your thoughts and imagination become your greatest enemy. Keep fishing and experimenting to the limit.

Above all, keep your head and obey the man in charge. Remember that ships, boats and aircraft are looking for you. Maintain hope and you will be found.

—Dan Kasperick, JOC, USN

### **You Never Know — It Might Happen to You**

You never know when the moment is awaiting you—that moment that changes ordinary, routine circumstances into trouble and places your personal safety in jeopardy.

Not that you need hang a dark cloud of doom over your head and always expect the worst, but you should be alert to the fact that the unexpected can happen, even on a routine boat ride from your ship. One illustration of this point occurred a while back when three sailors were stranded in a boat overnight in sub-freezing weather—not in some remote section of Alaska, but in the populous, Navy-infested Norfolk, Va., area.

Because these men kept their heads, they survived their ordeal.

Late in the evening the three,

who were crewing a 40-foot liberty boat, departed their ship and were making for pier seven at Norfolk Naval Base. En route the engine quit, and the boat started to drift.

While they worked to restart it, the boat continued to drift. They got it started a few times only to have it conk out again.

Soon they were drifting past the Hampton Roads Bridge-Tunnel. Recognizing their peril, they dropped anchor and began searching for anything they could use to signal for help. Some of the plentiful life jackets were decided upon.

They tore up life jackets and saturated them with diesel fuel, then waved their fiery signal on the end of a boat hook. They were spotted by a bridge guard.

Although all ships in the area were on the lookout for them, almost four hours passed before they were discovered. Even then, nature and circumstances combined forces to keep them stranded longer.

The first patrol boat that started for the men developed rudder trouble. A second was forced to give up the rescue when it ran into heavy icing conditions.

The men kept their spirits up during the cold night. They yelled at each other to remain awake.

By daybreak a helicopter was able to pick them up. They received treatment for exposure and exhaustion, and one man had frostbite, but thanks to the way they met an unexpected situation they are alive and safe today.

# SURVIVAL

## LIFEBOAT

### LIFE PRESERVER

The Navy has two types of life preservers. One is filled with buoyant material, and the other is the inflatable type. The filled preserver has cloth tapes to pull tight for a close fit. Leg straps prevent it from riding up while you are in the water. A body strap across the chest helps toward a snugger fit and provides a hold for lifting you out of the water. The strap can also be used to attach yourself to lifecraft or to other men in the water. Always put the jacket-type life preserver on over outer clothes.

The inflatable preserver is normally carried in a pouch held in place at your back by a web belt around your waist. The inflatable preserver is blown up either by a carbon dioxide cylinder or by mouth. It is equipped with a lifting harness, a waist belt, and a wood toggle and line for attaching yourself to a lifecraft or another survivor. When you need the preserver, pull the pouch around to the front, remove the preserver from the pouch, slip it over your head and inflate it. A "one-shot" inflater, which has the CO<sub>2</sub> cylinder screwed into it, is located within easy reach of your hand but not in a position where you might discharge it by mistake. To inflate the preserver, grasp the lanyard attached to the inflater and jerk downward as far as possible. This will release the carbon dioxide gas into the chamber. If still more buoyancy is necessary, it may be accomplished orally.

If the order is received to leave the ship, go over the side fully clothed and from the lowest part of the windward side, if possible. If you must jump, do so feet first, legs together and body erect. If you are jumping into flames, do not wear a filled preserver, or if you have an inflatable type, don't inflate it until you are clear of the flames. However, be sure your life preserver is fastened securely, including the leg straps. If you are wearing a jacket-type preserver, place one hand firmly on your shoulder to keep the preserver from riding up sharply when you hit the water; in a long drop, the force of impact might hurt your chin or neck. Hold your nose with your hand. If you are wearing an inflatable preserver, inflate it after you are in the water.

### LIFEBOAT

The Navy's 15-person CO<sub>2</sub> inflatable lifeboat is the most common and efficient inflatable boat used aboard ship today. It is light, compact, easily stowed and can be launched quickly. The craft is inflated, either on ship or in the water, by pulling a quick-release cable on the outside of the carrying case.

Other gear on the boat consists of outboard lifelines, boarding nets, grab ladders, canopy, sea anchor, rain catcher tube, paddles, survival kit and a radar reflector screen.

The boat is inflated by the discharge of CO<sub>2</sub> (carbon dioxide) cylinders. An actuating cable from one of the cylinder valves leads to a pull-handle outside the lifeboat carrying case. A coated fabric guard flap over the pull-handle prevents accidental discharge of the cylinders. The thwart tubes and the floor are inflated by hand pumps which are stowed in pockets attached to the canopy support tubes.

When boarding the craft, the first man uses the boarding net and grab ladders, entering in the rear. He remains at the stern, helping other men aboard, while the second man goes forward and opens the other entrance. This man also helps others aboard and sees that the sea anchor is not entangled. When all men are safely aboard, the carrying case is retrieved and the paddles are broken out. After paddling a safe distance from the ship, the sea anchor is cast out to reduce drift.

### LEADERSHIP

In a crisis, leadership can be the determining factor in survival. The mental and emotional stability of the crew in a life raft is of utmost importance if they are to survive. Cooperation is vital. Once safely aboard a life raft, survivors react to circumstances in different ways. There may be the feeling of relief, elation, excitement, changing to withdrawal, hopelessness or shock.

The events surrounding a calamity at sea pose a real challenge to individual and group morale. The mood of depression can be overcome or offset by good leadership. A group that is well led is mentally more capable, and its chances are greatly improved. The leader acts as umpire in disputes; he uses simple devices, such as joking and encouragement, to ward off dangerous self-preoccupation. One additional pointer—if you are senior man, it is very important that you allocate some job, however small, to each man aboard.

### EXPOSURE

Clothing—For protection from the elements, the more clothes you have the better off you'll be. In the case of abandoning ship, a man should wear as much clothing as possible. In tropical waters, the greatest dangers are sunburn, heat stroke and heat exhaustion. (Refer to first aid centerspread.) In polar waters the greatest dangers are the effects of the cold and excessive body cooling.

However, the length of time one can survive in cold water varies from one person to another. All possible measures should be taken to keep clothing dry, since wet apparel offers no protection. Huddling together and limited exercises also help in keeping warm. Other dangers from the cold are frostbite and immersion foot. (Refer to first aid centerspread.)

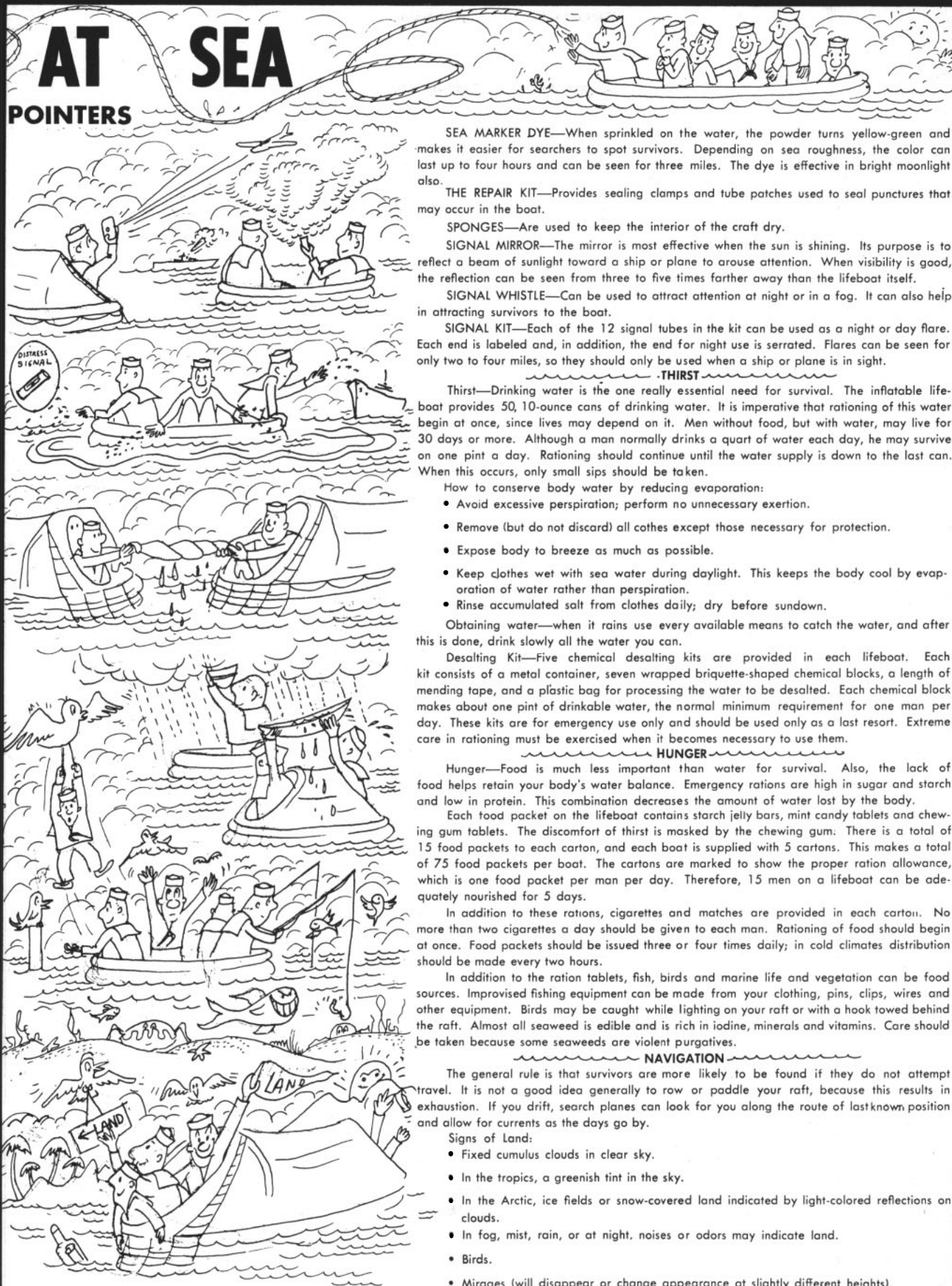
### EQUIPMENT

Each inflatable boat is equipped with three containers packed in the carrying case. The carrying case is attached to the boat by a lanyard. The carrying case should be retrieved immediately. Besides food packets and cans of drinking water, the containers also have the following equipment:



# AT SEA

## POINTERS



**SEA MARKER DYE**—When sprinkled on the water, the powder turns yellow-green and makes it easier for searchers to spot survivors. Depending on sea roughness, the color can last up to four hours and can be seen for three miles. The dye is effective in bright moonlight also.

**THE REPAIR KIT**—Provides sealing clamps and tube patches used to seal punctures that may occur in the boat.

**SPONGES**—Are used to keep the interior of the craft dry.

**SIGNAL MIRROR**—The mirror is most effective when the sun is shining. Its purpose is to reflect a beam of sunlight toward a ship or plane to arouse attention. When visibility is good, the reflection can be seen from three to five times farther away than the lifeboat itself.

**SIGNAL WHISTLE**—Can be used to attract attention at night or in a fog. It can also help in attracting survivors to the boat.

**SIGNAL KIT**—Each of the 12 signal tubes in the kit can be used as a night or day flare. Each end is labeled and, in addition, the end for night use is serrated. Flares can be seen for only two to four miles, so they should only be used when a ship or plane is in sight.

### THIRST

**Thirst**—Drinking water is the one really essential need for survival. The inflatable lifeboat provides 50, 10-ounce cans of drinking water. It is imperative that rationing of this water begin at once, since lives may depend on it. Men without food, but with water, may live for 30 days or more. Although a man normally drinks a quart of water each day, he may survive on one pint a day. Rationing should continue until the water supply is down to the last can. When this occurs, only small sips should be taken.

How to conserve body water by reducing evaporation:

- Avoid excessive perspiration; perform no unnecessary exertion.
- Remove (but do not discard) all clothes except those necessary for protection.
- Expose body to breeze as much as possible.
- Keep clothes wet with sea water during daylight. This keeps the body cool by evaporation of water rather than perspiration.
- Rinse accumulated salt from clothes daily; dry before sundown.

**Obtaining water**—when it rains use every available means to catch the water, and after this is done, drink slowly all the water you can.

**Desalting Kit**—Five chemical desalting kits are provided in each lifeboat. Each kit consists of a metal container, seven wrapped briquette-shaped chemical blocks, a length of mending tape, and a plastic bag for processing the water to be desalted. Each chemical block makes about one pint of drinkable water, the normal minimum requirement for one man per day. These kits are for emergency use only and should be used only as a last resort. Extreme care in rationing must be exercised when it becomes necessary to use them.

### HUNGER

**Hunger**—Food is much less important than water for survival. Also, the lack of food helps retain your body's water balance. Emergency rations are high in sugar and starch and low in protein. This combination decreases the amount of water lost by the body.

Each food packet on the lifeboat contains starch jelly bars, mint candy tablets and chewing gum tablets. The discomfort of thirst is masked by the chewing gum. There is a total of 15 food packets to each carton, and each boat is supplied with 5 cartons. This makes a total of 75 food packets per boat. The cartons are marked to show the proper ration allowance, which is one food packet per man per day. Therefore, 15 men on a lifeboat can be adequately nourished for 5 days.

In addition to these rations, cigarettes and matches are provided in each carton. No more than two cigarettes a day should be given to each man. Rationing of food should begin at once. Food packets should be issued three or four times daily; in cold climates distribution should be made every two hours.

In addition to the ration tablets, fish, birds and marine life and vegetation can be food sources. Improvised fishing equipment can be made from your clothing, pins, clips, wires and other equipment. Birds may be caught while lighting on your raft or with a hook towed behind the raft. Almost all seaweed is edible and is rich in iodine, minerals and vitamins. Care should be taken because some seaweeds are violent purgatives.

### NAVIGATION

The general rule is that survivors are more likely to be found if they do not attempt travel. It is not a good idea generally to row or paddle your raft, because this results in exhaustion. If you drift, search planes can look for you along the route of last known position and allow for currents as the days go by.

Signs of Land:

- Fixed cumulus clouds in clear sky.
- In the tropics, a greenish tint in the sky.
- In the Arctic, ice fields or snow-covered land indicated by light-colored reflections on clouds.
- In fog, mist, rain, or at night, noises or odors may indicate land.
- Birds.
- Mirages (will disappear or change appearance at slightly different heights).

DO

battle  
dressing  
station

don't



DO



# NAVY PRIMER

**M**OST ACCIDENTS Navy men will witness during their lifetime will occur within quick reach of competent medical assistance.

In an emergency in which someone is hurt, what should you do?

First, get competent medical help. If that is not possible and first aid must be given, *know what you are doing*.

ALL HANDS does not wish to convey the idea that it is a simple matter to administer first aid. Quite the contrary, first aid is an art which must be studied and practiced.

Frequently, it is the art of knowing enough to wait for help because doing the wrong thing, particularly where broken bones are concerned, can be worse than doing nothing at all.

The following information does not replace the intensive training of a first aid course. It can only serve as a refresher, and as a warning about the results when the wrong kind of action is taken.

The principles of first aid develop generally along two lines.

1. Know what *not* to do.
2. Learn what to do, when, and in what order to do it.

Sometimes an injured person is suffering from a number of conditions. What is the order of action?

- The first step is to stop hemorrhage.
- The second is to insure that the victim is breathing; if he isn't, initiate action to get him breathing again.
- The third step is to prevent or minimize shock.
- After these matters are taken care of, more specific action will be called for, depending on the injuries involved.

## BLEEDING

Like everybody else, a Navy man has only about five quarts of blood in his veins. He can normally lose a pint of it without serious consequences. (As you know, this is the amount usually taken in a blood donation.)

The loss of a quart of blood, however, will usually cause shock, and the greater the loss of blood, the deeper the shock. If he loses half the blood in his body, death usually results.

If a man's vein is cut, the blood usually escapes in a steady, even flow. If an artery is cut near the surface of the skin, the blood will squirt in synchronization with the beat of his heart. If the severed artery is buried deep, blood will appear from the wound in a steady stream.

Regardless of where the blood is coming from, it must be stopped.

There are several methods:

The best way to stop bleeding is to apply pressure directly to the wound—preferably with a sterile bandage. If this is not available, use any cloth, placing it in a wad over the wound and fastening it in place.

If the pressure furnished by the bandage doesn't do the job, press on it with your hand.

If the hemorrhage is severe, don't worry too much about the chances of infection; just get the bleeding stopped. *Direct pressure* is the first method you should try. If this fails, use the following methods in the order given below. But first, let's expand on the subject of pressure points.

**Pressure points**—you do not need first aid materials for this method; you do need to know where the pressure points are. The object of direct pressure is to shut off the flow of blood through the artery by pressing it with your finger or hand against the bone. (The location of the pressure points is shown in the illustrations on the centerspread, pages 32 and 33).

- **Face**—If a man is bleeding on the face below the level of his eyes, pressure should be applied in the area of the lower jawbone. To find the pressure point, start at the angle of the jaw and run your finger forward along the lower edge until you feel a small notch. Apply pressure to this notch.

- **Shoulder**—If the bleeding is in the shoulder or the upper part of the arm, put the pressure on the back of the collarbone. You can press down against the first rib or forward against the collarbone.

- **Arm and Elbow**—For bleeding between the middle of the upper arm and the elbow, pressure should be applied to the body side of the arm about halfway between the shoulder and the elbow. Bleeding from the lower arm can be controlled by applying pressure on the elbow.

- **Hand**—Bleeding from the hand can be controlled by pressure at the wrist. If it is possible to hold the hand up, the bleeding will be easier to stop.

- **Foot**—Elevating a bleeding foot is just as helpful as elevating a bleeding hand. The pressure point in the ankle should be grasped to stop blood flow (see pictorial centerspread).

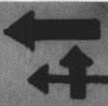
- **Thigh**—Pressure applied to the middle of the groin is often sufficient to stop bleeding from the thigh.

- **Scalp**—To check the flow of blood from the scalp or the temple, press your finger against the main artery to the temple at a point just in front of the ear.

- **Neck**—To check bleeding from the neck, apply pressure below the wound just in front of the prominent neck muscle. Press inward and slightly backward, compressing the main artery of that side of the neck against the bones of the spinal column. (Warning: Back and spine injuries are most serious. Any movement can be fatal to the victim. See below.)

Using a pressure point to control neck bleeding should be used only as a last resort since there is danger of pressing the windpipe and choking the victim.

- **Leg**—Bleeding between the knee and the foot can be controlled by applying firm pressure against the artery behind the knee. Check the illustrations.

**DON'T****first aid****caution**

# ON FIRST AID

**P**RESSING the artery between the victim's bone and your finger can be a tiring business. A man administering first aid may find it tough going after more than 15 minutes. If some other method of controlling bleeding must be found, check the following pointers.

Sometimes the answer is a compress held in place by a bandage. At other times, a tourniquet is used—but *only* as a last resort. Once applied, it cannot be removed except by a medical officer.

What is a tourniquet? It is a constricting band which is used to cut off the supply of blood to an injured limb. In first aid, the "Don't's" are often more important than the "Do's"—this applies particularly to tourniquets. Obviously, a tourniquet can't be used on the neck, head or body without causing even greater injury or even death.

Basically, a tourniquet consists of a pad, band and a device for tightening the band. Its purpose is to compress the blood vessels so the flow of blood will be stopped. If it is held on too long or is improperly applied, it can result in the loss of a limb.

When properly applied, a tourniquet can be left in place for a variable length of time without undue risk. Some advocate the periodic loosening of a tourniquet to provide for the flow of blood to the injured limb. But the point to note is that if the injury is serious enough to warrant the use of a tourniquet, the man has probably lost a considerable amount of blood. To permit further loss of blood might result in death.

A tourniquet is in Navy first aid kits. In addition, it can be improvised from materials at hand—a belt, stocking, flat strip of rubber, neckerchief—any long flat material may be used in an emergency. However, such materials as rope, wire or string should not be used because of the danger of cutting the flesh.

Also needed with a tourniquet is a pressure object. This can be any round, smooth object such as a compass, a roller bandage, a stone or a rifle shell.

A tourniquet should always be applied between the wound and the trunk and as close to the wound as possible. The pressure object goes under the band and must be placed directly over the artery.

If the flow of blood continues after the tourniquet is applied, it means the pressure object is not in the right place.

Keeping the victim's lifeblood in his body is the primary necessity in administering first aid. The second most important is to restore breathing if it has stopped. This is done through artificial respiration.

## ARTIFICIAL RESPIRATION

A man may stop breathing for several reasons: Because his air passages are blocked; because there is insufficient oxygen in the air or the blood is unable to carry oxygen to the body cells; the breathing center in the brain is paralyzed or the body is so compressed that breathing is impossible.

Before beginning artificial respiration, the condition

which makes it necessary should be removed. If the air passages are blocked, free them. If there isn't enough oxygen in the air, move the victim to a place where there is oxygen. If the victim is buried to the point that his chest can't expand, get him out.

Artificial respiration restores breathing. If the victim is breathing, let him continue to do so under his own power.

If the victim isn't breathing, it doesn't necessarily mean he's dead. In fact, artificial respiration shouldn't be abandoned in less than four hours.

When breathing stops, the heart may well continue circulating the blood which carries oxygen to the body cells. There will be a sufficient supply of oxygen to keep the victim's body cells alive for awhile, but it is important to begin artificial respiration as quickly as possible.

There are several methods of administering artificial respiration (see centerspread). The most effective is the mouth-to-mouth method which consists of forcing air directly from your lungs into those of the victim.

Anyone who is breathing normally, uses only a fraction of the oxygen he breathes to sustain life. Consequently, when he exhales, he expels the unused oxygen as well as carbon dioxide. It is the unused oxygen which may mean the difference between life and death to a victim of asphyxiation.

**Mouth-to-Mouth Method**—There is a standard procedure to follow before beginning any type of artificial respiration. The victim's mouth should be cleared of any foreign matter such as mucus, chewing gum or false teeth.

This is done by turning the victim's head to one side, opening the mouth and sweeping your fingers through it, removing foreign matter and bringing the tongue forward in the same motion.

To administer mouth-to-mouth artificial respiration, clear the victim's mouth and cover it with your own. Seal up any leaks as well as you can with your hand and exhale forcibly into the victim's mouth.

At the same time, keep a hand on the victim's stomach. This will prevent the precious oxygen which you exhale from going to the victim's stomach and direct it into his lungs where it will do some good.

If it is not possible to use this method of artificial respiration (due to facial injuries) another lifesaving technique is the back-pressure, arm-lift method.

**Back-pressure, Arm-lift**—To use this system, place the victim so he is lying face down. If he is on a sloping surface, his head should be slightly lower than his feet.

