

Little Sweeps Clear Way for Big Ships

LIKE an aggressive boxer who carries the fight to his opponent, the Navy's minesweepers have to "get in there and mix it up." Any sweeperman will tell you you don't get rid of mines simply by sitting back and thinking about them.

That the plucky sweepers of the Pacific Fleet have actually been mixing it up in Korea will come as news to no one. It is no coincidence that of the five U.S. Navy vessels sunk in Korean operations, four have been minesweepers. They were *uss Magpie* (AMS 25), *uss Partridge* (AMS 31), *uss Pledge* (AM 277) and *uss Pirate* (AM 275). The fifth ship was

a fleet tug—*uss Sarsi* (ATF 111).

Pirate and *Pledge* were lost during the same operation in Wonsan harbor, when they went down along with an ROK minesweeper, *YMS 516*.

The Wonsan sweeping job, incidentally, offers a good example of how the minesweeping Navy works. Here was the best harbor on North Korea's east coast, a port which in October 1950 had been taken by ROK land forces. But for five days a large Navy task force embarking 50,000 U. S. Army and Marine reinforcements had to remain outside the harbor, unable to get ashore to com-

plete the clean-up of the retreating enemy forces.

What held them up? Mines. Line after line of what later proved to be an assorted variety of mines lay between the port's docking area and the ships milling around 30 miles out in the Sea of Japan. In all, Navy officers estimated there were some 3000 mines lurking in the 400 square miles of water. The handful of sweepers had their work cut out for them.

The sweepers, three AMs and six AMSs, went to work. The job was originally scheduled to take five days. Plans were laid for the sweepers to cut a path into Wonsan on a straight-line sweep from well out at sea to the inner harbor. By the afternoon of the first day, 10 October, part of the channel had been cleared and many mines had been swept and destroyed.

Then a helicopter spotting for the formation reported a large "cabbage patch" of mines just ahead. This was verified by dozens of mine echoes registering on *Pledge's* sonar. In an attempt to skirt this patch, the formation shifted its sweep to the north to try another and perhaps less mine-ridden channel, a channel which had been used by the enemy only a month before.

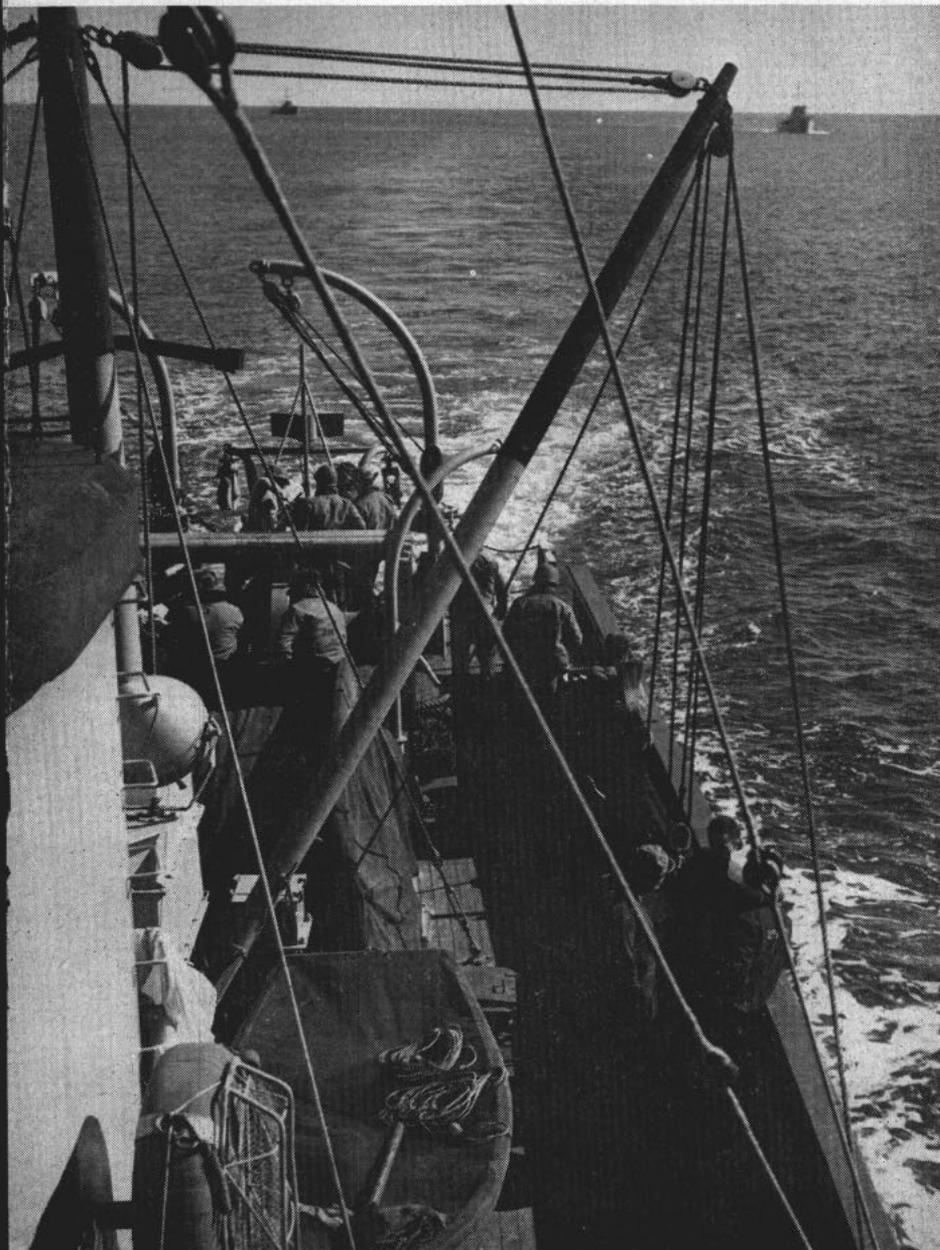
For the next two days the 'copter continued its spotting. "Frogmen" from UDT 12, riding in on rubber LCPRs, also helped to search. And *uss Doyle* (DMS 34), *uss Endicott* (DMS 35) and *uss Diachenko* (APD 123) (the frogmen's "mother ship") helped the search in deeper waters, looking for lurking mines.

Next day, the Navy air arm took a crack at the mines.

Trying a new form of mine warfare, carrier-based *Corsairs* and *Sky-raidors* pulled off a "countermining strike." Dropping 100 bombs of the 1000-pound variety, they blasted away at a narrow sea channel near the inner approaches through which the lead sweepers could pass.

Soon after the air strike, the minesweepers, led by the flagship *Pirate*, passed into the blasted area. The 800-ton, 185-foot, steel-hulled sweeper *Pirate* was followed by sister ships *Pledge* and *uss Incredible* (AM 249). Little *Redhead* (AMS 34), a 215-ton, 136-foot, wooden-hulled sweeper,

SAILORS on board a minesweeper relax momentarily during search for enemy mines off coast of Korea. In background are two other minesweepers.



was on "darning duty," ready to cast overboard *dan buoys*: orange-colored, flag-topped, basketball-size buoys used to mark a swept channel.

Also in the formation was *uss Kite* (AMS 22), a sister ship of *Redhead*. She was serving on "shotgun" duty. Her mission was to fire at severed mines as they bobbed to the surface. This five-ship group was making a sweep against moored contact mines.

These mines are what the type most Navymen visualize when mines are discussed. Two sections comprise the complete "assembly" of a mine. First is the mine *anchor assembly*, a large, square metal box which serves as an anchor and houses cable releasing gear. This is connected by a mine *anchor cable* to the other part: the horn studded, spherical *case assembly* containing the explosive. Contact with one of the horns triggers off the explosive—by way of a detonator and booster charge.