Bend both the victim's elbows and place one of his hands on the other. Turn his face so he is resting upon his hands and clear his mouth.

Kneel on one knee facing the victim, placing your knee close to his head. Place your other foot near his elbow. If you want to kneel on both knees, one knee should be located on each side of the victim's head.



Place your hands on the middle of the victim's back *just below the shoulder blades* so your fingers are spread downward and outward with your thumb tips just about touching.

Rock forward until your arms are about vertical and allow the weight of your upper body to exert a slow, steady, even pressure on your hands until you meet a firm resistance.

This compresses the victim's chest and forces the air out of his lungs. Be sure you exert pressure almost directly downward and do it steadily without excess pressure.

When you release the pressure, do it quickly, peeling your hands from the victim's back. Rock slowly backward to allow your arms to come to rest on the victim's arms just above his elbow. As you rock backwards, draw the victim's arms upward and toward you. Keep your arms straight while doing this.

Lift the victim's arms until you feel resistance and tension at the shoulders. The arm lift pulls on the chest muscles, arches the back and relieves the weight on the chest so that air is sucked into the lungs. You then lower the victim's arms and you have finished one full cycle.

The cycle should be repeated about 12 times a minute (five seconds per cycle).

**Hip-lift Method**—Another method which can be used if the victim has been injured in the chest, neck, shoulders or arms is the hip-lift method. It's a good method to use when there isn't enough room to use the method described above, but it is tiring.

The victim should be face down with his elbows bent and his face turned to one side and resting on one hand. The other should be stretched above the head.

Clear the victim's mouth and kneel on either knee, straddling the victim at the level of the hips so your heel is directly opposite your kneeling knee.

Place your hands on the middle of his back just below the shoulder blades so your fingers spread downward and outward and your thumb tips just about touch.

Rock forward, allowing the weight of your upper body to exert slow, steady and even pressure downward

until your hands meet resistance. Release the pressure quickly by peeling your hands from the victim's back.

Rock backward and let your hands come to rest on the victim's hips well below the waist. Slip your fingers underneath his hipbones and lift without bending your elbows. Lower the victim's hips to end the cycle, repeating it about 12 times per minute.

Navy men who work around electricity should know how to administer artificial respiration while suspended from a pole.

Since time is of the essence, there isn't enough of it to lower a man to a more convenient position. Every minute lost decreases his chances of survival.

The first thing to do is to disengage the victim from the power circuit and allow him to hang from the pole from his own safety belt.

Take a position below the victim and climb upward, working your safety belt between the victim's legs so that eventually he is straddling it.

When the victim's weight is completely on your safety belt, push his head forward toward the pole; pull his tongue forward and clear his mouth.

Put your arm under the victim's arms and around his waist and place your hands on his abdomen so your fingertips just touch and your thumbs are just below his lower ribs.

Compress the victim's abdomen with your arms and hands and push upward. By the end of the compression stroke, your hands will be cupped and your fingers will be depressing the victim's abdomen just under the ribs.

Release the pressure quickly to complete the cycle. You should complete one cycle about 12 to 15 times per minute until the victim is breathing naturally.

## FRACTURES

Anyone who leads an active life knows a broken bone is not hard to come by. For men at sea, a fracture is a greater possibility than ashore because you are on a moving platform, often in confined quarters, surrounded by hard steel, or on slippery decks surrounded by rough seas.

Even a slight fracture is not something to treat lightly. Fortunately at sea in an emergency, there is medical help close at hand. If it isn't here are some basic *do's* and more basic *don't's*.

To keep you from being confused by terminology, it might be well to interject at this point the information that a broken bone is a fractured bone. There are two kinds of fractures—simple and compound.

A simple fracture is sometimes difficult to detect because it may mean the bone is only cracked or, as in the case of the forearm, only one of two bones is broken.

Compound fractures are easier to spot because the soft tissue and the skin have been punctured either by something external (a bullet, for instance) entering the skin and soft tissue or the bone itself may be protruding through the skin.

The object of first aid in both cases is to immobilize the bone so that no further damage is done. If the fracture is compound, your first object is to stop the bleeding and clean the wound.

Bones are immobilized by means of splints which can

## How to Save a Life

Navy men frequently live in an environment where change can be sudden and dangerous.

What may be smooth sailing at 1400 may be a violent storm at 1600. A deck that is level one minute may well reach a radical angle the next. What is dry now may, in a moment, be awash. The man working beside you may, in an instant, be in need of your assistance. Can you give it?

One day, you may be faced with the knowledge that you must do something to save a life or a limb. If you do the wrong thing, it may only make matters worse.

The logical remedy then, is to learn to do the right thing. In this case, learn how to administer first aid.



be made of almost anything so long as it is strong, rigid and reasonably lightweight.

A splint should be wide enough so the bandage which holds it in place doesn't pinch, and it should be well padded to compensate for the curvature of the body. If there isn't sufficient padding, the broken bone is liable to move and damage tissue, blood vessels or organs.

If the victim can be seen quickly by a medical officer, splints can be applied over clothing which will usually form the necessary padding.

If some time will elapse before the victim can be seen, cut the clothes away before splinting the bone. If two men are available to give first aid, one should hold the splints while the other fastens them.

Try to keep the victim's fingers and toes exposed. They're a good index as to whether the splints are too tight. If circulation seems to be slowed down, making the fingers or toes cold and blue, loosen the splints.

As was mentioned before, a broken bone isn't always easy to detect. If there is doubt, the victim of an accident should be treated as if he had a fracture. He might be saved further and more serious injury by doing so.

As stated above, before giving first aid for fractures, you should stop any serious bleeding and treat the victim for shock. Methods for stopping bleeding were given earlier. The method of treating shock consists essentially of keeping the victim warm, but not allowing him to become overheated. If possible, his head should be lowered slightly. (See centerspread.)

There are two prohibitions concerning fractures.

- *Don't try to set the broken bone.* Your job is simply to immobilize it to prevent further damage. The other prohibition is related to the first.

- *Don't try to force a protruding bone back in place.* Doing so is very likely to do further damage to the victim.

**Forearm**—As mentioned before, a broken forearm may be difficult to detect because there are two bones involved and only one may be broken or cracked.

If you suspect the forearm is broken, put well padded splints on the top and bottom of the arm. The splints should be long enough to extend from the elbow to below the wrist. Use bandages to hold the splints in place.

Put the forearm across the chest so the palm of the hand is turned in. Support the arm in that position with a wide sling so the hand is raised about four inches above the level of the elbow.

**Upper Arm**—If the upper arm is fractured, the treatment will depend partly upon the location of the break. If it is near the shoulder, place a pad or folded towel in the armpit, bandage the arm securely to the body, and support the forearm in a narrow sling.

If the fracture is in the middle of the upper arm, use one well-padded splint on the outside of the arm extending from the shoulder to the elbow.

Fasten the splinted arm firmly to the body and support the forearm in a narrow sling.

**Thigh**—A fractured thigh can be more serious than some other fractures. The powerful thigh muscle pulls the injured leg up, making it shorter than the other leg. This increases the possibility of serious damage to

the blood vessels and nerves and shock is likely to be severe.

If a thigh fracture is compound, *stop the bleeding* and treat the wound before treating the fracture.

Carefully straighten the leg and apply two splints—one on the outside and one on the inside of the injured leg. The inside splint should reach from the crotch to the foot.

Fasten the splints in five places: around the ankle; over the knee; just below the hip; around the pelvis and just below the armpit. Both legs should be tied together to support the injured leg as firmly as possible.

**Leg Fracture**—The lower leg, like the lower arm, contains two bones and, unless both are broken, it is sometimes difficult to tell whether or not there has really been a fracture. If both are broken, however, the fracture is likely to be compound.

If the fracture is compound, bleeding should be stopped and the wound cleaned. Straighten the leg and apply three splints—one on each side of the leg and one underneath. The splint should be exceptionally well padded under the knee and at the knee bones on either side.

A pillow and two side splints can be used in a fracture of this type by placing the pillow beneath the injured leg and bringing the edges of the pillow around to the front and pinning them together. The splints are then placed on each side and fastened in place over the pillow with strips of bandage.

A fractured kneecap can be immobilized by placing a padded board at least four inches under the injured leg. The board should reach from the buttock to the heel. Bandages should fasten the leg to the board just below the knee, just above the knee, at the ankle and at the thigh. The knee itself should not be covered.

**Collarbone**—A man with a fractured collarbone usually isn't difficult to spot. He carries his injured shoulder lower than the uninjured one and frequently can't raise his arms above shoulder level.

He characteristically tries to support his injured shoulder by holding his elbow on that side with his other hand.

The actual point of fracture, in fact, can often be seen since the collarbone lies close to the surface of the skin.

To immobilize a broken collarbone, bend the victim's arm on the injured side and place the forearm across his chest with the palm of his hand turned in.

The hand should be raised about four inches above the level of his elbow and the forearm should be supported in this position by a sling.

**Rib Fractures**—A fractured rib is usually painful at the point of fracture and may cause the victim to breathe in a shallow, gasping way. The greatest danger in this type of fracture is from the rib's loose end puncturing a lung.

Broken ribs can be immobilized if they are causing the victim undue pain by placing a bandage around the upper part of the chest and tying it in a loose knot on the victim's uninjured side.

The second and third bandages should be placed a

(Continued on page 34)

## ARTIFICIAL RESPIRATION



The purpose of artificial respiration is to force air in and out of the lungs in rhythmic alternation, until natural breathing is reestablished. Artificial respiration should be continued for at least four hours, unless the natural breathing is restored or a medical officer declares the victim dead. Remember, a subject—in many cases—has such a weak pulse that it cannot be detected, and his face may turn a bluish black. Sometimes the subject's body becomes stiff and rigid and this can be mistaken for the rigidity of death. Some people have been saved after as much as eight hours of artificial respiration.

This method is the most practical for emergency treatment, giving a far greater exchange of air, and it is very simply done.

1. Clear mouth and throat of subject. Wipe out any obstruction with fingers or cloth. Place subject in a face-up position, kneeling at his side facing his head.
2. Place fingers under angle of subject's chin, thumb in corner of his mouth. Lift the jaw upward. Tilt head back to extend the neck. This will open and align the air passage.
3. Pinch nostrils closed (except with an infant) then place mouth over subject's mouth and form a tight seal with lips. Mouth must be wide open to completely seal the open mouth of subject.
4. Blow (puff for infant), exhale firmly into victim's mouth until chest rises. If no response, reposition head and improve support of the lower jaw.
5. Remove mouth and inhale. During this period rescuer should hear and feel escape of air from subject's lungs.
6. Repeat steps 4 and 5 (12-18 times per minute—20 times for children).
7. Remove air in subject's stomach periodically (breaths) by placing hand over pit of the stomach and pressing air out.
8. To prevent dizziness, rescuer should pause momentarily after each minute (12-18 breaths) and exhale normally. If dizziness persists rescuer is working too fast.



NOTE: "Back Pressure Arm Lift" is used only when facial injuries make "Mouth to Mouth" method impossible. Clear mouth and throat of subject. Wipe out any obstructions with fingers or cloth. Insert airway if available. Place subject in a prone (face-down) position. Kneel on one knee on either side of subject's head. Bend subject's elbows and place his hands, one upon the other. Turn his face to one side, lift jaw upward and toward you and "hook" it over his hands to extend his neck. Place palms of your hands on subject's back, heels of hands lie just below a line running between the armpits, fingers pointing down and outward. Rock forward until arms are vertical, allowing the upper part of the body to exert slow, steady pressure downward on hands. Keep elbows straight. Release the pressure, avoiding a final thrust, and rock slowly backward, grasping the subject's arms just above the elbows. Draw his arms toward you, enough to feel resistance in his shoulders, keeping your elbows straight. Rock forward, dropping subject's arms gently to the ground, and repeat steps four through seven (about 12 times a minute).

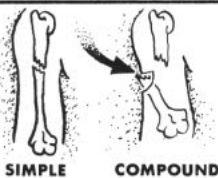
## FRACTURES

There are two main types of fractures—a simple fracture in which the injury is internal, and a compound fracture where the injury is open, and the skin is broken. The compound is more serious. If you are required to give first aid to a person who has a fracture, you should follow these general rules. If there is any possibility that a fracture has been sustained, treat the injury as a fracture.

Do not move subject until the injured part has been splinted, unless you move him to save his life or prevent further injury. Do not try to locate a fracture by grating the ends of the bone together. Do not attempt to set a broken bone.

Apply splints, being very careful in straightening long bones, such as those in the arm or the leg. If the protruding bone ends have dirt on them, clean with a sterile cloth. Remember, a simple fracture can turn into a compound fracture with rough handling.

If the fracture is compound there will be bleeding and this, of course, must be stopped before application of the splint. Stop bleeding by direct pressure. If bone end is protruding, straightening the limb may draw it back into place. Never attempt to force the end of the bone into place. You may use gentle traction by pulling gently with your hands, to get limb back into position. Apply the splint, then get medical assistance.



### SYMPTOMS

1. Pain and tenderness
2. Loss of motion
3. Crepitus (creaking or crackling).
4. Motion at points other than joints.
5. Swelling
6. Deformity (angulation)
7. Discoloration of the skin (after several hours).



## FROSTBITE

A condition most likely affecting cheeks, ears, nose, chin, hands and feet. The first symptom usually is blanching followed by intense pink color. With continued exposure cadaverous blanching will set in. In thawing, the part affected assumes intense red color, swells rapidly and rises in temperature. Blisters, normally present, grow rapidly and may burst.

1. Get subject into warmest available place. If feet or legs are affected do not allow him to walk.
2. Immerse injured part in a warm bath for about 10 minutes. Dry carefully.
3. Cover subject but not the affected area. Elevate the affected area slightly. Get medical aid.



## IMMERSION FOOT

Immersion foot is caused by prolonged standing or crouching and the continued wearing of wet footwear under cold conditions. The result may be extensive damage to the parts affected—usually the knees, buttocks, hands and feet. This condition occurs in cold and subtropical waters. The first stage starts with the extremities becoming numb. Swelling is noticed after several hours and the skin, which is at first red, becomes pale, mottled blue, or even black.

Keep feet and bottom of boot dry, if possible. Remove socks, dry feet, apply oil or grease, but do not replace socks or shoes unless they are dry. Avoid cramped positions by frequent exercises and the temporary elevation of the feet.

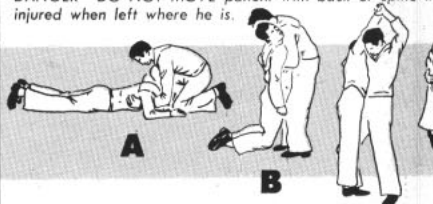
Get subject off his feet; expose affected parts to air. Warm, dry air is most beneficial. Get medical care as soon as possible.

# POINTERS

REMEMBER: First Aid is an emergency measure only—

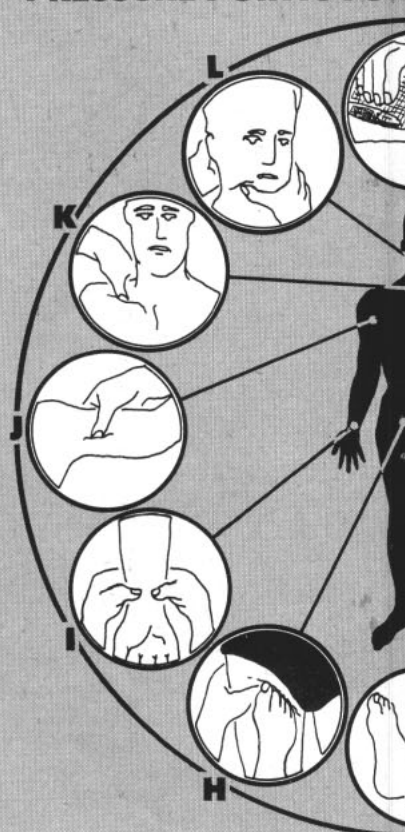
## IMPROVISED TR

DANGER—DO NOT MOVE patient with back or spine injured when left where he is.



When a subject must be moved, and a stretcher is not available, will help as a method of transportation. Turn the subject on one knee at his head, facing him. Pass your hands under his arms and clasp them across his back. Raise the subject to his back. Raise the subject to a standing position, and stick your right wrist in your left hand and swing his arm over your shoulder. Put your right arm between the subject's legs. Stoop quickly and grasp the subject's right wrist with your right wrist. The procedure for lowering the subject is shown in illustration D.

## PRESSURE POINTS FOR



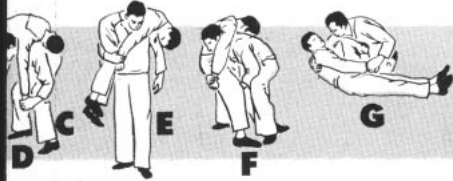
- A. Direct pressure is the first method to use when trying to stop bleeding. Use a clean cloth available, folding into wad to be placed directly over the wound.
- B. In temple or scalp bleeding compress main artery to the brain.
- C. In neck bleeding apply pressure below wound in front of the windpipe. Do not apply pressure at this point unless absolutely essential.
- D. Bleeding from lower arm (forearm) can be controlled by pressure on the brachial artery.
- E. In some cases, bleeding in leg wounds can best be controlled by pressure on the femoral artery. However, the artery is deeply buried in heavy muscle.
- F. Bleeding between knee and foot may be controlled by pressure on the popliteal artery.
- G. Elevation of foot is most helpful in controlling bleeding from the foot.
- H. To control bleeding from thigh, apply pressure in middle of thigh against the femoral artery to surface.
- I. Bleeding from hand can be controlled by applying pressure on the radial artery.
- J. Pressure of artery against bone or inner (body) side of hand between middle of upper arm and elbow.
- K. Bleeding in shoulder or upper part of arm can be controlled by pressure on the axillary artery against the first rib or against collarbone.
- L. For facial bleeding below level of eyes, run finger along the carotid artery.

# IN FIRST AID

proper medical attention to subject as quickly as possible.

## TRANSPORTATION

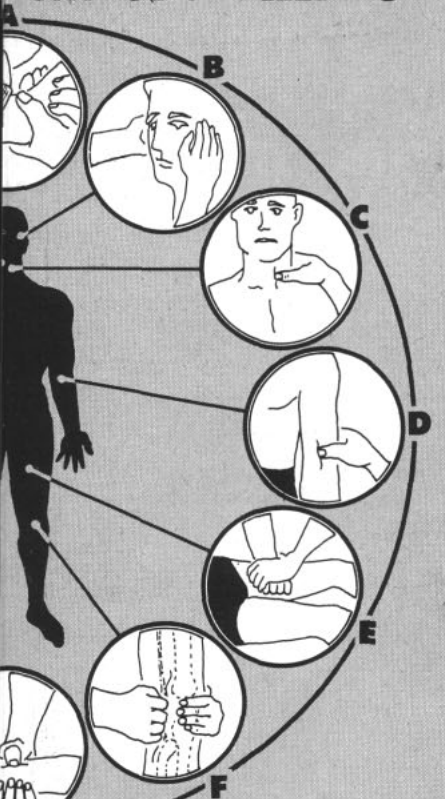
ry. Move a patient only if he will die or be more seriously



able, it is necessary to improvise. The illustrations above that he is lying flat, face down, as shown in illustration A. under the subject's armpits, then slide your hands down his knees, as shown in illustration B. Take a better hold across

leg between his legs as shown in illustration C. Grasp the back of your neck and down your left shoulder. and pull the subject across your shoulders, as shown in illustration E. Straighten up, as in illustration F. Your left hand is shown in illustrations F & G.

## CONTROL OF BLEEDING



control hemorrhage. If you don't have a sterile dressing use directly over wound, then apply pressure.

temple against skull bone just in front of ear. prominent neck muscle, pressing inward and slightly backward. fatal, since subject is in great danger of choking from pressure on

Applying pressure at elbow.

bled by applying pressure on the upper thigh with closed fist as cle, making compression of artery against bone difficult.

pressure in back of the knee.

Apply direct pressure at ankle.

of groin. Artery at this point lies over a bone and is quite close

sure at the wrist holding arm in the air.

arm halfway between shoulder and elbow will stop bleeding

rolled by applying pressure in back of collarbone, pressing down

lower edge of jawbone until you feel notch—apply pressure.

## TOURNIQUET



Whenever possible, to stop bleeding, apply direct pressure of your hand, firmly but gently, at the proper pressure point. CAUTION—Use a tourniquet as a last resort only. Remember, once tourniquet is applied, it can never be removed EXCEPT by a Medical Officer.

To apply an emergency tourniquet made from something like a neckerchief, wrap the material once around the limb and tie an overhand knot. Place a short stick on the overhand knot, and tie a square knot over it. Then twist the stick rapidly to tighten the tourniquet. The stick may be tied in place by another strip of material.

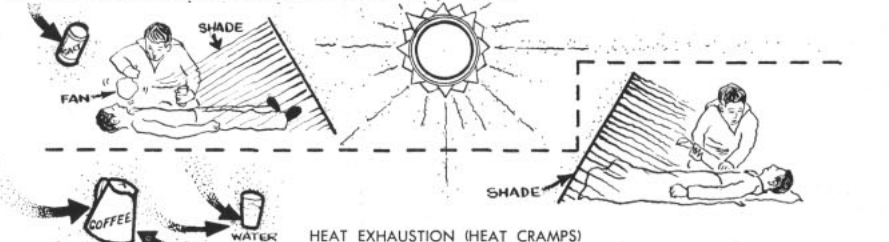
- Here are points to remember about using a tourniquet:
1. DO NOT use tourniquet unless bleeding cannot be stopped or controlled by any other means.
  2. DO NOT use a tourniquet for bleeding from head, face, neck or body. Use only on the limbs.
  3. Always apply a tourniquet above and as close as possible to the wound.
  4. A tourniquet must only be drawn tight enough to stop bleeding.
  5. Contrary to what you may have been taught before, do not loosen a tourniquet after application, except in extreme emergency.
  6. NEVER cover a tourniquet with a dressing. If an injured person must be covered make sure tourniquet is known to all persons concerned. MARK LARGE T on subject's forehead or attach medical tag to his wrist.

## HEAT STROKE & HEAT EXHAUSTION

Heat stroke and heat exhaustion are both caused by the same external conditions, but each represents a different bodily reaction to excessive heat, and there are important differences in symptoms and treatment. Usually, heat stroke involves exposure to direct rays of the sun, while heat exhaustion is more frequently found in hot, humid places, such as firerooms aboard ship.

Heat stroke results from a failure of the regulating mechanism of the body. Its symptoms are headache, dizziness, frequent desire to urinate, irritability and disturbed vision. The patient suddenly falls unconscious; his skin is hot and dry; pupils are contracted; pulse is full, strong and bounding; body temperature is from 105° to 109°; and there may be convulsions.