The sweeper group altered course to the left to pass between two islands and entered unswept waters. Then it happened. Two horned mines—their cables severed by the sweeping gear—bobbed to the surface astern of *Pirate*. Then four more bobbed up. *Pledge*, maneuvering through the field, cut three more. *Incredible*, also in the thick of things, cut another four.

The 'copter then reported another large cabbage patch ahead. Soon after this the sea beneath *Pirate* boiled up, engulfing her in a mass of spray. In less than a minute she went down.

Pledge stopped and lowered her boat to pick up survivors from her sister ship. To add to the confusion, previously undetected shore batteries began firing on the struggling swimmers. *Pledge* opened up with her three-incher on the shore batteries. In turn, the shore guns shifted their fire from the men in the water to *Pledge*.

While all this was happening, 13 loose mines were floating around on the surface; no telling how many still-moored mines lurked beneath. Within minutes, *Pledge* struck one of them and also went down. Altogether, there were more than 90 casualties from the two ships, including 12 who went to their death with their ships.

In retaliation, *uss Osprey* (AMS 28) moved in from a position further to seaward to work over the enemy shore batteries with her single 40 mm.



LCVPs are being used for minesweeping operations in Korea. Here, a crew rigs one of the small craft for shallow water sweep off Chinnampo, Korea.

and two 20 mms. She was soon joined by *Endicott* and later by carrier aircraft that were called into the fray. At length the enemy batteries were silenced for keeps.

On October 18th the remaining sweepers had cut what they believed to be a clear channel to the beach. Five LCVPs from *Diachenko* had helped in this endeavor. While the 'copter and recently arrived PBM *Mariners* spotted mines for them, frogmen riding the LCVPs anchored empty powder kegs near each mine cable. This served to mark mine positions for the sweepers. In two days

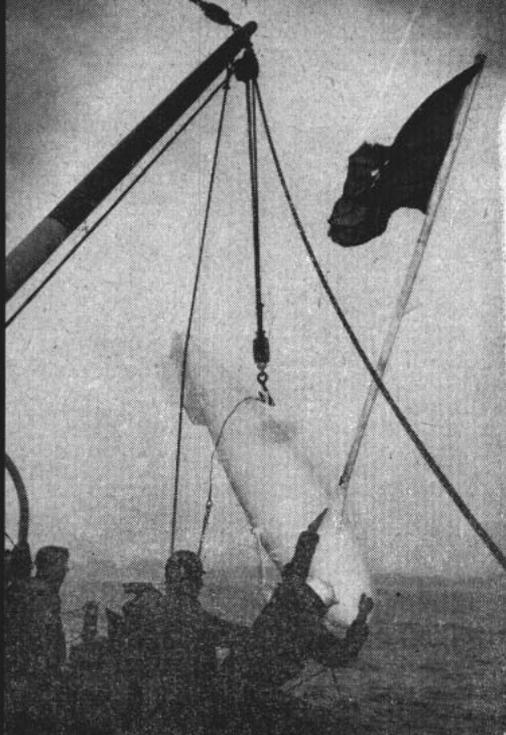
all moored mines within 15 feet of the surface in the channel area had been marked.

With but one hour of contact mine sweeping left on the operation schedule, four AMSs were making a final sweep when it happened again. Some 400 yards astern of *Redhead* the sea rose up in an angry geyser. An influence mine had been set off. A number of mines were then detonated in rapid succession. One of the exploding mines caught the ROK sweeper YMS 516, sending her to the bottom and taking the lives of half of her crew.

This incident set D-day back sev-



NEAR MISS—Geyser of water erupts from the surface of ocean as enemy projectiles send UN minesweepers scurrying out of range. None were damaged.



FLAGTOPPED 'PIG' is hoisted aboard USS *Mocking Bird* (AMS 27). Right: Depressor is rigged on LCVP for sweep.

eral days. The whole channel now had to be swept for influence mines. It took more than a week. As a result, the amphibious force, including 21 transports and 15 LSTs had to mill around in the Sea of Japan.

This demonstrates how mines can foul up an operation and passively defend a coast. And these are the methods used to clear the way.

In the above narrative many terms have been bandied about which are generally familiar only to men of the "mine navy." Here is what some of the more important terms mean.

Influence mines (which made their deadly debut in World War II) generally come in one of three forms: *magnetic* (met at Wonsan), *acoustic*

and *pressure*. Sweepersmen call these "sinkers" or "mudders" because they rest on the bottom instead of lurking a few feet below the surface like a contact mine. It doesn't take actual contact to set off an influence mine. All you have to do is come close enough to "influence" it.

The name of each indicates the type "influence" needed to set it off. In a magnetic mine, the magnetic influence of a passing ship induces current in a coiled rod within the mine case. This closes a switch triggers off the detonator, which in turn sets off the explosive.

The acoustic mine utilizes a simple hydrophone, an "artificial ear," set to hear a ship's engines or pro-

pellers. When it does, its diaphragm vibrates and closes the fatal switch. In a pressure mine, the negative pressure of a passing ship sucks a diaphragm upward, closing the switch.

Sweeping moored contact mines calls for plenty of "wire rope" seamanship. Designs vary somewhat among types of minesweepers, but this is what a typical rig looks like:

Streaming out from the sweeper's stern on both sides are *Oropesa* or "O"-type sweeps. Aside from the short span of wire running from the ship's stern to the water, the only thing you see on the surface is the float or "pig." The pig resembles an airplane's wing-tip tank and carries a large, brightly colored marker flag. It marks the outboard end of the sweep rig. It also marks the underwater location of the *otter*—an oblong, box-like device consisting of curved fins set at an angle inside a frame. The fins hold the otter on a straight course about 35 degrees to port or starboard of the ship's course.

Spanning the pig and otter is a cable whose length controls the depth of the sweep wire—usually about 8/10ths of the depth of the water in the area being swept. The finned otter exerts a downward pull, a force which is balanced by the floating pig. As a result, the otter and attached sweep wire do not plunge to the bottom but sweep along at a constant depth.

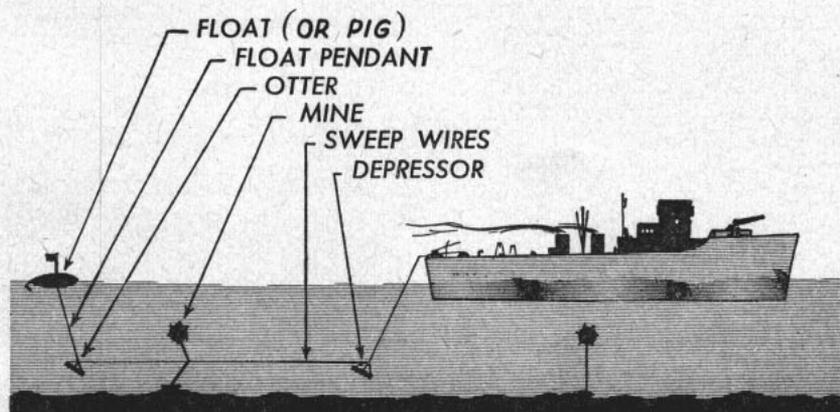


DIAGRAM shows minesweeper rigged to cut loose moored mines. Only float shows on surface; pendant, otter, wires and depressor are under water.

Another pull — the horizontal pull of the otter away from the ship's heading — puts a strain on the actual sweep wire, a serrated cable normally about 300 fathoms long. Every 40 fathoms or so along the sweep wire are attached knife-like cable cutters which snip the mooring cables holding the mines underwater. At the inboard end, the sweep wire is connected to a *depressor*, a device similar to the otter, which plows along below the surface just aft of the ship and which also helps hold the sweep wire at its prescribed depth.