1. Remove subject to coolest possible place; remove or loosen clothing.
2. Sponge or spray body with cold water, then fan patient so water will evaporate quickly.
3. When subject is conscious give cool (but not cold) water to drink.



In heat exhaustion there is a serious disturbance of the blood flow. Subject loses, through prolonged sweating, large quantities of salt water. Signs are headache, dizziness, nausea, weakness, profuse sweating and loss of consciousness. It is sometimes accompanied by cramps in the muscles. These heat cramps may appear separately without any sign of heat exhaustion.

Remove subject to cool place out of drafts, so he does not chill. Loosen clothing, but keep patient warm. Cramps may be relieved by applying heat or firm hand pressure to the affected muscles. If the subject is conscious, give plenty of warm water, adding 1/4 to 1/2 teaspoon of salt to each glass. Note: This is probably the most important part of the treatment. Give subject hot coffee or tea, for this stimulates the heart, decreasing the circulatory disturbance.

## SPLINTS



In most cases ready-made splints are not available in emergency. Almost any firm object, such as a cane, sword, rifle, tent peg, stick, oar, paddle, or heavy clothing can be used as a splint on a fractured limb. A fractured leg may temporarily be secured to the other uninjured leg. Splints should never be applied so as to stop circulation. You should check a splinted injury every half hour for, remember, any injury is likely to swell and make the splint so tight it impairs circulation.

## SHOCK

CAUTION—Treat a person for shock ONLY when medical attention is NOT available. Shock is a condition in which circulation of the blood is seriously disturbed.

The measures used to combat shock are aimed at helping the body recover from the disturbance of the blood flow. The more extensive the injury, the more profound the shock will be. A person in shock should get PROPER medical attention as quickly as possible.

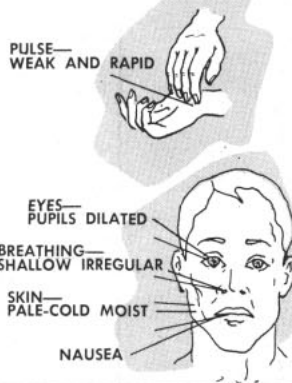
There is first pallor, then ashen color to the face and extremities. Complaints of weakness, faintness, dizziness, and nausea are common. Acute anxiety, restlessness and apprehension are present.

Thirst is present and sometimes intolerable. This symptom is a valuable indicator of imminent shock.

The eyes have a glassy stare, pulse is rapid and weak. The blood pressure falls. Breathing is faint, shallow and rapid.

Appearances may be deceiving, in that the calmest, most rational subject may be the one who rapidly develops shock and becomes stuporous if his injuries are ignored.

The first aid treatment of shock is primarily prevention. The subject should be placed horizontally, with head lower than feet. The person should be kept comfortably warm with blankets. A warm stimulating drink, such as coffee or tea, could be very helpful if the person is conscious.





(Continued) little lower down and tied loosely and a compress or pad placed under all three knots.

The three bandages should be tightened one at a time beginning with the top when the victim has exhaled.

When a man with fractured ribs is reasonably comfortable, it isn't necessary to apply any bandage or splint.

**Nose and Jaw**—First aid for a broken nose consists mostly of giving the victim good advice. You should, of course, stop the victim's nosebleed by making him sit quietly with his head tipped slightly backward. He can breathe through his mouth.

Tell him not to blow his nose and, if the bleeding doesn't stop within a few minutes, a cold compress or icebag on the nose will help.

If the fracture isn't treated promptly by a medical officer, it may result in a permanent nose deformity.

A fractured jaw may interfere with the victim's breathing. As you might imagine, chewing, talking and swallowing will also be difficult because any movement of the jaw will cause pain.

If the fracture impairs the victim's breathing, the lower jaw and tongue are pulled well forward and kept in that position until a four-tailed bandage can be applied around the lower jaw so it pulls the lower jaw forward. Tie the four tails together over the top of the head. The bandage must be sufficiently firm to immobilize the jaw, but it mustn't press against the throat.

**Head injuries**—A skull fracture, of course, is an extremely serious injury and one in which the victim must be kept entirely quiet.

Serious brain damage can result from apparently slight injuries.

There are several pointers which indicate the possibility of brain damage such as scalp wounds, or bruises, unconsciousness and severe headache.

Pupils which are of uneven size or which don't react normally to the light are indications of possible brain damage, as are bleeding from the ears, nose or mouth, restlessness, apparent disorientation, paralysis, flushed or pale face and shock.

When any of these symptoms are present, the victim should be kept lying down. If his face is flushed, his head and shoulders should be slightly raised. If his face is pale, head and shoulders should be lowered.

Keep the victim warm and as comfortable as possible. Don't give him anything to drink. Be careful when moving the victim and see that he gets medical attention as soon as possible.

There is one big *don't* where a head injury is concerned—**DON'T** give morphine.

**Back Injury**—A fracture of the spine is also an extremely serious injury for its vertebrae compose the spinal column or backbone which encloses the nerve fibers in direct communication with the brain. *If the spinal cord is cut or otherwise damaged, death or paralysis will result.*

It is important that the victim's neck or back not be

twisted or bent because this could result in irreparable damage to the spinal cord.

A man who has had his spine fractured will experience pain, particularly at the point of fracture. He will also be in shock, which will probably be severe, and he will be paralyzed if the spinal cord has been damaged.

If the victim can't move his arms and fingers, the damage to the spinal cord is probably in the neck. If his legs or feet and toes can't be moved, the fracture is in the back.

What is the best first aid treatment for a person with an injured back?

- Get competent medical aid as quickly as possible.
- Don't move the patient, unless failure to move him will result in further injury or death.

If the victim **MUST** be moved or transported before competent medical personnel arrive, a firm support should be used. In this instance, a rigid stretcher, a door, shutter or even a wide board should be used—not a canvas type stretcher which is likely to sag in the middle.

A victim with a fractured spine can be lifted, if it is absolutely essential, but don't do it without assistance, if you have any choice. Get from four to six other men so the victim's body will not be twisted or bent while being moved.

**Other Injuries**—A fracture of the pelvis can easily damage the organs or the large blood vessels of the pelvic region.

The victim may feel as though he is coming apart. He can't stand or sit or use the lower part of his body. He will, of course, experience great pain and shock.

If the victim must be transported without medical supervision, use a rigid stretcher and keep him lying on his back. His legs can be either straight or drawn up, whichever makes him the most comfortable.

To immobilize the victim's pelvis, bandage his legs together at the ankles and the knees and place a pillow beside each hip, fastening the pillows in place with bandages or strips of cloth. Fasten the victim securely to the stretcher or whatever support has been improvised.

**T**HE PURPOSE of the foregoing has not been to give you a lesson in first aid, but rather to point up the importance and value of keeping up with the shipboard or shore-based training available in the field of first aid.

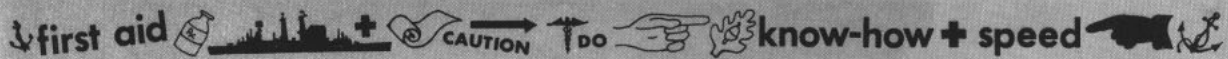
The variations of injuries are almost endless and volumes could be and have been written on first aid.

Now that you have checked some of the basic pointers on first aid, you can bring yourself up to date on the latest information with training aids available in the form of documentary films.

In addition, the Standard Navy First Aid Training Course (NavPers 10081-a) should be available as a refresher.

The man who knows what to do and, equally important, what not to do, in an emergency can be a real lifesaver.

—Robert Neil



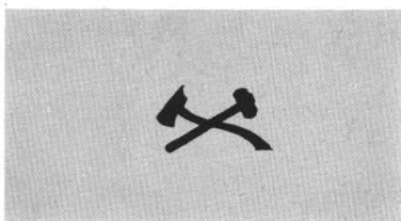
# How to Keep a Tight Ship

**A** SAILOR'S LOYALTY to his ship goes pretty deep. Ever since the first seafaring men began to sail the seas, the ships they sailed in have developed a personality and an identity all their own.

His ship is a real part of a sailor's life, and it's not hard to figure out why. He plays an important role in its achievements and its reputation. Further, if his ship's in danger, he's in danger. This reason alone is enough to give the seagoing man a lively interest in how his ship is built and how trouble is going to be squelched, when and if it comes.

As every Navyman knows, there are Damage Controlmen on board his ship whose job it is to prevent simple damage from becoming disaster. Damage Controlmen, believing in the maxim that an ounce of prevention is worth a pound of cure, spend much of their time making sure that watertight and airtight fittings such as hatches and doors are really water- and air-tight.

The construction of Navy ships assists them in this respect for they are compartmentalized so the compartments can be isolated to stop the spread of fumes or the rush of water.



This type of construction hasn't always been standard in the world's navies, as any avid reader of World War II battle stories will recall.

In the spring of 1941, HMS *Hood* engaged in a slugging match with the German *Bismarck*. Within a matter of minutes after the battle began, flames shot a thousand feet into the air between *Hood's* masts, then degenerated into a shroud of smoke.

When the smoke lifted, the place where *Hood* had been only a few minutes before was nothing but gray, tossing water.

Three days later, *Bismarck* was sunk after taking the combined assault of British battleships, battle cruisers, cruisers, destroyers and torpedo planes.

**T**HE COMPARISON between the quick demise of *Hood* and the durability of *Bismarck* against the persistent on-

slaught of the British provided what may be one of the most dramatic cases for watertight integrity in the history of naval warfare.

Although *Hood* admittedly was the victim of a lucky shot, she undoubtedly would have been more secure if damage control were able to contain the flooding caused by the German firepower.

Of course, keeping an eye on watertight and airtight integrity in the ship isn't the only preventive measure taken by Damage Controlmen. They must also keep an eye on the ship's draft and correct it when necessary to maintain stability.

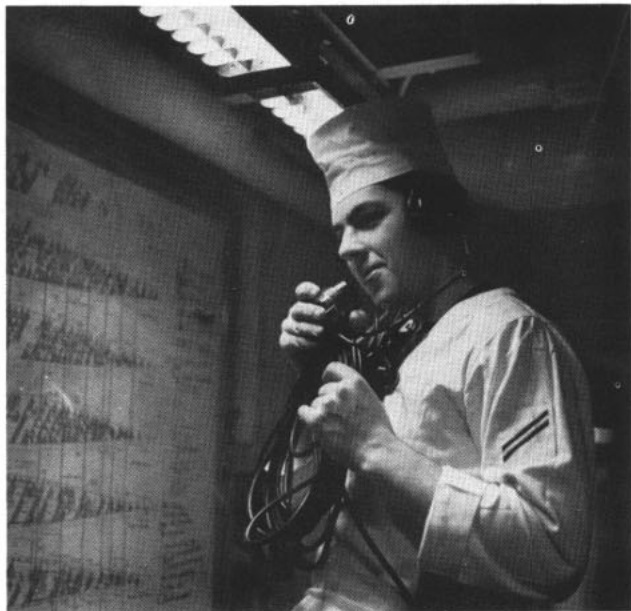
They take soundings to see if dry spaces are really dry or that spaces containing liquid don't contain too much or too little. Sometimes, after the ship has been damaged, they must flood spaces to correct the ship's trim.

These, of course, are only a few things a Damage Controlman must do in the course of his daily work. It can truly be said that he must be a jack-of-all-trades.

**A** CLUE TO THE VERSATILITY required by the DC rating can be gained by looking at a few of the

ON THE JOB—Damage control party removes shipmate from flooded compartment and (rt.) checks for radiation.





**ON STATION**—Ship's damage control stations keep track of 'battle damage' as telephone talkers transmit information.

advancement requirements.

In carpentry, he must know the characteristics of woods and glues the Navy uses.

He also must know how to join wood; how to make cofferdams and jumpers and be able to diagram the layout of fire mains, drains and other assorted plumbing used in his ship.

He must have better than a nodding acquaintance with the Navy's boats and how to repair them.

When it comes to fighting fires, he must, of course, know what equipment he can use and how to use it, plus the chemistry of fire and the chemistry of the extinguishing agents available to him.

If his ship is the victim of violence, the damage controlman must draw upon his knowledge of the

principles and methods of bracing and shoring and how to rig and use casualty power systems.

He must know how to trim the ship; and this covers a multitude of calculations.

He must know the ABCs of nuclear, biological and chemical warfare which include a knowledge of the types, characteristics and effects of nuclear blasts.

Also, in NBC warfare, an effective Damage Controlman has to be able to:

- Collect biological samples for laboratory analysis.
- Decontaminate the ship's surfaces, equipment and personnel.
- Recognize how heat from nuclear blasts is modified by weather, distance and shelter.
- Recognize the types and charac-

teristics of biological and chemical agents and the way they are spread.

**I**F A DAMAGE CONTROLMAN sees an injured man lying in the path of danger, he has to know how to carry him to safety and administer artificial respiration and stop bleeding, if need be. If the man is in shock or burned, our DC man has to know what to do.

In addition to all this, he has to know the workaday mechanics of supply; be able to take care of his equipment; and be able to handle the administrative details of his job.

If you think this is a lot for one man to know and do, you're right. Because it is such a big job, a large number of the personnel on board are assigned to damage control parties.

Let's take a look at the anatomy

**KEEPING READY**—Emergency power is rigged aboard DE and (rt.) carriermen fight a 'fire' during training exercises.



of damage control on board a ship.

The nerve center of damage control is found in DC Central. In a big ship, it is manned by the damage control assistant, a stability officer, a casualty board operator and a damage analyst.

Sometimes, there are representatives of fuel oil, electrical and ordnance groups as well as telephone talkers (who are often from clerical ratings) to take and transmit information to and from various damage control stations throughout the ship.

In a small ship, Damage Control Central may simply be one of the damage control stations. Regardless of what or where it is, however, there are always alternates which can take over DC Central's function in case the previously designated center is destroyed.

**I**F DC CENTRAL is the brain of damage control, the nerve endings are to be found in the damage control parties. These parties are usually composed of men in the ratings normally found in the area the DC party safeguards.

For instance, a propulsion repair party might have machinist's mates, machinery repairmen, boilermen, enginemen and firemen. It might also have an electrical officer or a senior electrician's mate.

This combination of ratings fused to the know-how of the men in the damage control rating produces a team that has come out a winner time after time.

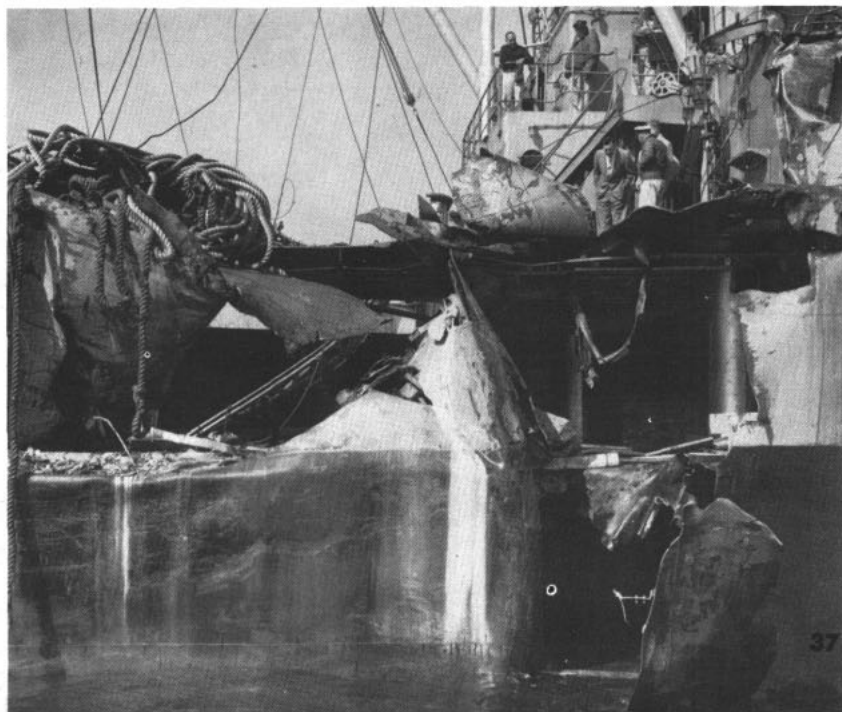
During World War II, for instance, the onslaught of the Japanese kamikazes inflicted heavy damage on many Navy ships. To some it appeared remarkable that after the worst of these attacks a ship could even remain afloat. Thanks to the efficiency of damage control, however, this proved they were tough, when they not only remained afloat but in most cases were restored to active service.

Constant training in damage control was the secret of success during World War II and it is the secret of success today. When times are quiet and there is no hint of trouble aboard ship, damage control drills keep DC organization and techniques sharpened to produce damage control parties well trained in how to do their work.

Today's Navymen also have the comforting knowledge that the history of damage control is a narrative of conspicuous success, giving it a well deserved reputation as the checkmate of disaster. —Robert Neil



**MR. FIX-IT**—Cutting torch is used by damage controlman to clear away 'wreckage' during drill. Below: When this happens the damage controlmen take over.



# DAMAGE CONTROL

Damage control is concerned not only with battle damage, but also with the maintenance of structural strength, watertight compartmentation, stability, buoyancy, and the prevention of fire and explosion, in port as well as at sea. If, in spite of all precautions and preparations, disaster does strike, the survival of a ship will often depend upon prompt and correct damage control measures after the damage occurs. Although damage control may rest primarily in the hands of specialists, detailed knowledge of ship construction, characteristics, stability, and the tools of the trade is available to men in related ratings. In other words, the safety of a ship is an all hands operation.

## CASUALTY

### MATERIAL CONDITIONS OF READINESS

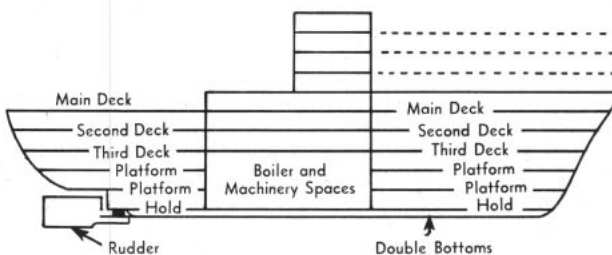


In order to use compartmentation to its fullest advantage, and to further provide for maximum preparedness, all the doors, hatches, scuttles, accesses, valves, and fittings of damage control value are classified and marked. Navy vessels maintain different material conditions of readiness according to whether contact with the enemy is improbable, probable, or imminent. Each condition represents a different degree of tightness and guarantees the maximum protection for the proximity of the enemy, with due regard for the health and comfort of personnel. The setting of material conditions is normally a departmental responsibility. When general quarters is sounded, setting condition Zebra is an all hands responsibility.

- A B C CLASSES A, B, C, FIRES—REPORTED
- A/B/C CLASSES A, B, C, FIRES—UNDER CONTROL
- A B C CLASSES A, B, C, FIRES—OUT
- CLASS A FIRE—REFLASH WATCH SET
- CLASS A FIRE—COMPARTMENT TESTED
- CLASS A FIRE—FIRE OVERHAULED
- F FLOODING
- F300 FLOODING AT RATE OF 300 GPM
- F FLOODING—REPORTED

WTD

### DECK SYMBOLS FOR NAVY SHIPS



Ships Built Before March '49	Ships Built After March '49
0400	04
0300	03
0200	02
0100	01
100	1
200	2
300	3
400	4
500	5
600	6
900	7

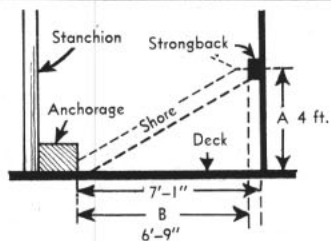
### CLASSES

#### CLASS A

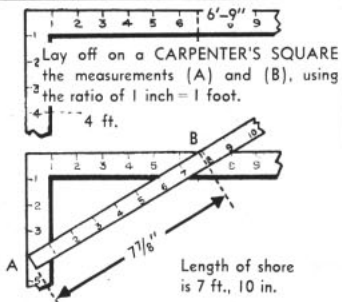
Class A fires are fires in ordinary combustible materials such as bedding, mattresses, dunnage, books, paper, cloth, canvas, and wood. All Class A fires leave embers which are likely to rekindle if air comes in contact with them. Therefore, extinguish fires completely.



### CUTTING THE



Measure the distance (A) from the center of the strongback to the deck. Then measure the distance (B) from the edge of the anchorage to the bulkhead, minus the thickness of the strongback.



Measure the diagonal distance between (A) and (B). This is the length of the shore in FEET.



Lay the square along the shore as indicated, making sure that the measurements 4 in. and 6 3/4 in. lie along the same line.



Mark Here and Cut

Measure center of cut and mark a right angle to it for second cut. You now have one end of the shore cut.

### SHORING



A sharp point on shore required to take pressure will slip and curl, letting shore move and work loose.

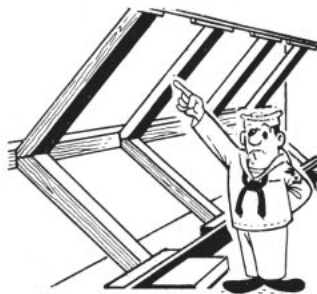


This is the simplest and strongest shoring structure.

Shores perpendicular to bulkhead exert maximum pressure.



The usual method of installing shores is by a triangulation system.



The basic structure is repeated as often as necessary.





# MARKING SYMBOLS

- FLOODING—BEING PUMPED OUT
- FLOODING—COMPLETELY PUMPED OUT
- 
- HOLES PATCHED
- BROKEN PIPE OR LINE
- BROKEN LINE REPAIRED
- BREAK ISOLATED
- BREAK BYPASSED
- SHORING
- FIRE MAIN
- WATERTIGHT DOOR



# MATERIAL CONDITIONS OF CLOSURE

The following illustrates material conditions of closure.

Condition	Damage Is	Close Fittings Marked
X-Ray	Improbable (well protected harbor)	X
Yoke	Probable (cruising conditions, unprotected harbors)	XY
Zebra	Imminent (battle conditions, maximum protection)	XYZ

Circle X and Y fittings may be opened without special permission when proceeding to battle stations or during action if it is necessary to do so to fight the ship. They must be kept closed when not in use. Red circle Z fittings may be opened during prolonged periods of General Quarters. However, these fittings are guarded for immediate closure. Circle W fittings, normally opened, are closed only to prevent ABC contamination or smoke from entering a vent system.