A minesweeper rigged in the manner described above cuts a channel about 200 yards wide. Higher speed sweepers such as the DMS class do not carry cable cutters on their sweep wires because the jagged nature of the wire combined with the speed of the ship is sufficient to saw through the mine cable without further help. Should the sweep wire hit the mine cable too late for the sawing process to be effective, the mine cable is snipped off by a double-bladed cable cutter on the outboard end of the wire near the otter.

When a mine's cable is severed, the buoyancy chamber within the submerged mine case causes the mine to pop up to the surface. As it bobs around on the surface, the "shotgun" sweeper nearby sinks the floating mine with rifle fire or 20 mm. bursts. Contrary to general belief, it isn't necessary to hit a horn to do away with a contact mine. A hit on the



CREWMEN ready a motor launch for minesweeping work off Korea. The boat is especially rigged and equipped for sweeping operations in shallow waters.

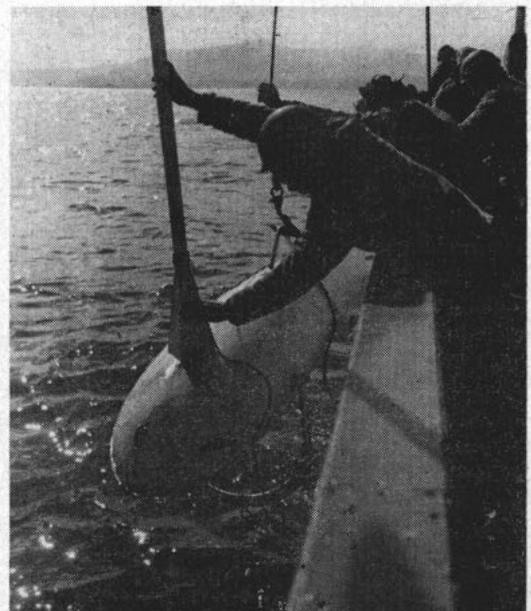
horn will explode it, of course, but putting holes in buoyancy chamber fills the mine case with water. It then sinks to the bottom where it remains a hazard to sharks, ships' wayward anchors and anchor cables.

When sweeping for contact mines, two standard formations are generally used. The first is the open echelon" or "pig to pig" formation. In this one, the left otter of one sweeper trails the right otter of the sweeper ahead (and to the left). This pattern

covers a maximum area, but it furnishes the least protection to the sweepers.

In the "protective echelon" formation, on the other hand, only the sweeper leading the formation is exposed. Sweepers following in echelon are covered by the sweep wire and otter of the sweeper ahead. Although it covers less area, it is a safer formation.

That's how they take care of moored contact mines. Dealing with



LCVP gets underway with gear on board. Right: Crewmen prepare to drop 'pig' or float over minesweep's side.



USS GULL (AMS 16) swept area near Chinnampo for mines so U.N. forces could stage a 'commando raid,' cutting enemy rail and supply lines.

influence type mines calls for entirely different measures. Of course, naval vessels and many merchant ships neutralize themselves in degaussing coils which theoretically render the vessels "magnetically neutral." This method is not infallible, however, because of the many magnetic variables both in the ship's own magnetic field and in the earth's magnetic variation.

Strung out aft of a vessel engaged in magnetic sweeping are large cables. When the cables are in position, a powerful shipboard generator is started. Powerful surges of current move through the cables and the

water, creating a strong magnetic field which in turn "influences" the magnetic mine to detonate itself.

Sweepers make several passes when searching for magnetic mines because mines oftentimes are set to go off only after a ship has passed over them several times.

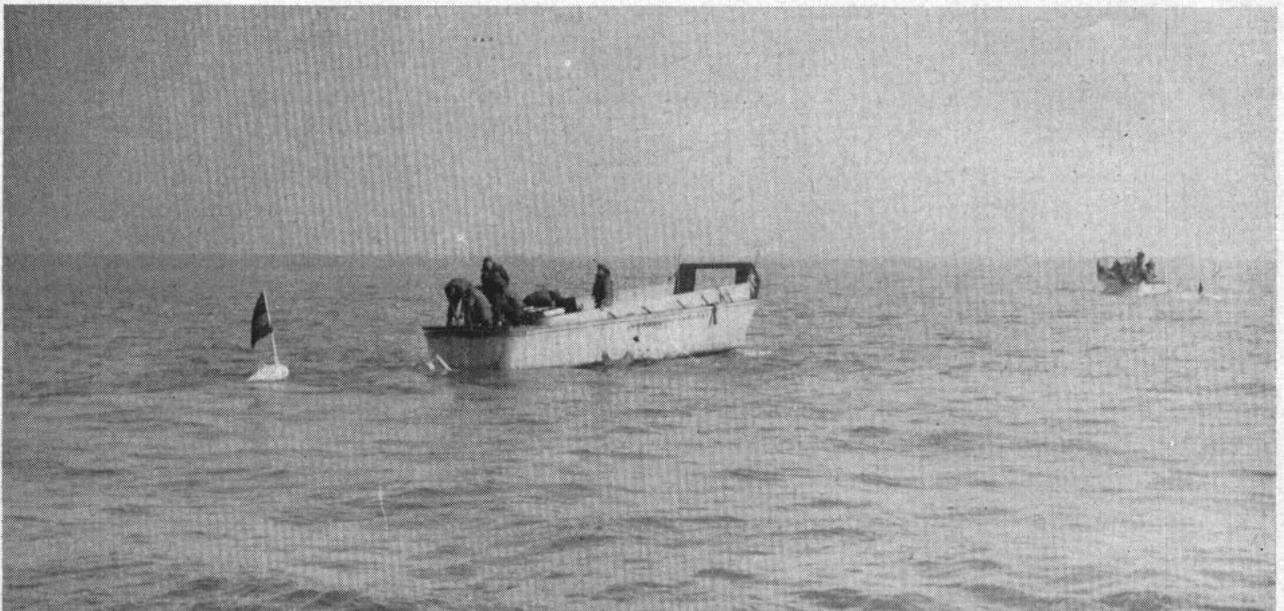
Handling the other two types of influence mines requires still other measures. Acoustic mines can be set off by increasing the noise level. An electrically or hydraulically operated "hammerbox" at the ship's bow just below the waterline can trigger them off by banging away. The hammerbox makes noise in a manner similar

to that created by a pneumatic drill breaking down a piece of city pavement.

Pressure mines can be set off by towing weighted, expendable barges across the suspected area. It may cost a couple of barges, but it saves lives and ships. Another method (used off Japan after World War II) is to send old Liberty ships through the area. The weight of barges and Liberty ships sets up a pressure more nearly equal to capital and service force ships. Bantamweight AMs and AMSs don't have the necessary weight (fortunately for them) to detonate these mines.

Tricky combinations can be set into influence mines. For example, an acoustic trigger can be rigged to a magnetic mine. Such a mine would lie dormant during a magnetic sweep. However, a ship with powerful engines and noisy propellers coming along later would be crippled. Her noise would release the acoustic trigger and then — unless properly degaussed — her magnetism would set off the deadly magnetic trigger. Such are the problems facing the Navy's sweepers.

However, new methods of mine detection and destruction are being developed all the time. Since the outbreak of war in Korea, a new type, lightweight sweeper has made its appearance. This is the *minesweeping boat* (MSB). It evolved from LCVPs which worked with special lightweight minesweeping gear.



SWEEPERS on board an LCVP rig their 'pig' for sweeping operations. Another LCVP is already on the job at right.

MSBs, like LCVP minesweepers, are also designed to be carried to the scene by a mother ship. More than 50 MSBs are now in service or under construction. These wooden-hulled vessels are 57 feet long, have a 10-knot speed and a crew of seven. Other details: diesel engines, twin screws and very shallow draft. They are designed to work in areas too shallow even for AMSs with their eight-and-one-half foot drafts.