# OF FIRES

## CLASS B

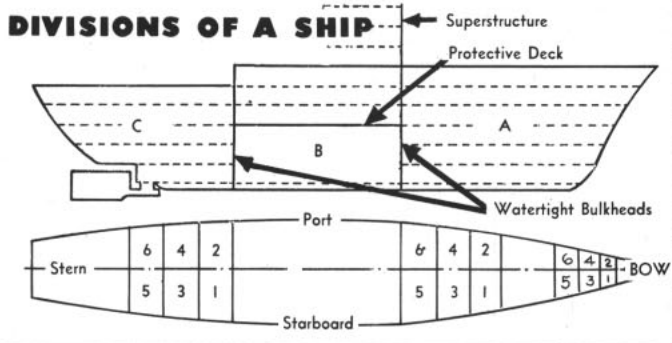
Class B fires are those that occur in flammable substances such as gasoline, jet fuels, kerosene, oils, paint, turpentine, tar, grease, and other combustible substances which do not leave embers or ashes. Chemical and foam products are best fighting agents for B type fires.



## CLASS C

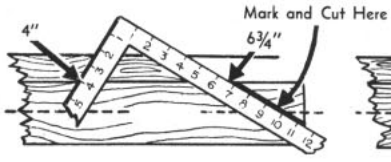
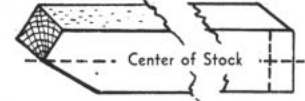
Class C fires are fires in live electrical materials. They present an extra hazard to the fire fighter, because of the danger of electrical shock. It is important to avoid damaging the electrical equipment. The first step is to secure the power to the circuit. Use carbon dioxide.

# DIVISIONS OF A SHIP



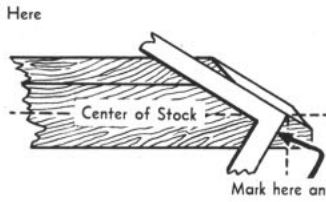
# ANGLES OF A SHORE

Along center of stock, measure length of shore, 77/8 feet.



Mark off perpendicular at other end of stock

Slide carpenter's square down to center point on perpendicular, keeping the same line as before. This time, mark cutting line on other side of square.

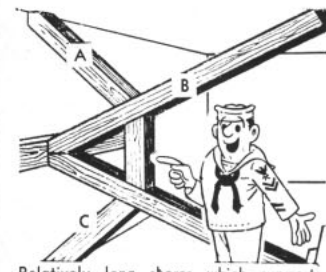


Mark a right angle from center point of this cut for second cut.

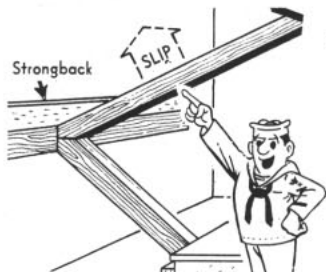


You now have a shore 77/8 feet long with ends properly cut.

# PRINCIPLES



Relatively long shores which support heavy pressure may have a tendency to bow. Supporting shores A, B, C, should be installed for greater strength.

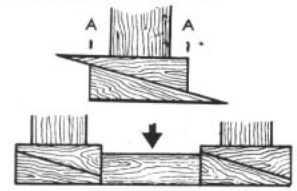


When one shore is longer than the other, a wider strongback will keep the longer one from slipping.

## Remember

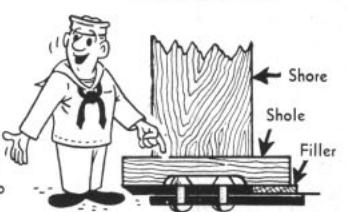
The length of a shore should never be over 30 times its minimum thickness.

After wedges have been driven home, cut them off along line A-A.



Cut blocks of 2 x 4 to fit the gap and tap them in snugly.

## The use of a Shore



# FTC Trainees Pass a Real

**F**IRE HAD BEEN gnawing at the Norwegian freighter *Sandanger* for eight days as she approached San Diego's outer anchorage under tow by two salvage tugs.

When the Navy was asked to furnish fire fighters to extinguish the blaze, it was more than ready to oblige. Not only was the sea service able to lend a traditional helping hand, but here was a real challenge to the men of the Fire Fighting School at San Diego's Fleet Training Center. LT Milford C. Berg headed the team from the school which was ordered aboard *YTB 763* and *764* and sent to render assistance.

By the time they finished, they had undergone a challenging course of on-the-job training.

As the *YTBs* approached *Sandanger*, the freighter was listing so heavily that her port deck-edge scuppers were awash. Smoke billowed from her stack, superstructure, vents and all holds.

The starboard shell was so hot that it hissed with steam as persistent ground swells slapped it. The freighter's rudder was jammed hard apart making it difficult for the salvage tugs to hold her on a good heading.

*Sandanger's* tugs towed her to the general vicinity of berth 170 and the Coast Guard cutter *Alert* approached *YTB 763*, bringing the salvage master to brief LT Berg on the nature of the cargo, the condition of

the anchor windlass and the increase in the list during the past 24 hours.

*YTB 763* then approached *Sandanger* and sprayed her decks with water to see how hot they were. The spray on number one and four holds and the upper superstructure hissed into steam, but the area around the number two hold seemed cool enough to permit boarding.

*YTB 763* made an angle approach on the port side and eight men donned life jackets and jumped aboard *Sandanger* as the *YTB* eased close to her bulwark.

**F**IRE IN *Sandanger's* machinery space had made the superstructure so hot that inspection above the O1 deck was impossible. The area was, in fact, so hot that the aluminum ladder treads had melted, leaving only the rails.

Tremendous heat radiated from the engine room casing, in the cabin area and all five holds were burning. The largest fire was in the number four hold, and the glowing red bulkhead of the machinery space gave the boarding party ample reason to suspect a large fire was at work there, too.

*Sandanger's* loading plan showed a large amount of coke stowed forward in the number one hold, and 175 ingots of silver were stowed in a main deck locker on the starboard side, forward over the number one hold.

The anchor windlass brake band

was so damaged by fire it was impossible to estimate how long it would hold.

**B**Y THE TIME the party returned to *Sandanger's* midship section, the list had increased to the point where the outboard main deck passage was partly awash, and she rolled enough to make her unsafe for the party to remain on board.

After a time, *Sandanger* ran aground—by the stern with her bow pointed seaward, but the persistent swells threatened to work her free. LT Berg, CWO Norman Mowery, two base fire chiefs, and two enlisted instructors boarded *Sandanger* but the vessel soon took a heavy roll completely submerging the port bulwarks. She returned slowly and LT Berg ordered all hands to return immediately to *YTB 763*.

While the party was on board, however, they noticed the forward bulkhead of number four hold was cherry red as a result of fire being fed by diesel oil from the ship's deep tanks.

Early the next morning portable pumps were rigged on an LCM and secured alongside number four hold in an attempt to cool the red-hot bulkhead. *YTB 764* was sent to the starboard side and began cooling the hull next to the machinery spaces. After wetting down the superstructure for half an hour, *YTB 763* sprayed water over several firemen who climbed to the superstruc-

SMOKE EATERS—San Diego FTC firefighters turn hoses on freighter blaze. Rt: Inspection party leaves burning ship.



# Tough Test



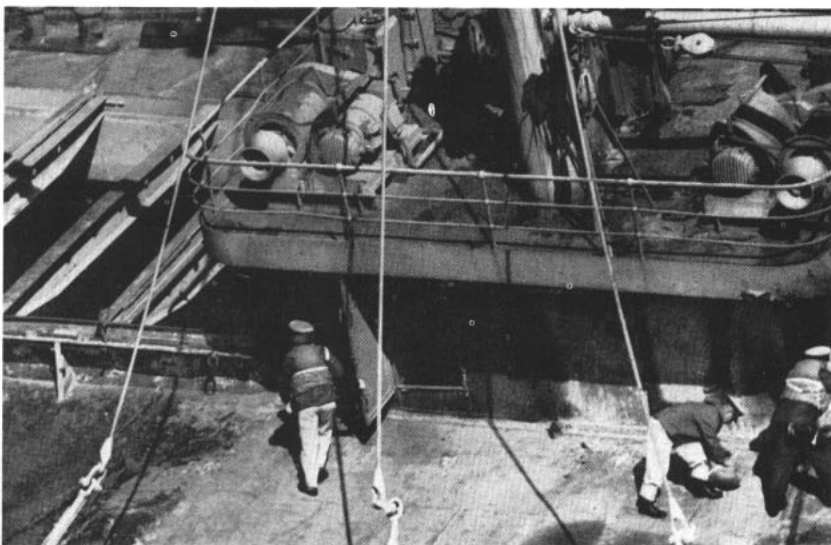
MERCHANT FREIGHTER *Sandanger* lies beached off San Diego, where Navy fire fighters came to the rescue.

ture to see if hoses could be hauled to the skylight area and lowered to the fire from above.

The climbing party found the metal in the engine casing was glowing and the entire engine space burning. Two and one-half inch hoses were hauled up and lowered into the inferno.

Circulating nozzles sent a rotating shower into the area for two hours, after which the YTBs prepared to foam the engine room through the skylights.

**E**VEN THOUGH the area had been cooled by water from the rotating nozzles, the heat was still so intense the foam blanket burned away, and a reflash occurred in the machinery spaces with such gusto that the fire-

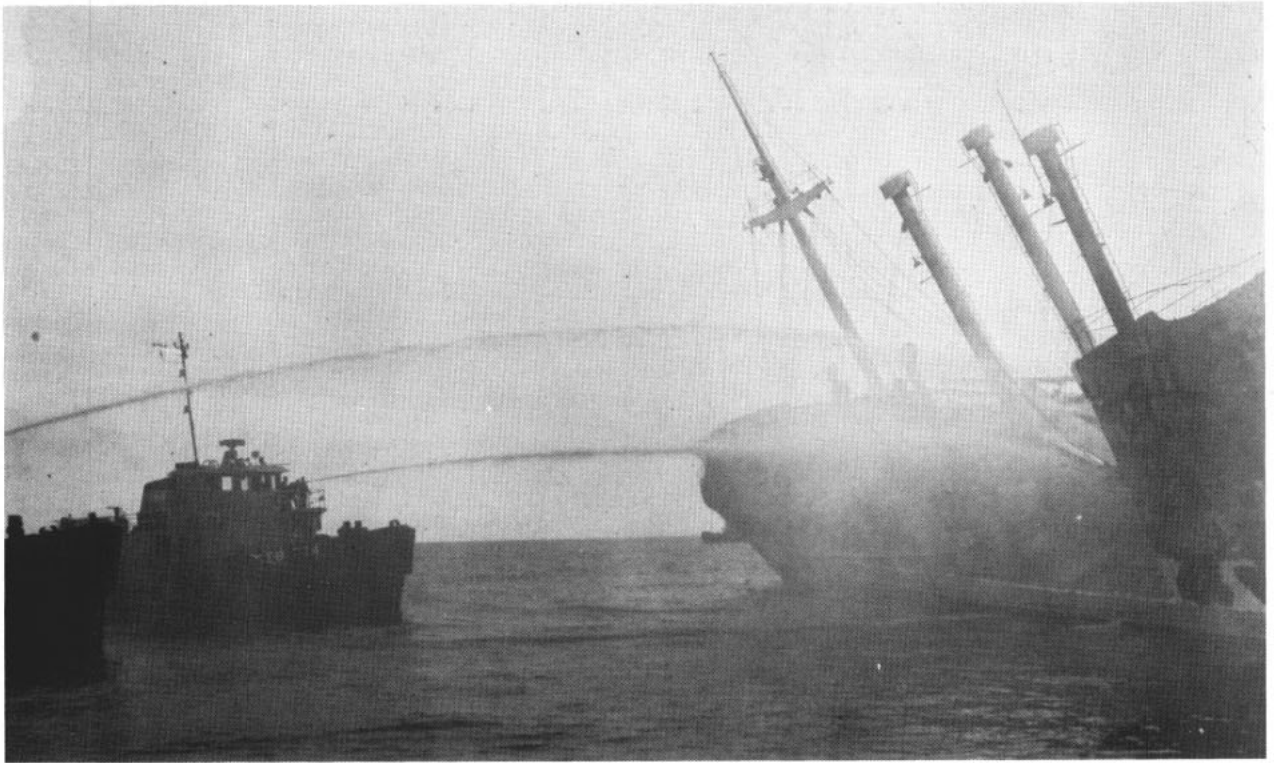


INSPECTION PARTY (*above*) sees extent of ship's damage. *Below*: Firefighting team runs pump as others fight fire.



BER 1964





NAVY FIREFIGHTING tugs from San Diego hose down *Sandanger* as she settles in water with a 30-degree list.

fighters had to beat a hasty retreat.

Again the cooling operation began. By this time, the diesel oil in the number four and five holds was an even greater danger. The firefighters began to blanket the after holds with foam.

Because the portable pumps then in use began to falter, the firefight-

ers fought with hoses from the *YTB 763* fire main.

Two and one-half inch hoses were run from *YTB 763* and manned by the firefighters on the skylight, who directed their streams into the casing and under the stack section.

As the circulating nozzles were gradually lowered, the casing area

cooled, and eventually the firemen could enter the machinery space casing from the main deck to work the corners and low areas with one and one-half inch high velocity nozzles.

Finally, 10 hours and 3000 gallons of foam liquid later, the fire in this area was out.

*YTB 763* then moved to a position between the number one and two holds and began pumping water into the number one hold, where a large amount of coke was still burning fiercely. The object was to flood the hold.

**W**HILE THE FLOODING was in progress, lines were rigged to fight the fires in the number two and three holds, which were not burning as intensely, but proved difficult to extinguish because of quantities of cotton, pulp, bird seed and other materials that might smoulder.

At length, all the fires which had ravaged *Sandanger* were extinguished, and the silver ingots on board the ship were unloaded under the supervision of United States Marshals.

The Navy's YTBs and fire party left the hull to return to the Fire Fighting School. *Sandanger's* fires were out, indicating the firefighters had learned their lessons well.

—Robert Neil



MEMBERS OF firefighting school get commendations from commanding officer of San Diego Fleet Training Center for their work on Norwegian freighter fire.

# Check That Bomb in Your Locker

Is there a bomb in your home? Or in your sleeping quarters aboard ship? There is if you have an aerosol dispenser of any type, and there are many types—dispensers for shaving cream, insect repellent, hair spray, tooth paste, deodorant, paint, varnish, polish, wax, air freshener, de-icer, ether car starter and whipped cream, to name several. These dispensers are handy, but they can be dangerous also if you don't know how to handle and dispose of them.

Gas is sealed in them under pressure. Extreme heat may build up the pressure until the can explodes like a bomb. Some injuries and deaths have been caused when people tossed supposedly empty containers in the incinerator, or placed a "bomb" in hot water. It's as

simple as that.

Here's a sample. One unwary individual tossed an empty aerosol can into a fire to dispose of it. As he turned his back, there was a dull thud, and a piece of ragged metal struck him in the neck, severing the jugular vein. He was dead 15 minutes later.

Another person heated a "near empty" can in hot water to "pep it up," and get out the last of its contents. Then he shook the can. Results: one lost eye, one broken jaw.

Any aerosol dispenser should always be kept away from sources of direct heat. Don't rest it on a radiator. Don't store it near a stove or a hot pipe. When the product is finished, the recommended way to dispose of the bomb is to bleed re-

maining gas from the container by holding down the button (do this in a ventilated area).

If you have to be really cautious, the recommendations are to wrap the container in newspaper and store (if possible) under refrigeration. This lowers any remaining pressure. Next day, with container still wrapped, turn the bottom end away from you and puncture it. Small cans can be punctured with a beer can opener.

Then the bomb can be safely disposed of. Remember, an unpunctured aerosol container, dropped over the fantail, will remain afloat for an indefinite period, possibly leaving a telltale trail behind.

One more note: pass this information on to members of your family and your shipmates.

## Award for Sea Rescue

Routine night air operations were transformed into a tense emergency situation recently when the carrier *Randolph's* number three elevator collapsed, sending a plane and five men into the sea off the Virginia coast.

Trailing CVS 15 in plane guard position was *uss Holder* (DD 819). Her crew were alerted when they saw flames suddenly engulf one side of the carrier. The DD closed in with fire hoses ready, then received signals that there were men overboard.

High seas fouled an attempt to lower a boat, so *Holder's* CO prepared to make a destroyer rescue.

**MEDAL WINNER LTJG W. J. Brennan of *USS Holder* (DD 819) receives medal for saving *Randolph* seaman's life.**



As searchlights were played over the area where smoke floats had been dropped by *Randolph*, some men were sighted.

*Holder's* crew were able to pull two men aboard. Lieutenant (jg) William J. Brennan, USN, aboard *Holder*, spotted a third man floating face down. He dove into the choppy waters, swam to the victim and towed him back to the ship. The other two men were not found.

In recognition of his heroic action, LTJG Brennan, a 1962 graduate of the Naval Academy, has been awarded the Navy and Marine Corps Medal—the highest award given for peacetime bravery.

## Live Messenger Line

It was almost like a Winslow Homer painting—thundering surf, heavy ground swell and one vessel trying to shoot a messenger line to another which was being pounded to death on the beach.

For hours, the 100-foot *YTM 138* battled the heavy ground swells and the worsening surf off San Clemente Island, Calif., but couldn't get close enough to shoot a line to the crew of the stranded *LCU 1619*.

It finally became apparent that only a swimmer could get a line from the tug to the beached landing craft.

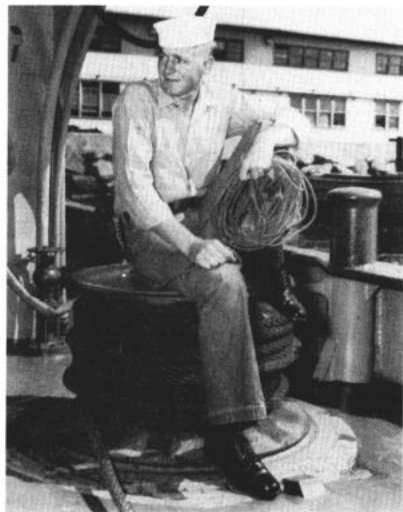
Fred Freeland, EM2 and a scuba diver, donned his wet suit and plunged into the water carrying the messenger line with him.

The trip wasn't easy. For 30 anxious minutes the crews of both the tug and the LCU watched *Freeland* as the waves broke over him during the 1500-foot swim.

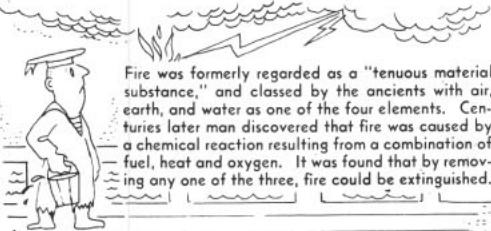
*Freeland* made it, however, and the 1000-horsepower pull of *YTM 138* pulled the landing craft off the beach.

Everybody back at the base in Long Beach considered it a job well done. *Freeland*, however, allowed as how it would have taken him only 15 minutes to make the swim if the heavy messenger line hadn't kept pulling him back.

**GOOD SWIMMER—Fred Freeland, EM2, swam 1500 feet through rough seas to rescue beached landing craft.**



# WHAT IS FIRE? FRIEND OR FOE



Fire was formerly regarded as a "tenuous material substance," and classed by the ancients with air, earth, and water as one of the four elements. Centuries later man discovered that fire was caused by a chemical reaction resulting from a combination of fuel, heat and oxygen. It was found that by removing any one of the three, fire could be extinguished.

## IGNITION TEMPERATURE



In order to have a combustible fuel or substance take fire, it must be hot enough to burn and it must be heated to its ignition temperature. This is the temperature at which the vapor being given off by a substance will ignite spontaneously in the air. The substance does not have to be heated to this ignition temperature throughout to ignite.

## TYPES OF FIRES



Fires in ordinary combustible materials (such as bedding, clothing, wood, canvas, rope, and paper) where the cooling effect of water is of first importance to extinguish them. The chief characteristic of Class A combustibles is the embers or ashes remaining after burning. Material of this type must be cooled throughout the entire mass before the fire is completely extinguished.



Fires in flammable liquids (such as gasoline, oil, grease, paint, and turpentine). Materials of this type burn at the surface where the vapors are given off. Smothering or blanketing of the burning liquid is best for extinguishing this type of fire.



Fires in electrical equipment where the use of a "non-conducting" extinguishing agent is of first importance. In most electrical fires it will be necessary to de-energize the circuits (cut off the electricity) before any progress can be made.

## HEAT IS TRANSMITTED BY

### 1 CONDUCTION

Heat is transferred through a substance by direct contact. Thus a thick steel bulkhead with a fire on one side causes heat to be given off in adjoining compartments through the steel by conduction.

### 2 CONVECTION

The heated air and gases rise from a fire bringing heat to all other combustible substances within reach.

### 3 RADIATION

Heat is transmitted in all directions and no medium is required. It is this radiation which causes the feeling of heat when standing before an open fire.

# FACTS FOR NAVY



## Pointers on

The best way to combat fires is to prevent them. Fire prevention must become a daily

## MOST DESTRUCTIVE

### CARELESSNESS



Fires never simply happen. They must be caused, and men, women and children are nearly always responsible.



## PERSONAL HABITS CAN



By being careful in the use of flame-producing tools and equipment aboard ship or station.



Keeping containers of volatile liquids tightly closed.

By being careful in the use of open lights and electrical equipment where an explosive vapor might exist.



By using non-sparking tools where fire or explosive hazard exists.

## PLAN OF ACTION

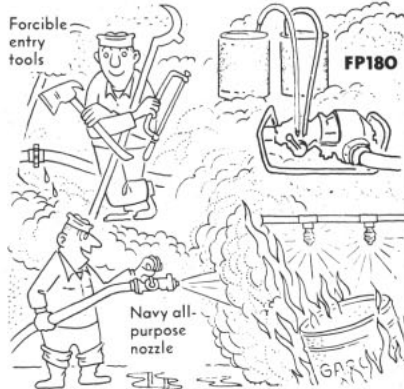


Give the alarm, notify at least one other person who can turn in the alarm.

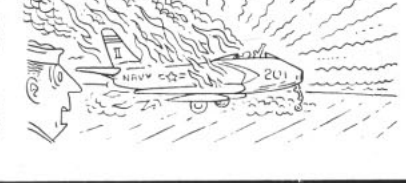


When reporting the fire give an accurate description and location in a clear voice.

## EQUIPMENT FOR



Many important pieces of fire-fighting gear are not shown. Mention should be made in passing of such apparatus as portable CO2 extinguishers, installed systems, asbestos



# FIREFIGHTERS



## Fire Prevention



habit. Make a habit of keeping things squared away and shipshape at all times.

## FIRES ARE CAUSED BY:

### LACK OF KNOWLEDGE BEING UNPREPARED

Knowledge of what fire is, how it begins, and what must be done to prevent it, is essential, but this alone is insufficient.



Training is often tiresome, yet it is the most foolproof approach to the prevention of destructive fires.

### MAKE OR BREAK FIRES

A match or cigarette carelessly tossed can start a fire as damaging as one caused by enemy action.



By obeying Safety Signs, Don't smoke in magazines, paint lockers, or while fuel or ammo is being taken aboard.



## REPORTING A FIRE



Inspect from a safe distance and attempt to determine what is burning.

Do what you can to extinguish or control the fire until help arrives.

## FIGHTING FIRE



Straight type pick-up tube proportioner

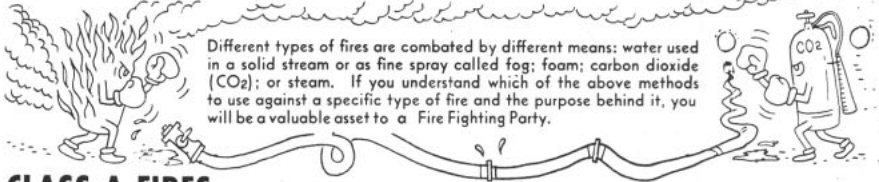
Fog spray installations

Foam nozzle



suits, lifelines, the pumps and oxygen — breathing apparatus. Know where every piece of equipment is located. Know how to use it correctly.

## FIGHTING FIRE USING THE RIGHT EXTINGUISHING AGENT



Different types of fires are combated by different means: water used in a solid stream or as fine spray called fog; foam; carbon dioxide (CO<sub>2</sub>); or steam. If you understand which of the above methods to use against a specific type of fire and the purpose behind it, you will be a valuable asset to a Fire Fighting Party.

## CLASS A FIRES



Woodwork, bedding, clothes, combustible stores

### USE



Carbon dioxide (CO<sub>2</sub>)



Solid water stream



Low-velocity fog



High-velocity fog



Films, celluloid, etc.

### USE



Water immersion



Solid water



High-velocity fog



GUN POWDER

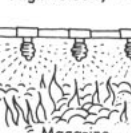
### USE



Water immersion



Solid water stream



Magazine sprinkling



Incendiary bombs

### USE



(Throw overboard)



High-velocity fog



Sand

## CLASS B FIRES



GASOLINE, kerosene, fuel oil and diesel oil

### USE



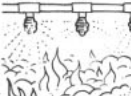
CO<sub>2</sub>, foam or fog



Low- or high-velocity fog



Fog spray CO<sub>2</sub> (fixed system)



Installed sprinkling system



Paints, spirits, flammable stores

### USE



CO<sub>2</sub> extinguishers



Low- or high-velocity fog



Installed sprinkling system



Foam

## CLASS C FIRES



Electrical and radio apparatus

### USE



De-energize affected circuits



CO<sub>2</sub>



High-velocity fog



Foam application

## KEEP YOUR SHIRT ON



Any clothing which covers your skin protects you in case of fire or explosion. Bare skin is cooked instantly by a flash from an explosion. If your clothes catch fire, don't run. This fans the flame; lie down and roll up in blanket, coat, or anything at hand.

## DON'T PANIC





PATROL PLANE P-3 Orion replaced older P-2 Neptune in SAR. *Rt:* Destroyers are often called for help in rescues.

# SEARCH AND RESCUE

**I**F YOU'RE UNFORTUNATE enough to crash at sea, become lost in a forest or stranded (alone) on desert island, survival training may save your life . . . but won't insure your comfort. Before long you'll begin looking forward to being found and transported back to civilization.

You probably won't have long to wait, thanks to the Search and Rescue (SAR) centers (officially named Rescue Coordination Centers) scattered around the world. They are always on the ready.

SAR centers are operated by the Navy, Coast Guard and Air Force. They are command centers for rescue operations and are charged with saving lives and property in their assigned areas. A good example may be found at rescue centers in the Hawaiian Islands, where SARmen keep tabs on sea and air traffic in a 10-million-mile area of the central Pacific.

When a Mayday or SOS is broadcast . . . a ship or plane is reported

overdue, the SAR center goes into action on the double.

First, the last known position of the missing craft is determined. Ship movements are simple—they're charted on a large map at SAR headquarters. Or if it's an aircraft in trouble or overdue, the local Civil Aeronautics Administration Office can supply the last position report.

When the nature and location of the emergency is relatively clear, the SAR Center may call on full-time search and rescue units. The 76th Air Rescue Squadron at Hickam Air Force Base can provide helos and long-range search planes. Coast Guard men are the real experts on at-sea rescue, and are always ready with specially-configured search aircraft, cutters, buoy tenders and small craft. Nearby Naval Stations can provide helos and boats. For land searches anywhere in Hawaii, the Army's Land Rescue Team is available.

If there's sea traffic in the emer-

gency area, the ships may be called on to lend a hand. Aircraft carriers, cruisers and destroyers going to or returning from duty in the western Pacific are diverted to take part in many SAR operations.

**S**AR CENTERS are usually pretty busy. Many cases concern small craft which are overdue at destination or stranded by engine trouble. Others begin when airliners enter the Hawaiian area with crippled engines. When this happens the aircraft is met by SAR planes and escorted to the nearest landing field.

Many of the emergency calls are requests for medical assistance. Last July, for instance, a Navy destroyer operating in the Hawaiian area sent an emergency call to SAR: One of the crew members had suffered a heart attack. Could SAR lend a hand?

It could. The destroyer was ordered to French Frigate Shoals and a Coast Guard seaplane with a doctor

SHIPWRECKED MERCHANT seamen are rescued by Navy men. *Rt:* Hospital corpsmen help rescued pilot out of helicopter.







SAR CENTERS coordinate rescues.

# TEAM

aboard was dispatched to meet her there. It was night when the seaplane arrived, and it landed with the aid of flare pots and vehicle headlights. It wasn't long before the sick man had been transferred to Tripler Hospital on the Islands.

**S** EARCH AND RESCUE operations on land are generally coordinated by the Air Force, while sea SAR is the responsibility of the Coast Guard. But the SAR centers are manned by personnel from the service in the area. Rescue operations in the Guantanamo area, for instance, though coordinated by the Coast Guard, are carried out by Navymen. A mid-

CARRIER-BASED helicopter hovers over downed pilot in preparation for pickup as motor whaleboat stands by to help.



WELCOME SIGHT to any man in water is view at 12 o'clock of rescue helicopter.

western U. S. SAR center would be manned by Air Force personnel.

SAR centers are located at:

Boston, Mass. (Coast Guard)  
 New York City, N.Y. (Coast Guard)  
 Norfolk, Va. (Coast Guard)  
 Miami, Fla. (Coast Guard)  
 New Orleans, La. (Coast Guard)  
 Bermuda (Coast Guard)  
 Guantanamo Bay, Cuba (Navy)  
 San Juan, Puerto Rico (Coast Guard)  
 Los Angeles, Calif. (Coast Guard)  
 San Francisco, Calif. (Coast Guard)  
 Seattle, Wash. (Coast Guard)  
 Ketchikan, Alaska (Coast Guard)  
 Kodiak, Alaska (Coast Guard)  
 Adak, Alaska (Navy)

Honolulu, Hawaii (Navy, Coast Guard, Air Force)  
 Elmendorf AFB, Alaska (Air Force)  
 Midway Island (Navy)  
 Kwajalein, Marshall Islands (Navy)  
 Guam, Marianas Islands (Navy)  
 Iceland (Navy)  
 Azores (Air Force)  
 Robins AFB, Ga. (Air Force)  
 Richards-Gebaur AFB, Mo. (Air Force)  
 Hamilton AFB, Calif. (Air Force)  
 Eglin AFB, Fla. (Air Force)  
 Ramstein AB, Germany (Air Force)  
 Clark AB, Philippine Islands (Air Force)  
 Tachikawa AB, Japan (Air Force)  
 Albrook AFB, Panama Canal Zone (Air Force)  
 Jon Franklin, JO1, USN



## SAFETY FILMS:

# PREVIEW THEATER

IN THE PRECEDING pages we have tried to describe procedures and practices which may very well save the life of your shipmate or, possibly, even your own life. Limitations of space, time and personnel may have, however, caused us to fail to give proper emphasis on certain areas of safety and survival.

To help rectify this situation, we are listing below the titles of those documentary films which may be found in the *U. S. Navy Film Catalog* (NavWeps 10-1-77), which we think will be most helpful. There are more, many more, in the *Catalog*.

All are unclassified.

### SURVIVAL

**Jungle Survival:** MV-8826 (36 minutes, sound, color). Deals with different types of jungles and describes characteristics of rain and cloud forests, savannas and swamps.

**Jungle Operations—Part I—How to Live in the Jungle:** MA-8944A (19 minutes, B&W, sound). How to survive in the jungle under combat conditions.

**Survival in the North Temperate Regions—Living off the Land:** FN-9202A (14 minutes, color, sound). How to survive under emergency conditions in the North temperate regions.

**Survival Training—Snow and Glacier Travel:** MV-9404B (12 minutes, B&W, sound). Familiarizes the survival student with problems of travel over glaciers and snow-covered terrain.

**Survival Training—Preparing an Animal for Use:** MV-9404C (13 minutes, B&W, sound). How to prepare an animal killed in the field for survival use.

**Survival Training—Utilization of Game:** MV-9404D (11 minutes, B&W, sound). How to use parts of an animal for survival use.

**Survival Training—Map and Compass:** MV-9404E (11 minutes, B&W, sound). How to use map and compass.

**Survival Training—Route Planning and Selection:** MV-9404F (13 minutes, B&W, sound). How to plan long- and short-range routes of travel.

**Survival Training—Preparing Plant Food for Use:** MV-9404G (14 minutes, B&W, sound). Primitive methods of preparing plant foods and information on how to obtain maximum nutrition from limited food.

**Survival Training—Fishline Sextant:** MV-9404H (12 minutes, B&W, sound). How to set up and use the fishline sextant.

**Survival Training—Fire Building:** MV-9404I (9 minutes, B&W, sound). Different types of improvised fire building equipment are demonstrated.

**Survival Training—Tactical Movement:** MV-9404J (11 minutes, B&W, sound). Basic informa-

tion on how to survive in enemy territory.

**Survival Training—Camouflage for Evasion:** MV-9404K (12 minutes, B&W, sound). Blending with the terrain.

**Survival Training—River Crossings:** MV-9404L (13 minutes, B&W, sound). Effective techniques of crossing rivers and streams under different conditions.

**Survival Training—Medical Aid:** MV-9404M (16 minutes, B&W, sound). Deals with emergency medical measures for common injuries.

**Survival Training—Back Packing:** MV-9404N (10 minutes, B&W, sound). How to construct packs and carry burdens.

**Survival Training—Hunting in Survival:** MV-9404O (6 minutes, B&W, sound). Location of game and correct methods of hunting.

**Survival Training—Traps and Snares:** MV-9404P (13 minutes, B&W, sound). Proper location of traps, use of some is demonstrated.

**Survival Training—Fishing:** MV-9404Q (12 minutes, B&W, sound). Catching fish with limited or improvised equipment.

**Survival Training—Fires for Survival:** MV-9404R (7 minutes, B&W, sound). Nature, usefulness and types of fires for survival.

**Survival Training—Improvised Signaling Methods:** MV-9404S (7 minutes, B&W, sound).

**Survival Training—Parachuting:** MV-9404T (10 minutes, B&W, sound). Title is self-explanatory.

**Survival Training—Survival Firearms in Hunting:** MV-9404U (10 minutes, B&W, sound). Use and maintenance of M-4 and M-6 survival weapons.

**Survival Training—River Travel:** MV-9404V (9 minutes, B&W, sound). Construction and use of rafts plus techniques for river travel.

**Survival Training—Shelter:** MV-9404W (10 minutes, B&W, sound). How to select and erect shelters for any environment.

**Survival Training—Forest Fire Suppression:** MV-9404X (10 minutes, B&W, sound). How to control wild fires with primitive equipment.

**Deep Sea Survival:** MV-9407 (27 minutes, color, sound). Case histories which portray violent conditions at sea, but prove survival is possible with will, endurance and training.

**Edible Plants of Field and Forest:** MC-9781 (20 minutes, color, sound). Describes edible plants in North temperate regions and how to prepare them.

**Survival Stresses:** MV-9794A (30 minutes, color, sound). Physiological and psychological stresses which may be encountered by men facing a survival problem in any area.

**Tropic Seacoast Survival:** MV-9794B (23 minutes, color, sound). Procedures and techniques for survival along tropical seacoasts.

**Man Overboard Emergency Drill:** SN-370 (20 frames, B&W, sound). Demonstrates procedures including launching and securing boat.

**Abandon Ship:** MN-1145 (32 minutes, B&W, sound). Leaving the ship, swimming through

burning oil and gasoline and emergency flotation techniques.

**Survival in the Aleutians:** MV-7818 (70 minutes, color, sound). Shows actual conditions and methods of survival.

**Evasion:** MV-7840 (90 minutes, B&W, sound). Aircraft crew is forced to bail out over enemy territory.

**Making Sea Water Drinkable with the Solar Still and Desalting Kit:** MN-7918 (14 minutes, B&W, sound).

**Survival at Sea:** KN-7933E (30 minutes, B&W, sound). Covers the Naval Reserve Recruit Training survival curriculum.

**Tenderfeet V—An Exercise in Escape and Evasion:** MN-8280 (18 minutes, B&W, sound). Documentary on Air Force escape and evasion exercise.

**Survival on Polar Sea Ice:** MV-8381 (35 minutes, B&W, sound). Building shelters, obtaining drinking water, signaling, hunting for food.

**Survival on the Ice Cap:** MV-8384 (40 minutes, B&W, sound). Film centers on a C-47 crew which crashes on the icecap.

**Sun, Sand and Survival:** MV-8677 (22 minutes, color, sound). Desert survival, including use of survival equipment, setting up a plan, sending messages, and making shade.

**U. S. Navy Armored Life Jacket:** MN-9026 (7 minutes, B&W, sound). Lightweight glass fabric life jacket will stop .38 .45 and sub-machinegun bullets. Film deals with its use.

**Life Jacket Flotation Characteristics:** MN-9140 (109 minutes, B&W, silent). Various types of life jackets are demonstrated.

**Swimming for Survival:** MN-9198 (17 minutes, B&W, sound). Human stroke, side stroke, breast stroke, trudgeon, sculling, treading water, and methods of entering the water.

**Survival in North Temperate Regions—Traveling and Camping:** FN-9202B (13 minutes, color, sound). Elementary traveling techniques in the North temperate area.

**Life Preservers—Shipboard Inflatable Type:** MN-9355A (5 minutes, B&W, sound). Procedures for testing and emergency inflation.

**Life Preservers—Jacket Type:** MN-9355B (8 minutes, B&W, sound). Use of inherently buoyant life preservers.

**Life Preservers—Yoke Type:** MN-9355C (3 minutes, B&W, sound). Use of yoke type preservers issued to troops engaged in amphibious operations.

### FIRST AID

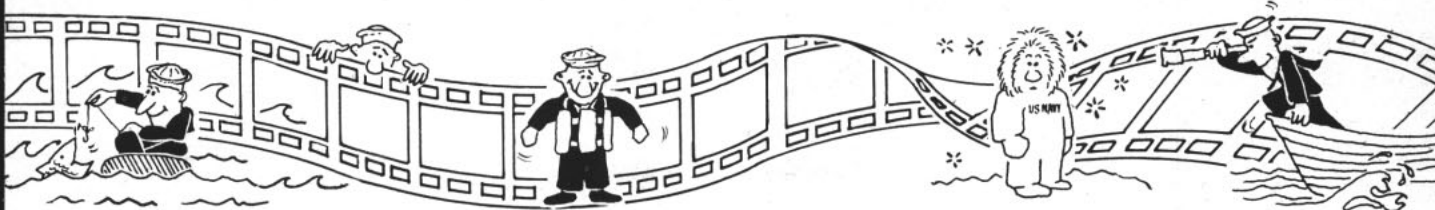
**First Aid for the Injured—Introduction:** MN-8180 (17 minutes, color, sound). Basic first aid procedures.

**First Aid for Asphyxia:** MN-8181 (22 minutes, color, sound). Recognition and treatment of asphyxia.

**First Aid for Bleeding:** MN-8182 (20 minutes, color, sound). Recognition and treatment of the three types of bleeding.

**First Aid for Burns:** MN-8185 (21 minutes,





color, sound). Detailed information on procedures and techniques used to recognize and treat burns. Intended primarily for hospital corpsmen trainees.

**First Aid for All Hands—Introduction:** MN-8188A (12 minutes, B&W, sound). Orderly procedure for first aid examination and treatment of the injured by non-medical personnel.

**First Aid for All Hands—Asphyxia:** MN-8188B (14 minutes, B&W, sound). Recognition of asphyxia and three steps of treatment for all hands.

**First Aid for All Hands—Bleeding:** MN-8188C (14 minutes, B&W, sound). Types of bleeding and the use of pressure dressings and tourniquets.

**First Aid for All Hands—Fractures:** MN-8188D (24 minutes, B&W, sound). Recognition of different types of fractures and the general treatments required.

**First Aid for All Hands—Burns:** MN-8188E (11 minutes, B&W, sound). Describes types of burns, their seriousness, and the three-step treatment.

**First Aid for All Hands—Handling and Transporting the Injured:** MN-8188F (12 minutes, B&W, sound). Presents seven principles for handling and transporting injured.

**Medical Defense Against Chemical Warfare—Gas Attack—Self-Aid:** MN-8266D (17 minutes, color, sound). Detailed explanation of self-aid if subjected to a chemical warfare attack.

**Quiz Film on Bleeding:** MN-8976 (14 minutes, color, silent). Silent quiz film composed of selected scenes from *First Aid for Bleeding* (MN-8182) with questions and multiple choice answers.

**Quiz Film on Fractures:** MN-8977 (15 minutes, color, silent). Silent quiz film testing the student's mastery of items presented in MN-8184A and B.

**Quiz Film on Burns:** MN-8978 (15 minutes, color, silent). Composed of selected scenes from *First Aid for Burns* (MN-8185).

**First Aid—Part 4—Resuscitation, Mouth-to-Mouth, Mouth-to-Nose:** MA-9559 (23 minutes, color, sound). Details of mouth-to-mouth resuscitation and alternate methods.

**First Aid for Fractures—Introduction:** MN-8184A (14 minutes, color, sound). General treatment of fractures with emphasis on fractures of the extremities.

**First Aid for Fractures—Skull, Spine and Pelvis:** MN-8184B (10 minutes, color, sound). Fundamentals of recognizing and handling fractures of skull, spine and pelvis.

**First Aid for Fractures—The Triangular Arm Splint:** MN-8184C (6 minutes, B&W, sound). Application and modifications of the triangular arm splint.

**First Aid for Fractures—The Universal Leg Splint:** MN-8184D (4 minutes, B&W, sound). Step-by-step demonstration of how to apply a universal leg splint to fractures.

**First Aid for Fractures—The Thomas Leg**

**Splint:** MN-8184E (8 minutes, B&W, sound). How to apply a Thomas leg splint to fractures of the thigh, knee or leg.

**First Aid Handling and Transporting the Injured—Introduction:** MN-8187A (13 minutes, B&W, sound). Seven principles of handling and transporting casualties.

**First Aid Handling and Transporting of the Injured—Mastering Basic Techniques:** MN-8187B (26 minutes, B&W, sound). Proper techniques of straightening a seriously injured casualty, rolling, lifting and transporting.

**First Aid Handling and Transporting of the Injured—Lifelines, Improvised Stretchers and Carriers:** MN-8187C (12 minutes, B&W, sound). Special techniques of handling and transporting the injured in emergency situations where standard stretchers are not available.

**Snake Bite Kit, Suction, In Plastic Carrying Case:** SA-8200 (11 minutes, 39 frames, B&W sound). Recognition and treatment of poisonous snake bite.

**First Aid—Part 2—Everyday Emergencies:** MA-8504B (29 minutes, B&W, sound). Covers such subjects as poisoning, poison ivy, chemicals in the eye, insect in ear, and electrical shock.

#### SAFETY

**115 Volts—Deadly Shipmate:** MN-8990 (19 minutes, color, sound). Dangers of low voltage electrical shock.

**Safety On the Job At Sea:** MN-8639 (16 minutes, B&W, sound). Shipboard safety.

**Death on the Highway:** MC-9463 (18 minutes, color, sound). Actual auto accidents and the importance of defensive driving.

**Nightmare for the Bold:** MV-9643 (53 minutes, B&W, sound). The story of a man who must learn to live with a lifetime of regret as the result of an auto accident.

**Perception of Driving Hazards—Part 2—Limited Access Highways:** SA-9510B (43 frames, color, silent). Frequent causes of accidents of limited access highways.

**Introduction to Disaster Planning:** MA-9786 (18 minutes, B&W, sound). Developing a disaster plan by the government or industry.

**Motor Mania:** MC-9811 (8 minutes, sound, color). Animated film starring Goofy in the dual role of pedestrian and driver.

**None for the Road:** MC-9825 (11 minutes, color, sound). The drinking driver problem.

**VADM Smedberg Speaks of Operation Drive-safe:** MN-9834 (5 minutes, color, sound). The title is self-explanatory.

**Grime Doesn't Pay:** SC-1250 (18 minutes, B&W, 96 frames, sound). Good housekeeping as a safety factor.

**The Eyes Have It:** SC-1251 (17 minutes, 122 frames, B&W, sound). Avoiding freak accidents which may cause blindness.

**Handle With Care:** SC-1252 (14 minutes, 93 frames, B&W, sound). Lifting heavy objects.

**Safety in Air Stations:** MN-1921B (14 minutes,

B&W, sound). Preventing accidents at air stations by a sensible application of safety rules.

**Safety in Offices:** MN-1921D (10 minutes, B&W, sound). Illustrations.

**To Live in Darkness:** MN-1921F (14 minutes, B&W, sound). Three cases where loss of sight could have been avoided.

**Safety for Welders (Use of Welding Protective Equipment):** MN-1921G (7 minutes, B&W, sound). Demonstrates use of protective clothing and other equipment for the prevention of eye injuries, skin burns and metal fume poisoning.

**Death Walks the Highway:** SN-3328 (30 minutes, 112 frames, B&W, sound). Statistics and causes of pedestrian accidents based on a study in San Diego.

**A Safe Day—Safety:** MC-4256 (10 minutes, B&W, sound). Typical safe worker in his daily routine.

**Safe All Around:** SC-4292 (18 minutes, B&W, sound). On-the-job safety.

**Inertia—Safe Driving:** SC-4297 (15 minutes, B&W, sound). Law of inertia as applied to driving.

**For Safety's Sake:** MC-4597 (13 minutes, B&W, sound). Safety precautions when handling portable power tools.

**Safely We Work:** SC-5227 (15 minutes, B&W, sound). Safety in railroad yards.

**Tragic Road to Safety:** SC-6735 (27 minutes, B&W, sound). For drivers of commercial vehicles, especially of tractor trailers.