In addition to the newly evolved MSBs, there are four well-established types of active duty vessels serving in the mine navy. Largest of these are the high speed mine sweepers (DMSs) and light mine layers (DMs). Both types were converted from World War II destroyers and retain their original names.

Next largest are the fleet mine sweepers (AMs). These ships are 185 or 221 feet long, steel-hulled vessels with diesel and diesel-electric drives. These and the smaller AMSs have handled the brunt of the Navy's mine sweeping both in World War II and the Korean war.

The high-bowed, 136-foot auxiliary motor minesweepers (AMSs) are the Navy's largest wooden-hull vessels, weighing in at 270 tons. Prior to 1947 they were known as motor minesweepers (YMSs). AMs and AMSs are the most numerous or Mine Force vessels, about 50 of each type being in commission.

Minesweeping boats are not the only mine craft whose development was given a boost by Korean sweeping lessons. The AMCU — mine hunter — is another. A number of these are included in the 1952 conversion program, a few being converted from AMS-type craft and the others from infantry landing craft (LCI) types. They will carry explosive ordnance disposal teams during anti-mine operations.

In the Navy there are ships many times as large and three times as fast as the great majority of sweepers. The layman can tell you quite a few things about destroyers, submarines, fleet oilers and transports. Ask him about minesweepers and you'll probably draw a blank. But every now and then — such as a Wonsan and Chinnampo — a mine field holds up the operation and the 'big steel jobs' can't move in. Then the little sweepers become the most important ships in the Navy. — W. J. Miller, QMC, USN.



USS THOMPSON (DMS 38) sustained her second hit by Red coastal guns in same area where she suffered her first battle damage over a year ago.

DMS Seeking Out Coast Target Sustains Second Hit

While standing off Songjin on the east coast of North Korea *uss Thompson* (DMS 38) sustained her second hit by Communist coastal guns on 20 August. Enemy shells killed three crewmen and injured 10.

By coincidence *Thompson* was in the same area where on 14 June 1951, she suffered her first battle damage and casualties during her first Far Eastern tour, apparently by the same guns that had killed three other crewmen and wounded a like number.

The high speed destroyer-mine-sweeper had only recently arrived for her second tour. The previous night, the ship had operated with U.N. east coast blockade and escort forces, firing on a rail bridge north of Tanchon. Replenishing at daylight, she moved north to participate in an air-spotted bombardment of targets in Songjin.

As she prepared to open fire on the target area, an enemy shell splashed near her bow. Immediately the ship got underway at flank speed, changing course frequently. Despite the evasive action, however, the next shell hit the flying bridge, spraying shrapnel in the pilot house and fire control platform.

One of the injured men, Joe R. Moore, SN, USN, said that he owes his life to his buddy, Donald B. Smith, SN, USN. While he and Smith were on their GQ station as

lookout and talker, they reported the first shell splash to the officer of the deck. "Then," said Moore, "my buddy grabbed me and pulled me behind the fire control director. The next shell hit where we were standing. That's why I figure I'm a lucky guy."

Thompson's navigator, Ensign John M. Donnell, Jr., USN, one of the destroyer-mine-sweeper's wounded, reported that he had stepped out on deck to spot the location of the shore guns with his glasses when there was an explosion. He said, "It felt like someone was pouring hot lead down my leg. I shook my trousers a little and some chunks of metal fell out."

uss Iowa (BB 61), flagship of the Seventh Fleet, intercepted *Thompson's* report of action and steamed to her assistance. The wounded were quickly transferred and rushed below to the battleship's modern hospital where doctors worked through the night. *Iowa's* doctors praised the work of *Thompson's* hospital corpsmen for the first aid treatments given the casualties and of Lieutenant (junior grade) Floyd H. Poteete, Jr., (MC), USN, when he boarded the minesweeper by helicopter to ready the patients for highline evacuation.

Other U.S. ships in the Korean War which have been hit twice by coastal gunfire are *uss Helena* (CA 75) and *Osprey* (AMS 28).