**Driven to Kill:** MC-6746 (20 minutes, B&W, sound). Main character is involved in a driving accident in which another man is killed. Emphasizes the importance of courteous and safe driving.

**Safety Precautions for Electronics Personnel—Introduction:** MN-6754 (15 minutes, B&W, sound). Electrical and mechanical hazards encountered by Electronics Technicians.

**Accident Prevention Aboard Ship:** MN-6939 (9 minutes, color, sound). Illustrates a number of typical shipboard accidents.

**It's Wanton Murder:** MC-6983 (10 minutes, B&W, sound). A GI survives three years of combat to be killed in an automobile accident.

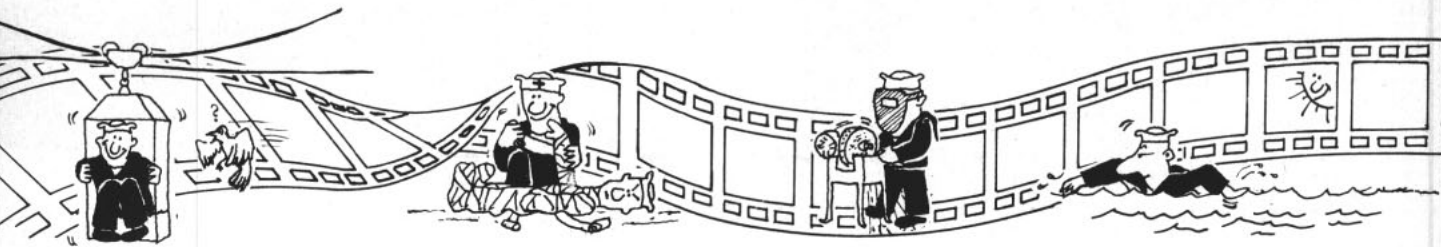
**A Closed Book:** MC-7430 (26 minutes, B&W, sound). Small-town doctor launches a one-man safety drive after his wife is killed in an auto accident.

**Eyes of Flight:** MC-7471 (31 minutes, color, sound). How to clean, polish, buff and saw acrylic plastics used in aircraft canopies.

**Shipbuilding Safety—Rigging—Making a Safe Lift:** MN-7486B (18 minutes, B&W, sound). Describes three procedures used in making a safe lift.

**Shipbuilding Safety—Rigging—Maintenance and Care of Rigging Gear:** MN-7486C (17 minutes, B&W, sound). Handling gear correctly, overhauling thoroughly and testing regularly.





**Industrial Hygiene and Safety—Breathe and Live:** MN-7498A (18 minutes, color, sound). Health precautions and protective gear designed to protect from noxious gases.

**Industrial Hygiene and Safety—Drive Right:** MN-7498B (21 minutes, B&W, sound). Preoccupation, intoxication, fatigue and speed as major causes of traffic accidents. Illustrated by case histories.

**Driving in the City:** MC-7841B (17 minutes B&W, sound). Problems of city driving are illustrated by street scenes and running narration.

**Driving on the Highway:** MC-7841C (22 minutes, B&W, sound). Problems of highway driving are illustrated by road scenes and running narration.

**Care of the Car:** MC-7841E (13 minutes, B&W, sound). Value of proper care and maintenance for vehicle is shown through street scenes and running narration.

**Driving Under Adverse Conditions:** MC-7841F (13 minutes, B&W, sound). Driving in rain, fog and snow.

**Safety Saves:** MC-8145 (25 minutes, B&W, sound). Driving a truck safely.

**The Gamblers:** MC-8146 (20 minutes, color, sound). Safe operation of earth-moving equipment.

**Death on the Highway:** SC-8425 (30 minutes, 32 frames, B&W, sound). Shows what could happen to the careless driver.

**The Traffic Accident Spot Map:** MA-8542A (4 minutes, B&W, sound). Use and preparation of the traffic accident spot map.

**The Collision Diagram:** MA-8542B (5 minutes, B&W, sound). How to prepare a collision diagram from the accident report.

**Motor Vehicle Spot Speed Studies—Setting Up Mirror Boxes:** MA-8543 (6 minutes, B&W, sound). How to set up mirror boxes for use in traffic spot speed studies.

**What's Your Safety I. Q.?:** MC-9252 (B&W, sound). Off-the-job safety hazards must be identified by the audience before the answers are flashed on the screen.

**Safety in Aircraft Line Operations:** MN-9301 (16 minutes, B&W, sound). Hazards of everyday aircraft line operations.

**High Altitude High Speed Flight—The Vg Diagram:** MN-6915D (16 minutes, B&W, sound). Pilot indoctrination.

**Full Pressure Suit—Mark 4:** MN-8323A (19 minutes, B&W, sound). How to put on, adjust and take off the full pressure suit.

**Aviation Survival and Safety Equipment—Liquid Oxygen Converters:** MN-8364A (12 minutes, B&W, sound). All about converters.

**Aircraft Accident Prevention—Ground Accidents:** MN-8366A (14 minutes, B&W, sound). Prevention of aircraft ground accidents.

**Maintenance Safety in Aviation—Murphy's Law:** FN-8642 (10 minutes, color, sound). Common errors in installation of equipment.

**No Margin for Error:** MC-8724 (22 minutes, color, sound). Illustrates methods used to train flight safety officers.

**Aircraft Accident Investigation:** MV-8748 (37 minutes, B&W, sound). Techniques used to determine the cause of aircraft accidents.

**Helicopter Rescue at Sea:** MN-8760A (21 minutes, color, sound). How the potential survivor can cooperate in his own rescue by helo.

**Safety is no Accident—Ground Safety on and Around Naval Aircraft:** FN-8805 (16 minutes, B&W, sound). Preventive measures which reduce accidents in and around aircraft.

**Danger—Stacked Deck:** FN-8909 (20 minutes, color, sound). Six rules for flight deck safety.

**Ditching Techniques for Transport Aircraft:** MV-8930 (16 minutes, color, sound). What flight crews and passengers should do in case of crash at sea.

**Parachute Landing Techniques:** MN-9299B (14 minutes, B&W, sound). Parachute landings at sea or on land with various types of harness.

**Huff and Puff:** MB-9517 (7 minutes, color, sound). Effects of hyperventilation.

**Mk 5 Anti-Exposure Suit:** MN-9549 (18 minutes, B&W, sound). Use of the anti-exposure suit and attached equipment.

**Ditching Techniques for Transport Aircraft—Communications, Sea Evaluation, Headings and Landings:** MV-9563 (26 minutes, color, sound). Steps to minimize hazards of ditching when a forced landing at sea is anticipated.

**Helicopter Rescue Operations:** MV-9565 (34 minutes, color, sound). Helo pilots, copilots and paramedics work together for successful air-sea rescue operations.

**Search Operations:** MV-9793 (29 minutes, B&W, sound). Dramatizes a typical missing aircraft incident to demonstrate systematic search and rescue operations.

**Air-Sea Rescue:** MG-4327 (18 minutes, B&W, sound). Problems of air-sea rescue and how they are solved by Air-Sea Rescue Service.

**Flight Safety—Unfamiliarity with Aircraft:** MN-4353O (6 minutes, color, sound). Shows importance of checkout before a pilots flies an unfamiliar aircraft.

**Flight Safety—Hazards in Ground Operation of Jet Aircraft:** MN-4353P (5 minutes, color, sound). Exhaust blast, suction and cooling hazards.

**Flight Safety—Avoidable Carrier Accidents:** MN-4353Q (8 minutes, color, sound). Causes of carrier accidents.

**Flight Safety—Bailing Out:** MN-4353R (9 minutes, color, sound). How to bail out safely.

**Flight Safety—Collisions During Simulated Combat:** MN-4353S (6 minutes, color, sound). Four basic causes of accidents while engaged in simulated combat.

**Flight Safety—Reach for the Right Control:** MN-4353T (8 minutes, color, sound). Grandpaw Pettibone admonishes pilots on the necessity for checking and double-checking their flying habits to prevent wheel and flaps accidents.

**Search and Rescue—Visual Aspects of Search and Signaling:** MN-5309A (19 minutes, color, sound). Signal mirrors, smoke, flares, pistols, and dye markers.

**Physiology of High Altitude Flying:** MN-5311 (15 minutes, color, sound). Dangers of high altitude flying.

**Use of Parachutes:** MN-5801 (15 minutes, B&W, sound). Various types of chutes and how to use them.

**Expendable Radio Sona-buoy in Air-Sea Rescue—Description:** MN-6483A (15 minutes, B&W, sound). What the buoy is and how it works.

**High Altitude, High Speed Flight Problems—Physiological Effects:** MN-6915A (23 minutes, color, sound). Effects of high altitude and high speed flight on pilot.

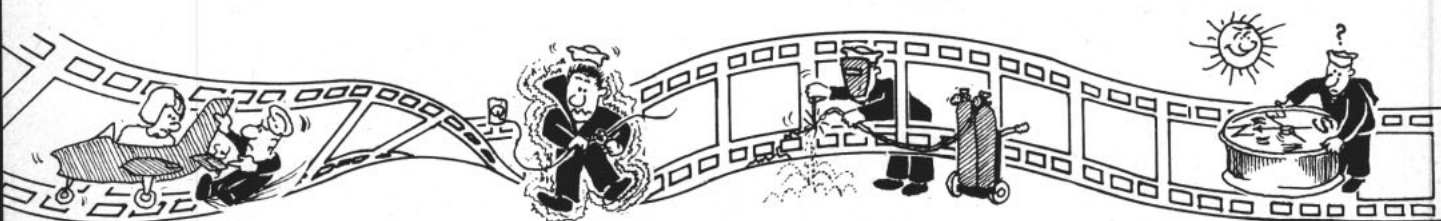
**Mark 7 Mod. 1 Barrier and Barricade Equipment:** MN-7852C (20 minutes, B&W, sound). Operation and preventive maintenance.

**Safety in Ferrying Aircraft:** MN-8105 (19 minutes, B&W, sound). Procedures and safety precautions.

**Aircraft Accident Investigation:** MN-8270 (30 minutes, B&W, sound). Duties of squadron personnel and flight surgeons when there is an accident in their squadron.

**Escape by Parachute:** MN-9299 (20 minutes, B&W, sound). Describes various types of parachutes used by the Navy.

**Emergency Escape Using Ejection Seats:** MN-9313 (14 minutes, B&W, sound). Installation and operation of seat.



# BOOKS

## HERE ARE HOW-TO-DO-ITS IN SAFETY AND SURVIVAL

**T**HERE'S NO LACK of sound information concerning safety and survival. Almost every Navy training publication describes in detail the precautions to be taken in regard to the subject under discussion. In addition, many volumes are devoted solely to one or more aspects of safety.

However, safety is not an exclusive Navy prerogative. Here is a further list of books on the subject, all non-fiction and all interesting:

**Dive:** the complete book of skin diving by Rick Carrier, 1963. A basic book on skin diving with data on rules, records, techniques and equipment.

**Aquatics Handbook,** by Milton A. Gabrielson and others, 1960. A how-to survey of water sports written by specialists. The authors give special attention to lifesaving techniques and water safety.

**Navy Diver,** by Joseph S. Karneke, 1962. A Navy master diver's story of salvage and intelligence diving during a career which spanned World War II and Korea.

**Drownproofing;** a new technique for water safety, by Fred Lanoue, 1963. A new concept which, the author claims, can keep swimmers or non-swimmers afloat indefinitely.

**Swimming and Diving,** U. S. Naval Institute, 1962. Contains instructions on water safety and the mouth-to-mouth method of resuscitation.

**Basic Seamanship and Safe Boat Handling,** by Blair A. Walliser, 1962.

**Danger, Shark!** by Jean C. Butler, 1964. Adapted from an extensive technical study *Sharks and Survival*, edited by P. W. Gilbert, which was

sponsored by the Navy, this is a highly recommended survey for laymen.

**Shark!** by Thomas Helm, 1961. A popular and informative book on sharks and shark attacks with side-lights on the barracuda and octopus.

**Dangerous Marine Animals,** by Bruce W. Halstead, 1959. A ready reference with excellent illustrations, this book is a source of information for the identification, geographical distribution, habits and characteristics of these animals.

**Abyss:** the deep sea and the creatures that live in it, C. P. Idyll, 1964. An exploration of the deep which makes up nine-tenths of the oceans, and the strange and curious animals who live there—even including the sea monsters sometimes sighted.

**What Cares the Sea?** by Kenneth Cooke, 1960. The author who survived 50 days on a life raft during World War II here gives a graphic account of his ordeal and the endurance and valor of human beings where faith is the essence of survival.

**Sea was Kind,** by Albert Klestadt, 1959. A first-rate story of an escape from the Philippines during World War II in a small open boat.

**Raft,** by Robert Trumbull, 1942. A day-by-day account of three downed Navy fliers in a rubber raft, who sailed without food or equipment across a thousand miles of the Pacific.

**The Hundred Days of LT MacHorton,** by Ian MacHorton, 1962. This true account of individual survival in the Burma jungle shows how a wounded officer living off the land finally rejoined his unit. It gives a vivid picture of courage and human adaptability to extreme conditions.

**Living off the Country:** how to stay alive in the woods, by Bradford Angier, 1956. An emergency book kit for staying alive in the wilderness with sections on food, warmth, orientation and first aid.

**On Your Own in the Wilderness,** by Townsend Whelan, 1958. A practical guide to camping and traveling or living in the wilderness.

**How to Survive on Land and Sea,** U. S. Naval Institute, 1956. A practical handbook on survival under all conditions and climates. Included are details on food, clothing and shelter.

**Survival Book,** by Paul H. Nessbitt, 1959. Emergency landing procedures

in all conceivable conditions are illustrated with case histories of survivors. Physical facts about heat, cold, thirst and how to overcome them and how to contact and cooperate with rescue parties are stressed.

**Parachute to Survival,** by Herbert Best, 1964. What to do if you find yourself stranded after a parachute jump. Covers survival techniques in all kinds of climate and terrain.

**Into the Silk,** by Ian Mackersey, 1958. Down from the sky without an airplane; successful jumps in war and peace are recounted in this well researched history.

**Escape:** from the air and from the sea, by Eloise Engle, 1963. A useful background book on air and sea rescue operations after emergency exits from ships, planes, balloons and—so help us!—space ships.

**How to Abandon Ship,** by Philip Richards, 1943. Although over 20 years old this book still gives much useful information if you have to take to the lifeboats.

**Alone at Sea,** by Hannes Lindemann, 1958. Two solitary voyages, one in an African canoe, the other in a rubber life raft, provided the author with a test of his mental and physical resources against the sea. Interesting descriptions of the birds and fishes encountered and his narrow escapes and adventures.

**Serpent's Coil,** by Farley Mowat, 1962. A true story of a ship abandoned in mid-Atlantic during a hurricane.

**Hell at 50 Fathoms,** by Charles A. Lockwood, 1962. The evolution of modern survival and salvage methods is illustrated in these tales of U. S. submarines and rescue work.

### All-Navy Cartoon Contest

Thomas Robert Gunlock, LTJG, USN

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IT'S BEAN GOOD—Key West Navymen offer free coffee to passing motorists.

### Fast Action Saves a Life

"I didn't have time to think—I just acted."

That was the explanation of Airman Lawrence K. Carlos after he saved the life of a shipmate, Airman William J. Kent, aboard *uss Ticonderoga* (CVA 14).

The incident occurred while the carrier was conducting normal flight operations.

Kent had approached an F-8E *Crusader* from the "blind" side, and was suddenly sucked into the jet's air intake. He grasped the

outer edge and held on. His hands were slipping; then he felt someone grab his legs.

It was Airman Carlos. He won the tug-of-war against the air suction. The pilot shut down the engine on signal from one of the flight deck crew. Quick action on the part of Carlos and the others had saved the young airman's life.

After being removed from the intake, Kent discovered that his headgear, goggles and windbreaker were ripped from his body by the suction of the jet intake. But he

ON TOP—Swimming tips learned in recruit training may someday save your life. Here, recruits learn how to use their white hats to help keep afloat.



was still intact, with only minor injuries to remind him of the ordeal.

Carlos was cited for his action by *Tico's* CO.

### Life Saver of an Idea

A pilot's emergency signal actions previously involved pressing buttons, turning knobs and setting codes; but Donald E. Sadowski, ATCS, has reduced all this to a simple flick of a switch.

The switch is part of the Identification Friend or Foe (IFF) system found in every Navy aircraft. Introduced in 1943, this system identifies by radar all IFF-equipped aircraft.

Briefly, this is how it works: When an airplane approaches within radar range of a control center, the plane's IFF system is signaled. If the plane is friendly, a mark appears on the center's radarscope. If no mark appears, alert planes are dispatched to identify the aircraft visually.

When a pilot signals an emergency, another series of marks appear on the radarscope. This alerts the local control centers that a plane is in distress.

Using only eight parts, Chief Sadowski rigged the IFF system to signal an emergency by flicking only one switch.

It took Chief Sadowski five minutes to figure out, and about three weeks to diagram and complete the paperwork. The total cost of modifying each IFF system—only \$20.00.

For his initiative, Chief Sadowski has received commendations from the Bureau of Naval Weapons; Commander Naval Air Force, Atlantic Fleet; Commander Fleet Air, Quonset Point, R. I.; and his squadron commander. The fleet adds theirs.

### Man Overboard—Briefly

Crewmembers of *uss Springfield* (CLG 7) can pull a dummy out of the water in seven minutes during a man overboard drill. And they can really get unlimbered when there's an emergency—they recently pulled a sopping wet *Springfield* Navyman out of the sea in six minutes flat.

The live sailor fell into the water while *Springfield* was conducting antisubmarine warfare operations in the Caribbean. Word was passed that a man was in the water and the officer of the deck ordered the rudder swung 30 degrees right. This maneuver swerved the ship's stern away from the floundering Navyman.

# QUIZ AWEIGH



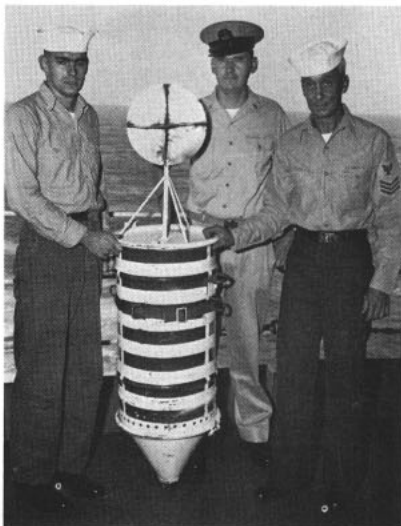
**SAFETY CONSCIOUS**—All seven landing signalmen of the amphibious assault ship *USS Iwo Jima* (LPH 2) help bring down 15,000th consecutive safe landing.

Speed was increased immediately and *Springfield* swung in a wide arc until it approached the area where the man had been lost. Nearing the sailor, who was wildly waving his arms, the OOD backed all engines to slow the ship's advance.

The port lifeboat was lowered as the ship slowed, and minutes later the wet sailor was hauled into the foresheets of the motor whaleboat—six minutes after the first alarm was sounded a record for the ship.

## Happy-Meeting

A New York City resident may well owe his life to the crew of *USS Krishna* (ARL 38). The Phiblant re-CREATIVE-MINDED Navymen on board *USS Ticonderoga* (CVA 14) pose with buoy they built for marking area in which man is overboard.



pair ship was transiting New York harbor, when the OOD spotted Robert G. Lane clinging to a buoy.

*Krishna's* CO ordered a boat into the water and the rescue was made. Lane had been stranded for about two hours after his small boat struck a log and sank.

## Oh Buoy! — It Floats

An oceanographic buoy which Navy scientists hope will withstand 60-foot waves and 150-knot winds is being given its sea trials. The 40-foot disc has been moored in 300 feet of water just off the coast of Florida—during the height of the hurricane season.

If the buoy survives, it'll be towed out to sea and anchored in some 20,000 feet of water. While it bobs around it'll transmit—on 100 channels—information on ocean currents, sea states, temperatures, and wind velocities.

If the ocean data station works as well as expected, similar ones may be placed in all the major ice-free ocean areas.

There have been other buoys which served the same purpose, but the ocean data station is much improved. Old types transmitted on only five or six channels and needed repairs and refueling about every six months.

The buoy also has a memory, of sorts. Information collected will go into two memory banks, one of which will have a 24-hour capacity and the other a one-year capacity. About every six hours the buoy will transmit the information which has been gathered in its short-term bank.

When you need your first aid training, you'll need it fast. There'll be no time to bone up on the subject.

How well would you do?

1. When a man is injured, your first step is to call a doctor, using whatever form of communications is at your disposal. Then, until medical help arrives you should treat the patient's major injuries in the order of their importance. What is the correct priority?

- (a) Bleeding, respiration, then shock.
- (b) Shock, respiration, then bleeding.
- (c) Respiration, bleeding, then shock.



2. If the pupils of the victim's eyes are reduced to pinpoint size, he may be suffering from:

- (a) Effects of nerve gas.
- (b) Shock.
- (c) Frostbite.

3. Dilated pupils may indicate:

- (a) Nerve gas poisoning.
- (b) Shock.
- (c) Frostbite.



4. An injured person in severe pain may be given morphine. The standard dose is:

- (a) One-eighth grain.
- (b) One-fourth grain.
- (c) One-half grain.

5. However, morphine should never be given if the victim has:

- (a) Severe abdominal wounds.
- (b) Head injuries.
- (c) Second and third degree burns.

6. Atropine is the standard treatment for nerve gas victims. What is the maximum number of injections which may be given without special permission from a competent authority?

- (a) Two. (b) Three. (c) Four.

Answers to Quiz Aweigh may be found on page 64.

# THE SHIP

## ALL HANDS SPECIAL SUPPLEMENT

**O**N 18 MARCH, USS FRANKLIN (CV 13) had participated in strikes against Kyushu airfields. Further strikes were scheduled the following day against targets in western Japan. Forty-five aircraft had taken off for the first mission of the day and 31 were waiting on the flight deck to take off when, without warning, the ship was hit by two bombs from a low-flying Japanese aircraft.

Gasoline and ammunition caught fire and there began a long series of explosions which threatened to destroy the ship. In spite of heavy casualties, the ship's crew fought until the fires were checked, the serious listing of the ship controlled, and steerageway finally regained.

The recovery of Franklin constitutes a classic in heroism, damage control, leadership and discipline.

Here, the story of Franklin, from the time she was struck until she pulled triumphantly into the harbor at Ulithi, is told from several viewpoints. The first is based upon the action report of her commanding officer, Captain L. E. Gehres, USN.

**This is an ALL HANDS "first." These on-the-spot action reports have never been published before.**

**A**T 0708, without radar warning, an enemy plane dove out of the base of the clouds from less than 2000 feet altitude, about a thousand yards directly ahead of Franklin, made a low-level bombing run, dropping two 250-kilo, semi-armor-piercing bombs with about .25-second delay fuses.

The commanding officer, the navigator, the group

recognition officer, the officer of the deck, and two enlisted men were lining the open bridge, searching the clouds ahead and on each bow for this very attack, but it developed so suddenly and so close aboard that the plane was not seen from the bridge.

One bomb struck the flight deck and penetrated to the hangar deck, blowing a large hole through the armored deck, spreading destruction aft through the second deck and down into the third deck.

This bomb apparently killed all the personnel in the forward part of the hangar deck, knocked out Combat Intelligence Center and Air Plot, sucked down and wrecked the forward elevator and, in the hangar, started great fires which enveloped the forward starboard side of the ship and flight deck.

The second bomb struck the flight deck and apparently exploded above the hangar deck. This explosion forced the after elevator up and to starboard, and started uncontrollable fires on the planes turning up on deck in the process of taking off, and spread fire and destruction throughout the remainder of the hangar deck.

**T**HE CONCUSSION of the first bomb knocked me down. Upon regaining my feet, I saw a sheet of flame come from under the forward starboard side of the flight deck and envelop the forward starboard batteries and catwalks, and spread aft over the starboard side of the flight deck. At the same instant, a great column of flame and black smoke came out of the forward eleva-



# THAT WOULDN'T BE SUNK

## STORY OF USS FRANKLIN



tor well. The smoke coming down the wind enveloped the bridge.

Thinking that the ship had been struck forward on the starboard side by a bomb, and as it was apparent that there was a great fire in the forward end of the hangar deck, I immediately ordered the ship turned to starboard and speed slowed to two-thirds. My intent was to place the wind, already 10° on the port bow, further aft on the port side, to keep the fire forward, and prevent it from spreading aft among the heavily loaded and gassed airplanes on the hangar and flight decks.

As *Franklin* passed narrowly astern of *Bataan* (CVL 29), the smoke from the forward elevator cleared the bridge, which was then immediately enveloped by heavy black smoke from abaft the beam. This was the first indication on the bridge that the ship had been struck amidships.

I made my way to the port side and then as soon as I could get word to the pilothouse, the ship was turned with a full left rudder and standard speed again ordered to bring the wind on the starboard side. At about 0709, the first of a five-hour long series of heavy explosions occurred on the flight deck, where a number of planes were turning up and loaded with a maximum load of general-purpose bombs and *Tiny Tim* rockets.

The explosions of this heavy ordnance spread fire and destruction throughout the ship from the island down to the fourth deck. Fires from the hangar and gal-

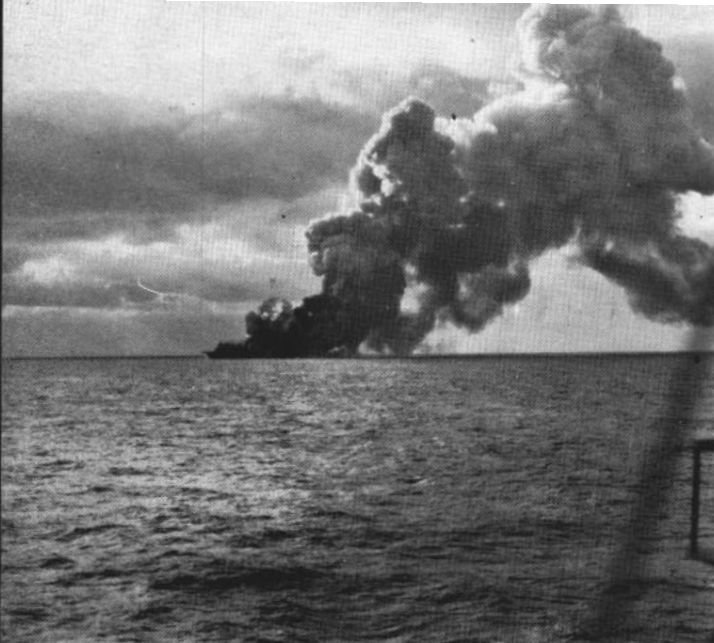
lery decks worked upward through the island and eventually all topside five-inch, 40-millimeter, 20-millimeter, ready rocket, and aircraft ammunition lockers and the ammunition in all the gun mounts aft of the bridge, exploded.

At about 0725 we were making about 16 knots with the wind broad on the starboard bow. *Santa Fe* (CL 60) was requested to come alongside to remove the wounded who were being gathered on the forecabin and on the forward end of the flight deck. *Franklin* at this time had taken a list of about 3 degrees to starboard, but was under engine and steering control.

**W**ITH THE FIRST heavy explosion on the flight deck, all internal communications within the ship were lost, except a single sound-powered line from conn to steering aft, from whence another sound-powered line to main engine control was effective. All topside and interior general announcing systems went out, and all radio communications were lost. The main magazines were ordered flooded.

Much later it was ascertained that while the forward magazine sprinkler functioned properly, the after main magazines were never wet down. The valves were properly opened but the water lines leading to them were ruptured.

At about 0931 *Santa Fe* approached and maintained a position about 100 feet off the starboard bow, and started taking our seriously wounded aboard via a trolley. Less seriously injured personnel went over to *Santa*



**BURNING FRANKLIN** billows fire and smoke after two bomb hits in surprise attack from Japanese dive bomber.

*Fe* via the forward radio masts, which were down.

At about this time, the firerooms and engine rooms progressively from forward aft reported that the men were collapsing on their stations, and permission was requested to abandon the firerooms and engine rooms.

They were instructed to leave all machinery set and running in present condition (all boilers steaming speed eight knots), to stay as long as possible, and then to vacate the stations. The list was steadily increasing from the free water in the ship settling to starboard.

At about 0945, the ship lost steering control. At about 1000, the ship lost all headway and lay dead in the water, head falling off to starboard. This made it impossible for *Santa Fe* to maintain her position, and she backed rapidly away, snapping all lines.

**A**S SOON AS FRANKLIN had assumed a steady heading, *Santa Fe* came in fast and boldly on the starboard side, slamming into actual contact, where she was held by use of her engines. The remainder of the seriously wounded were then transferred. All surviving air group personnel were next transferred, and orders were issued from the bridge for heads of departments to send off any enlisted personnel who were not required to work the ship and fight the fire.

Meanwhile, a number of destroyers, notably *Hickox* (DD 673) and *Miller* (DD 535), came up to our stern, picking up personnel from the water en route and took off wounded and other personnel trapped on the fantail. While taking personnel from the ship, *Santa Fe* helped to fight the gasoline fires in the hangar deck amidships.

Heavy explosions continued to occur all during the time *Santa Fe* was alongside. The large 5"/38 ready magazine locker on the flight deck threw heavy and burning debris over the after part of *Santa Fe*, and over the bridge and island structure of *Franklin*.

At this time, concerned for the men huddling forward, I asked my navigator, Commander Jurika, if he thought I should permit them to leave to the safety of *Santa Fe*. He replied that he did not think it was time yet, and the young officer of the deck, Lieutenant Tappen, said nothing but emphatically shook his head.

With this support for my own convictions, *Santa Fe*

was informed that all wounded had been transferred, that no more *Franklin* personnel were to come aboard, and she was requested to clear the side, which she did about 1225. This was the only time when anything resembling abandoning the ship was mentioned on the bridge of the *Franklin*.

Request was made to *Santa Fe* for a tow, and *Pittsburgh* (CA 72), which had been rescuing personnel from the water astern, was designated.

**A**T 1254, an enemy *Judy* aircraft made a fast-glide bombing run on *Franklin* from the starboard side. It was taken under fire by all accompanying vessels on that side and its bomb exploded short, about 200 yards on our starboard quarter.

By 1404, *Pittsburgh* had succeeded in getting way on the ship, hauling around to a southerly course, proceeding at about two knots working up to three and a half. By this time, all major explosions on the ship had ceased, although there still were sporadic explosions of 40-millimeter and smaller stuff. The list was steadied at an average of 13° to starboard, the ship down about three feet by the stern, and the fires on the forward end of the hangar deck extinguished, and those in the after part of the hangar deck, in the gallery deck, and in other parts of the ship were gradually being brought under control.

The only fire main pressure available at this time was from the two diesel emergency fire pumps located on the forecastle. Accompanying destroyers continued to come alongside the starboard side and up to the fantail to fight the recurrent fires in the after part of the ship.

During the night, engine room and damage control personnel succeeded in returning to one of the firerooms, and in the early morning of 20 March, were able to light off three of the boilers. With this assistance, *Pittsburgh* was able to tow at six knots. Steering was very difficult because, due to the heavy starboard list, *Franklin* persisted in steering up to port and sailing to windward, dragging *Pittsburgh's* stern around.

**T**HROUGHOUT THE NIGHT, fires broke out in various parts of the ship, including the flight deck, and the fire parties, hampered by darkness and the indescribable wreckage, had their hands full.

At about 2200, counterflooding operations to reduce the list were commenced. As Damage Control Central was inaccessible, and the hydraulic controls of the counterflooding valves were out of commission, officers and men had to make their way below on the port side forward with rescue breathers to find and open the valves to flood the forward port voids. Their instructions were to reduce the list to about 5° starboard and hold it there, as the ship was heavily flooded both below decks and in the gallery decks, with a great deal of free water surface.

Counterflooding operations got out of control, however, and at about 0200 on the 20th, the ship rolled to port and stayed there with a list of about 10°. No further counterflooding operations of any kind were attempted after that. By 1000 on the 20th, with four boilers on the line, the ship was making turns for six knots, though still in tow. By 1200, speed had been worked up to 14 knots. At 1233, the towline was cast off, *Pittsburgh* hauled clear, and the ship's own speed gradually worked up to 15 knots at 1405.

**U**NTIL DARK, numerous bogeys were reported, some of which were real, and some of which were our own Combat Air Patrol. During that night we worked up to 18 knots. Flares and firing could be seen during the first and mid-watches on the horizon astern, where groups of enemy aircraft encountered other task groups, where they apparently expected to find our ship helpless.

By this time the ship had four boilers steaming, the after two engines operating normally, and auxiliary steam from the after plant going through the turbo-generator cross connection into the forward engines, thus obtaining some thrust instead of a dead drag from the outboard propellers.

Ventilation in engineering spaces had been restored. One gyro compass was in operation, and a repeater cut in on the bridge, and all but a few stubborn fires on the gallery deck, the captain's cabin, and in some of the lower spaces aft were out. The forward port five-inch battery, the bow 40-millimeter, and the bridge 40-millimeter were in commission, and a sound-powered telephone system had been jury-rigged from the bridge to these batteries.

**B**EGINNING WITH DAWN and continuing into the day, the personnel remaining on board (about 300 men and 100 officers fit for duty out of a total of 500 men and 106 officers on board) turned to to extricate the bodies tangled in the interior wreckage of the ship.

At 1151 a *Betty* started a fast low run-in on the starboard quarter, and was splashed by the Combat Air Patrol with a very violent explosion on the water within sight of the formation, about eight to 10 miles away.

Several times during the day, speed had to be reduced because of difficulty with the feed water supply and because of salt water in the fuel oil, but these difficulties were overcome. Before dark on this day, a portable radar had been set up on the bridge, and was operating within its limitations, and one radio receiver had been placed in commission, although our only means of transmission was still a battery-powered walkie-talkie. Hot fires were still burning in the gallery deck and commanding officer's cabin country. This latter was finally cooled down on the evening of the 21st, and extinguished on the 22nd.

During the night of the 21st, *Franklin* with her escorts proceeded at an average speed of 19 knots to a rendezvous with Task Force 58 in the fueling area. On several occasions, fires broke out on the fantail in

**BLAST UPON BLAST** increases damage aboard *Franklin*, causing new injuries and the loss of additional lives.



**INFERNO AT SEA**—Leaking gasoline and ammunition caused explosions, making damage control difficult.

the after part of the ship where gasoline was still leaking from the unsecured gasoline system but these fires were brought under control by the ship's company.

**B**y 0700 on the morning of the 22nd, the list had been reduced to 6° to port by pumping and by jettisoning two batteries of burned out 20-millimeter guns and their mounts from the port side. On this day, the antenna of the forward radar was salvaged from the wrecked foretopmast, mounted on the platform on the port side of the smoke stack, hooked up by jury-rigged cables to the flag plot radar receiver, then connected to the remote Plan Position Indicator on the navigating bridge. By sunset it was operating reliably and accurately.

At daylight, the Task Unit fell in with Task Force 58, *Franklin* joined formation with *Enterprise* and *Wasp*, and reported to Commander Task Group 58.2. In the afternoon *Franklin* and three accompanying destroyers proceeded on a course to Ulithi at approximately 20 knots. The voyage to Ulithi was without incident, this ship operating independently, five miles in advance of the task group. En route to Ulithi, the work of extricating, identifying and burying over 400 bodies continued, and clearing of the wreckage in the hangar deck was gotten underway. Additional guns were placed in commission and some of the more essential power, light, and telephone lines repaired or replaced. At noon on 24 March, *Franklin* took her place in column astern of *Wasp* and *Enterprise*, entered Ulithi in formation, and at 1414, anchored in berth assigned.

*That's how the commanding officer saw it. LCDR David Berger, USNR, assistant air officer, gives this supplementary account of the attack on Franklin, and her recovery, with additional details. Here is a condensed version of his eyewitness report:*

**A**T FIRST I was unaware of what had happened because of the concussion but shortly afterward I noticed a great tongue of red flame shoot out from the hangar deck at the deck edge elevator on the port side of the ship. Immediately, the entire ship appeared to be enveloped in clouds of heavy black, acrid smoke. This smoke pinned me up against the side of the island structure and for a while I believed that I was going to



be suffocated. However, somehow I made my way up topside to sky forward and managed to move through this cloud of smoke down a line on the starboard side which took me to the 40-mm gun sponsons.

At that point, I believed I would have to jump off the ship because of the intensity of the smoke. Lacking oxygen I felt that I was faced with no other recourse: Either to jump through this heavy smoke into the sea below or stay aboard and be suffocated. However, the ship turned at that moment which enabled me to get some oxygen which revived me.

While this was going on, there were tremendous explosions. I found myself with a group of men at the 40mm guns. We immediately set to work jettisoning hot ammunition. We emptied some of the ready magazines and then I went up topside to the 20mm mounts, starboard side, where we did the same thing.

From that point on my own participation consisted principally in fighting fires on the flight deck and in and around the various island structures. The ship itself was being subjected to a series of very heavy explosions and the fires which followed were the result mainly of our own bombs, rockets and other armament exploding. We had a large number of aircraft on the flight deck and the hangar deck all gassed up and armed and ready for launching. Very shortly after the first explosion these various types of incendiaries and explosives went up, causing more fires.

**F**OR A WHILE it seemed as though it would be impossible to save the ship, because there seemed to be no end to these explosions. In the meantime, the forward part of the ship appeared to be in a little better shape. Sometime around 0830, *Santa Fe* was brought sharply up alongside the ship, starboard side, coming so close that it was possible to evacuate many wounded, some of whom were seriously injured and many of whom would not have been able to reach safety had it not been for *Santa Fe*.

After the air group had been evacuated as well as the wounded and seriously injured, and those who were otherwise unfit for duty, the captain ordered *Santa Fe* to haul away and then began to get the ship under

tow. After a long struggle in the midst of all the confusion, with the aid of a group of steward's mates, Commander Taylor, Executive Officer, succeeded in rigging a tow line to *Pittsburgh*.

In the meantime, the ship proceeded for a while under power but then became dead in the water. The wind was such that the ship drifted toward the main Japanese Islands and it is my understanding that at one point we were within 40 miles of the island of Shikoku.

After the ship was under tow there still remained a considerable number of fires to put out. As a matter of fact the fires lasted for approximately 15 hours, and late that night fires were still burning.

During the course of one attempt to put out fires, I personally recollect being on the flight deck when another Japanese aircraft came in and made a low-level attack on *Franklin*. Looking about for a foxhole, the closest thing I could find were the forward five-inch gun mounts which were quite hot and ready to explode. However, as a result of heroic action by members of *Franklin's* crew, particularly Chaplain O'Callahan, the forward five-inch guns had been flooded and were kept down below the exploding point.

**I**N ANY EVENT, this particular aircraft came in and made a beautiful bombing run on the ship. Fortunately for us, the 40mm mount above the pilot house was manned by a group of volunteers. Shortly after the first explosion, this gun had been put out of commission electrically; however, it was possible to operate it manually. The captain's orderly, a yeoman and several other volunteers went topside to this 40mm gun and operating it mechanically, fired so accurately that they were able to drive off the attacking aircraft, forcing him to pull up sharply so that his bomb was a near miss astern rather than a direct hit amidships.

Sometime on the 20th I recall being on the hangar deck with a working party jettisoning worthless material and dangerous substances, burying bodies, when again *Franklin* was put under attack, and this time it was even more difficult to find a foxhole. However, nothing



**SOUL SHAKING** series of explosions set off fireworks lasting for hours, resulted in leaving carrier at 10° list.



**JETS OF FIRE** envelop five-inch gun mount. Men in *Santa Fe* fought blaze by aiming hoses through hatch at rear.

serious happened and we continued to do our work.

As I recall there were quite a few alerts during the 20th, all of which caused the nerves of the crew of *Franklin* to be very much jangled. We were all very jittery from lack of sleep and what had happened the previous day and all these various alerts of bogeys being around and the noise of the ship's guns, such as they were, firing and those of the guns of the force did a great deal to unstabilize further the emotions of the people who were aboard the ship.

**I**T WAS CURIOUS that we did not know how many people we had aboard. Of course, it was impossible for anybody to know how many had been left. There were so many people we saw forced off the ship and a great many had gone over to *Santa Fe* alongside that we didn't know exactly how many people we had left aboard. Our first suspicion was that we had only 50 officers and 250 men. However, on the 22nd of March while we were still considered to be in the forward area, but when we had begun to make some progress in burying bodies and cleaning up the wreckage, we took a muster and it developed that we had a total of 704 people aboard.

At this muster, the Air Department was found to have but 27 men out of its original total (including the air group) of approximately 1100.

We immediately got things going in as routine a fashion as possible and even put out a plan of the day on the 23rd of March, with a masthead which stated "A Ship That Won't Be Sunk, Can't Be Sunk" and such has been the slogan of *Franklin* ever since.

On the entire trip back from Ulithi to Pearl and from Pearl to Panama, *Franklin* made very good speed and always seemed to me to be making in excess of 20 knots. The trip to Pearl and thence to Panama was uneventful. Throughout, Captain Gehres ordered the officers and men of *Franklin* to carry on with their work of clearing up the wreckage, of extricating bodies from various charred spaces and generally cleaning up the ship. By the time the ship arrived at Panama it was hard to recognize her as the same *Franklin* which was

so badly battered and bruised but not broken, on the 19th.

The executive officer, Commander Taylor, was all over the ship, it appeared, almost simultaneously and was actually one of the greatest fire-fighters of the day. In addition, his performance on the forecandle in getting the ship under tow was very thrilling and had a terrific effect on the morale of the ship because once we got under tow we all felt considerably better than when we were dead in the water and drifting toward Japan.

**T**HE CATHOLIC chaplain, Father O'Callahan, was very inspiring as he proceeded up and down the flight deck in his tin hat with a large white cross painted on it. He was one of the outstanding leaders in fighting the fires and he could be observed by everybody topside as he would give the last rites of the Church to the dying men and then very shortly afterwards would lead parties into the smoke and flames. On more than one occasion I saw him carrying bombs and ammunition, all of which had been heated to the exploding point, over to a ramp where they could be jettisoned from the ship. His actions throughout were such that we were all inspired by him.

There was another story which I personally did not observe but which we all heard about very shortly after it happened and that was the action of a lieutenant (junior grade) by the name of Gary who saved 300 men who had been trapped in a compartment on the third deck aft. We had heard reports topside that a large number of personnel were trapped in this compartment and some time afterwards they began to make their appearance up on the hangar deck and the flight deck and then the word got to us that Lieutenant (jg) Gary, who had been in the compartment, had saved the men.

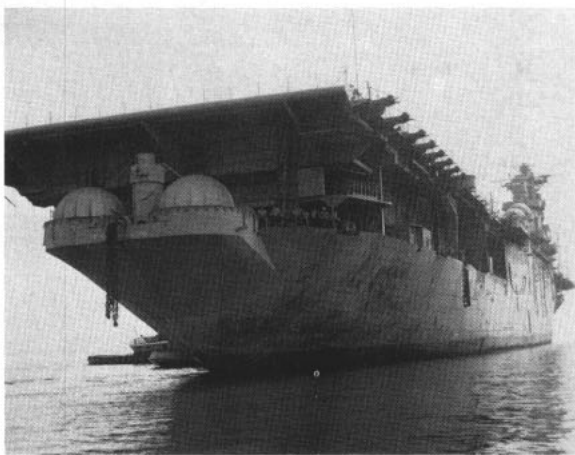
There was one other officer, Lieutenant Commander Fuelling, a flight medical officer, who also was in that compartment and who was instrumental in calming the men. However, Gary took control of the situation and stated that he would find some way out of that trap and that he would come back for them. He



SANTA FE lies alongside the flame-ridden *Franklin* fighting raging gasoline fires on hangar deck level.



ASSISTANCE from *Santa Fe* included fighting fires and taking injured aboard from the disabled carrier.



### Franklin On the Move Again

The aircraft carrier Franklin (CV 13) took a trip a couple of months ago. But this could hardly compare with the grueling voyage described in our special supplement.

She changed resting areas at the Naval Supply Center, Bayonne, N. J.

Franklin has been part of the Atlantic Reserve Fleet since February 1947.

The new berths will give greater protection against the elements and will also permit better port operations. The move will make available more docking space and expedite dredging operation to accommodate a large variety of ships.

Another member of the mothball fleet, the anti-submarine warfare carrier Leyte (CVS 32) was moved at the same time.

then proceeded out through the smoke-filled spaces; all this while the horrible explosions were continuing and he was able somehow to find a way of egress to the flight deck aft. He made numerous trips back to the compartment, each time leading out a group of men in human chain fashion until all of the 300 men, Dr. Fuelling last, were led to safety.

Dr. Fuelling then went up to the flight deck where he carried on with his regular duties as a flight surgeon while the ship was being attacked and while further explosions and fires raged.

**T**HE NEXT DAY, the 20th, we were still very close to the main Japanese Islands and as a matter of fact were put under attack by Japanese aircraft. However, all through the 20th Captain Gehres had ordered the officers and men to take steps to clear up the wreckage, extricate bodies from charred spaces and begin burials.

The hangar deck was a mass of tangled "I" beams. The deck had been smashed up. There were still slight fires, smoldering embers and there was a great deal of work to be done.

The fire-fighting efforts continued both on the flight and the hangar decks and in the island spaces all day and through the night.

Getting back to the towing operations I distinctly recall one time when we were put under attack when all the guns which were available on *Franklin*, and various guns of the screen were firing, (although I personally expected the captain of *Pittsburgh*, which was

the cruiser towing us to break the tow line because we were making only four knots) *Pittsburgh* continued to tow us and fire at the same time, which gave us a considerable lift in morale.

Throughout the entire engagement, the actions of *Pittsburgh* and *Santa Fe* served as a great inspiration and help to the members of *Franklin* who were left aboard to put out the fires and save the ship.

That night the Japanese sent a large force of aircraft out to finish off *Franklin*. Because Admiral Mitscher had placed a large task group between us and the Japanese coast, 41 Japanese aircraft were shot down in an effort to sink us that night. The ships of our force were fired on on various occasions but to my knowledge none of the attacking Japanese aircraft got through the screen to attack us.

There is a sharp emotional break when you lose your ship. You feel like crying when you see it go down. However, if you're fortunate, you're picked up by another ship and you begin a new life and the problem of very existence itself is such that your attention is directed away from your old ship and to your new life.

In this case, those of us who remained aboard *Franklin* were faced with the constant picture of the horribly mangled ship and the tremendous number of dead and large number of bodies which had to be extricated from charred and broken spaces. This went on for a considerable time and I daresay that it was Captain Gehres' policy of working everybody as hard as possible which had a lot to do with the morale.

The following is a condensed account of the notes taken during the action by the ship's navigator, CDR Stephen Jurika, Jr.

**A**T 0708, while searching the sky overhead and ahead for aircraft, two bombs flashed into my field of vision and hurtled toward *Franklin*. I did not see the enemy aircraft but glimpsed the shadow as it flashed past the island structure at about masthead height. The two five-inch mounts forward of the island commenced firing just as the bombs hit the flight deck and continued firing as they trained aft to follow the plane in its flight.

The first bomb, which I estimated to be of 250-kg size, entered the flight deck abreast the bridge, just after a plane had cleared the forward elevator. The second bomb swept past the island and landed somewhere aft among the planes in the park, ready to come out of their spot for launching.

The forward elevator was lifted about a foot above the flight deck and then collapsed suddenly. It cocked over at a 45-degree angle and did not budge or even sway with the other explosions which followed. Simultaneously, tongues of billowing flame and heavy, acrid, black smoke curled over the edge of the flight deck from the hangar deck beneath. Only a few seconds after the first bomb burst, the second one exploded. Many of the planes on deck were tossed a foot or so above the deck, propellers whirling and cutting into other aircraft. Dense smoke poured out of the side of the ship and blew over the flight deck, obliterating it from my sight.

Through occasional breaks in the heavy pall of smoke which enveloped us, I could see *Bataan*, apparently at full speed, turning to starboard and crossing ahead, clear by only a few hundred yards. Just a few seconds

later, a series of extremely violent explosions commenced setting off fireworks which lasted for hours.

**T**HE EXPLOSIONS which followed were soul-shaking. The ship shuddered, rocked under the impacts and emerged from periods of vibration only to be rocked by other heavy blasts. Fifty-caliber ammunition in the planes on deck set up a staccato chattering and the air was well punctuated with streaks of tracer. Twenty- and 40-millimeter ammunition went next as the gallery mounts caught fire. *Tiny Tims* from the *Corsairs* parked aft on the flight deck took off with an eerie whooshing sound. I saw two pass us on the bridge off to starboard, strike the sea and ricochet for several hundred yards. Others took off up the flight deck.

At 0815, ammunition was still exploding on both flight and hangar decks and the smoke obscured the entire ship abaft the island. *Santa Fe*, on our starboard quarter, sent a semaphore message, "Are your magazines flooded?" Since most communications in the ship were out, the captain could only reply "Am not sure, but believe so." *Santa Fe* approached to starboard and rigged two lines over which the wounded were passed to the cruiser.

At 0952 the most terrific blast of the morning resulted from a five-inch ready service magazine being set afire. The ship felt as though it were a rat being shaken by an angry cat. Whole aircraft engines with propellers attached and debris of all description were flung high into the air and descended on the general area like hail on a reef. One engine and prop struck the navigating bridge a glancing blow about three feet from my head, and for a couple of moments I will admit to ducking under the overhang of the masthead light. By now the list had increased to eight degrees to starboard, and continued increasing at approximately one degree every 10 minutes.

**S**ANTA FE could not maintain her position alongside because of our lateral drift, so at 1015 she cast off, circled, and then made a most magnificent, seaman-like approach which brought her alongside as though she were a well handled gig making a liberty float at Long Beach. *Franklin* lost all headway and began drifting.

Two forward, starboard antenna masts were damaging *Santa Fe's* forward section, and the 40mm mounts on *Franklin's* starboard side were acting as fenders for the cruiser's stern. Men from *Franklin* began streaming over to the cruiser via the antenna masts forward, by hand lines rigged from the forecandle, and from the hangar deck over the 40mm mounts. Wounded were shuttled from just forward of *Franklin's* five-inch turrets to *Santa Fe's* side five-inch mounts, which were being badly beaten up by the relative motion of the ships. The 40mm sponsons on *Franklin's* starboard side tore the deck plating from the cruiser's side and inflicted other damage.

During all this time, fires on the flight deck were being fought with great courage and determination. The chaplain, Lieutenant Commander O'Callahan, in particular was everywhere at once, leading men, officiating at last rites for the wounded and dying, manning hoses and doing 10 men's work. Every time an explosion occurred men would duck for an instant, then those still alive and able would pick up where they left off.

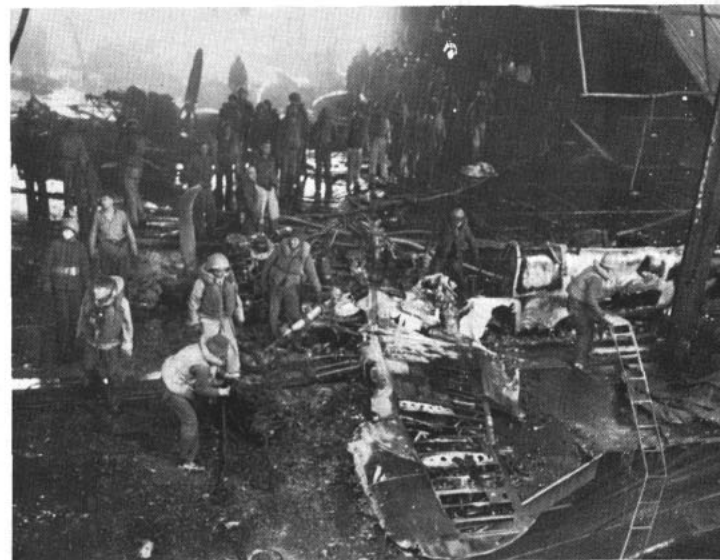
The only means of communication on *Franklin* was



WITH LOST POWER *Franklin* lies dead in water. Unable to hold her position, *Santa Fe* backs rapidly off.



SURVIVORS AND INJURED are shown on flight deck of *Franklin* as they wait to be transferred to *Santa Fe*.



GROTESQUE STEEL seems an impossible task to clean up, with remaining small fires still to be extinguished.

the X1JV sound powered line to steering aft, where five men were trapped. Signal halliards had been burned and carried away. All searchlights were inoperative. The intercom was out of commission and the radios and TBS, through fire and loss of power, were not functioning. The SG radar on the mainmast had toppled to the flight deck and the SK radar was smashed by the fore-topmast, threatening to crash down onto the navigating bridge at any moment.

**T**HROUGH THE slowly diminishing smoke, at 1115, I saw the cruiser *Pittsburgh* off our port bow, preparing to take us in tow. At 1245 every ship in our vicinity began firing with five-inch and automatic weapons at a *Judy* which dived out of the clouds on us. The bomb was a near miss to starboard. The explosion lifted *Franklin* appreciably and our list increased to 13 degrees to starboard. The inclinometer was carefully watched. At this time, when fires were still raging all over the after section of the ship, gasoline began spilling over the side and burning on the water. Battle Two then burned to a crisp. Bombs from our aircraft were blown into the air and came back down and exploded. Ready rockets on the third deck let go with a resounding roar and our position, only 52 miles from Ashizuri Saki, on Shikoku, Japan, seemed at low ebb.

The captain leaned over towards me, and above the noise, asked for my opinion on allowing all the men forward to abandon the ship. After considering a moment, I replied "Not yet," and was delighted to see the officer of the deck, Lieutenant Tappen, shake his head in an emphatic "No." No further mention was ever made of leaving *Franklin*.

At 1304, fighters splashed another *Judy* about seven miles from the ship.

At 1404, *Pittsburgh* started towing us, but instead of positioning herself and getting way on us, she towed at right angles, trying to swing *Franklin* toward the south. We called steering aft from conn and asked that hand gear and tackle be used to shift the rudder from amidships to three degrees right. The tow then proceeded, *Pittsburgh* reporting us headed south at five knots.

At 1505 *Franklin* was headed 180 at six knots, under tow. Our position at 1652 was approximately 55 miles from Shikoku.

**A**T 1700, fires on the flight deck were under control as far back as #3 elevator. The deck was a shambles of burned, warped and broken wood and steel, with bodies, debris and wreckage littering the entire area. Holes were cut into the flight deck and hoses were poked through in an attempt to quell flames still burning on the gallery deck.

When by officer messengers, usually heads of departments, word finally reached the bridge of the condition of *Franklin*, our outlook seemed quite hopeful. The engineer officer investigated the condition of the engines and firerooms and reported that as soon as the spaces cooled sufficiently to permit habitability the machinery could probably be coaxed into action. An investigation was begun on the condition of all accessible spaces.

Canned pork sausage and orange juice arrived on the bridge at 1935. With one piece of bread, the ensuing meal was a gourmet's delight (my last meal being dinner the night before).

All through the night I stayed on the bridge, trying to be of assistance. Occasional fires broke out during the night and parties from the damage and engineer command center set up in the warrant officers' wardroom would proceed to the scene. At least twice during the night destroyers in the disposition spotted flames on *Franklin* and came alongside with all hoses pumping to give assistance.

Before daylight, the engineers had fires lighted under the after boilers and, proceeding cautiously, succeeded in building up power. At 0930 steering control was regained on the bridge.

It was an extremely comforting sight at daybreak to find ourselves surrounded by many ships, including *Guam*, *Alaska*, *Pittsburgh*, *Santa Fe* and several destroyers.

*That is the story of uss Franklin, the ship that wouldn't be sunk.*

**HOME AGAIN**—After long struggle, the proud, battered *Franklin* and her men near Brooklyn Bridge in New York.





# DECORATIONS & CITATIONS



## DISTINGUISHED SERVICE MEDAL

**"For exceptionally meritorious service to the Government of the United States in a duty of great responsibility . . ."**

\* FELT, Harry D., ADM, USN, for service as Commander in Chief, Pacific, from July 1958 through June 1964. Admiral Felt combined sound judgment and political acumen with an extraordinary ability to command large military forces. During a period of continued turbulence, unrest, and armed conflict in the Pacific Command, marked by a crisis in the Taiwan Straits in 1958, a series of crises in Laos extending from 1960 to the present, and continued turmoil in Vietnam culminating in the current crucial operations against the Viet Cong, he demonstrated exceptional military and diplomatic skill in positioning forces and taking actions to meet the threat of aggression. As U.S. Military Advisor to the Southeast Asia Treaty Organization, ADM Felt, by his unwavering fairness and objectivity, earned the respect, admiration, and trust of the representatives of all member nations.

\* GANO, Roy A., VADM, USN, for service during the period 1 Jun 1961 to 30 Jun 1964 as Executive Director for Ocean Transportation and as Commander Military Sea Transportation Service. Responsible for directing the complex military logistical sea lift operations of the Department of Defense, VADM Gano succeeded in improving the responsiveness of the military sea lift in emergencies; enhanced the understanding of the complementary roles of military and merchant shipping to provide greater readiness to meet emergency demands; and made available and effectively utilized ocean shipping to meet military requirements promptly and efficiently during the Berlin build-up, the Cuban crisis and the critical periods occurring in the area of Southeast Asia.

\* PHILLIPS, Robert A., Capt, MC, USN, for service as Commanding Officer, U.S. Naval Medical Research Unit No. 2 from 13 Sep 1955 to 29 Feb 64. Responsible for establishing and directing Naval Medical Research Unit No. 2, CAPT Phillips effectively supervised its activities in the field of research and

treatment of tropical diseases and medical disorders in the WestPac Area. Under his skillful direction, new methods for field treatment of cholera were developed and successfully applied to bring quickly under control serious outbreaks of this disease in East Pakistan, the Philippines, Korea and Vietnam; a vaccine which promises ultimate control of trachoma has been developed; invaluable research on parasites in man and animals in North Borneo has been conducted; and extensive encephalitis research in Indonesia has been conducted.



## NAVY AND MARINE CORPS MEDAL

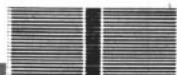
**"For heroic conduct not involving actual conflict with an enemy . . ."**

\* ANDERSON, Richard E., LCDR, CEC, USN, for heroism on the afternoon of 25 May 1964 while serving at U. S. Naval Ammunition Depot Bangor, Bremerton, Wash. Witnessing an automobile accident in which a gravel truck hit the rear of an automobile which landed in a ditch and burst into flames, LCDR Anderson, along with a companion, immediately went to the assistance of the woman driver of the burning vehicle who was trapped in the flaming wreckage. Breaking the window on the driver's side with an expended fire extinguisher, LCDR Anderson entered the vehicle through the window and partially effected the rescue of the unconscious victim by moving her closer to the open window before he, himself, was almost overcome by the dense smoke. Assisted from the automobile by his companion, who completed the rescue, LCDR Anderson, by his prompt and courageous actions in the face of great personal risk, was directly instrumental in saving the life of the woman.

\* CLEMENTS, Edwin H., III, AM3, USN, posthumously, for heroism on the afternoon of 15 Apr 1964 while serving on board USS *Enterprise* (CVAN 65). As a member of the Enterprise Skin Diving Club, Clements, along with his usual diving partner, was engaged in a Scuba dive to a depth of approximately 160 feet off the Isle of Capri, Italy, when his partner experienced trouble which rendered him unconscious. Clements attempted to share his air supply with his companion and, when this proved unsuccessful, inflated the vic-

tim's life vest and his own in a desperate bid to prevent his friend's death by drowning. Upon reaching the surface of the water, he immediately administered mouth-to-mouth resuscitation to the unconscious man until he himself lost consciousness. The rapid rise from a depth of 160 feet to the surface resulted in a decompression sickness from which Clements did not recover. His courageous and selfless efforts in behalf of his partner, who also succumbed, were in keeping with the highest traditions of the U. S. Naval Service.

\* GILMORE, Gordon R., LT, CEC, USN, for heroism on the afternoon of 25 May 1964 while serving at U. S. Naval Ammunition Depot Bangor, Bremerton, Wash. Witnessing an automobile accident in which a gravel truck hit the rear of an automobile which landed in a ditch and burst into flames, LT Gilmore, along with a companion immediately went to the assistance of the woman driver of the burning vehicle who was trapped in the flaming wreckage. After his companion had entered the vehicle through a broken window and had partially effected the rescue of the unconscious victim by moving her closer to the open window before he, himself, was almost overcome by the dense smoke, LT Gilmore assisted his comrade from the automobile and then entered the vehicle to complete the rescue. By his prompt and courageous actions in the face of great personal risk, LT Gilmore was directly instrumental in saving the life of the woman.



## BRONZE STAR MEDAL

**"For heroic or meritorious achievement or service during military operations . . ."**

\* RAGAN, Charles P., LT, USN, for meritorious service during the period 12 Apr 1963 to 9 Apr 1964 as a member of the U.S. Navy Section, Military Assistance Advisory Group, Vietnam, and serving as U.S. Navy Advisor to the Vietnamese Navy 22nd River Assault Group. Participating in 13 combat operations against the Viet Cong during this period, LT Ragan displayed outstanding courage, leadership, and professional skill in the face of hostile fire, providing an inspiring example to the Vietnamese Navy and contributing significantly to the molding of the 22nd River Assault Group into an effective fighting unit.

# TAFFRAIL TALK

OSCAR IS AN IMPROVEMENT over the wooden keg used by the old Navy in "Man overboard" drills, but he is still not the ultimate in realism. It's just downright difficult, it seems, for a ship's crew to get all worked up over a hunk of kapok.

Now, if it was a *real* person out there, the situation would be different.

The crew of *uss Enterprise* (CVAN 65) proved this to be the case with 24 pilot volunteers.

Although most of the *Enterprise* crew could also have benefited, it was impractical to include everyone, so many were forced to watch, however reluctantly, from the catwalks.

At the appointed hour the pilots showed up, dressed to the teeth in their flight suits with attached Mae Wests, signal lights, dye markers and other miscellaneous gear. The men were put in boats, carried a reasonable distance from the ship, and dropped in the drink.

The water was churned up in a flurry of activity. The victims splashed, yelled, activated dye markers and generally behaved as if this were the real thing, not just a drill. Relatively high winds and choppy seas added authenticity to the operation.

Much of the frantic waving was directed at the helicopters, stationed overhead for obvious reasons. When the helo pilots decided a particular victim had just about had enough he would swoop his craft down and hold steady until the man was plucked from the water. This was excellent rescue practice for the helo crews.

The operation was prolonged somewhat when several of the more hardy victims insisted on going back for seconds. When it was finally completed and all—repeat, all—24 pilots were back on board, the test was pronounced an unqualified success.

The impact on future man overboard drills is open to speculation but as a combined happy hour-training session, it was unsurpassed.

★ ★ ★

On the subject of the sea, our Editor-in-Charge-of-Irrelevant-Statistics burst in upon us, a while back, triumphantly waving a copy of the Naval Weather Service *Bulletin*. It seems that LCDR R. H. Sullivan had been playing fast and loose with his slide rule and science notebooks while considering the military applications of oceanography. We learned a number of things we didn't know.

He describes an exceedingly valuable substance to be found in the ocean. This substance has the highest heat capacity of all solids and liquids except  $NH_3$ , possesses the highest latent heat of evaporation of all substances, exhibits the highest surface tension of all liquids, conducts heat better than all other known liquids, and comes closest to being the universal solvent, so long sought by ancient and modern alchemists. Its chemical formula is relatively simple— $H_2O$ . It's better known to the layman as water.

The ocean also contains, LCDR Sullivan reminds us, a considerable number of minerals. After sufficiently confusing us with his recital of so many billions or trillions of tons of copper, boron, uranium, silver and gold, he confesses that he became intrigued with the amount of arsenic in the ocean. Here, too, there is a sizeable amount, but nothing for us swimmers to worry about.

*The All Hands Staff*

## The United States Navy Guardian of our Country

The United States Navy is responsible for maintaining control of the sea and is a ready force on watch at home and overseas, capable of strong action to preserve the peace or of instant offensive action to win in war.

It is upon the maintenance of this control that our country's glorious future depends. The United States Navy exists to make it so.

### We Serve with Honor

Tradition, valor and victory are the Navy's heritage from the past. To these may be added dedication, discipline and vigilance as the watchwords of the present and future. At home or on distant stations, we serve with pride, confident in the respect of our country, our shipmates, and our families. Our responsibilities sober us; our adversities strengthen us.

Service to God and Country is our special privilege. We serve with honor.

### The Future of the Navy

The Navy will always employ new weapons, new techniques and greater power to protect and defend the United States on the sea, under the sea, and in the air.

Now and in the future, control of the sea gives the United States her greatest advantage for the maintenance of peace and for victory in war. Mobility, surprise, dispersal and offensive power are the keystones of the new Navy. The roots of the Navy lie in a strong belief in the future, in continued dedication to our tasks, and in reflection on our heritage from the past.

Never have our opportunities and our responsibilities been greater.

**ALL HANDS** The Bureau of Naval Personnel Career Publication, solicits interesting story material and photographs from individuals, ships, stations, squadrons and other sources. All material received is carefully considered for publication.

Here are a few suggestions for preparing and submitting material:

There's a good story in every job that's being performed, whether it's on a nuclear carrier, a tugboat, in the submarine service or in the Seabees. The man on the scene is best qualified to tell what's going on in his outfit. Stories about routine day-to-day jobs are probably most interesting to the rest of the Fleet. This is the only way everyone can get a look at all the different parts of the Navy.

Research helps make a good story better. By talking with people who are closely related to the subject material a writer is able to collect many additional details which add interest and understanding to a story.

Articles about new types of unclassified equipment, research projects, all types of Navy assignments and duties, academic and historical subjects, personnel on liberty or during leisure hours, and humorous and interesting feature subjects are all of interest.

Photographs are very important, and should accompany the articles if possible. However, a good story should never be held back for lack of photographs. ALL HANDS prefers clear, well-identified, 8-by-10 glossy prints, but is not restricted to use of this type. All persons in the photographs should be dressed smartly and correctly when in uniform, and be identified by full name and rate or rank when possible. Location and general descriptive information and the name of the photographer should also be given.

ALL HANDS does not use poems (except New Year's day logs), songs, stories on change of command, or editorial type articles. The writer's name and rate or rank should be included on an article. Material timed for a certain date or event must be received before the first day of the month preceding the month of intended publication.

Address material to Editor, ALL HANDS, 1809 Arlington Annex, Navy Department, Washington, D.C. 20370.

### ANSWERS TO QUIZ AWEIGH

Quiz Aweigh is on page 53.

1. (c) Give artificial respiration.
2. (a) Nerve gas.
3. (b) Shock.
4. (b) One-fourth grain.
5. (b) Head injuries.
6. (b) Three.



Lord, as I stand on the rolling deck  
To view the restless sea  
With its wide expanse of darkened sky,  
You seem so far from me.  
Intrepid youth should feel no fear,  
But I have a load of care  
For the safety of our ship and men.  
Lord, hear my earnest prayer:  
That I be true to every task;  
May no fault lie with me,  
Whatever danger may arise,  
As we sail the raging sea:  
May I be calm and know that you  
Can still the wind and wave,  
And be assured in perfect trust  
That you have power to save.  
When the moon sheds beams from  
a starlit sky,  
I feel near to you again,  
For the same moon shines on my  
loved ones, too,  
And I thank you, Lord. Amen.

—M. Brown

**... OCEANS OF  
OPPORTUNITY**



**... UNITED  
STATES  
NAVY**