

200 YEARS UNDER THE SEA

3.

"CULPABLE NEGLIGENCE"

A SUBMARINE COMMANDER TELLS WHY WE ALMOST LOST THE PACIFIC WAR

by Edward L. Beach

My surreptitiously retained file of war-patrol reports of *Trigger*, *Tirante*, and *Piper* (submarine numbers 237, 420, and 409) still makes fascinating reading, to me at least. *Trigger* (SS 237), completed at Mare Island, California, early in 1942, started her career slowly, but as we learned our dreadful business her improvement was steady. Before she died, a tired old submarine at age three years, she had been, for a time, the highest-ranking sub in the Pacific Fleet in terms of overall damage to the enemy.

I hold the honor of being the next-to-last "plank owner" (crew-member when first commissioned) to leave the *Trigger*, after rising from assistant engineer to executive officer during my twenty-nine months aboard. I had entertained ideas of just possibly becoming her skipper before it was all over, but it is just as well the Navy had different plans for me. Poor old *Trigger* came to the end of her allotted time in March, 1945, just as I arrived back in the war zone as "exec" of the brand-new and much more formidable *Tirante*. At war's end I was skipper of the *Piper*, in the Sea of Japan. By that time the coasts of Japan had become far more familiar to us than our own, and the waters offshore—and all over her "co-prosperity sphere"—were littered with sunken wrecks.

But it was not so at the beginning; and in those old patrol reports, starkly written nearly forty years ago, lie the details. In most cases we did not then even know what was happening. Our guesses were crude at best; we know much more today. Today those reports tell how near I came to never having the chance to grow older, or be married, or have a family, or be promoted beyond the rank of lieutenant, or to write this article. All this was on the line for everyone in the combat branches during the war, of course. But for those serving in our submarines in 1941, 1942, and 1943, these risks were more often the fault of our own ordnance than that of the enemy.

On October 20, 1942, I heard the loudest noise I have ever heard. For a microsecond I thought I had been killed. A blinding flash enveloped me, and I thought, instantaneously, without articulating a single word in my mind: "This is how it feels. It's all over. So suddenly. I don't feel anything, and probably never will again." But it wasn't

over. The blinding flash was from a light bulb, dangling on a short extension of wire to protect it from depth-charge shock, which had been extinguished by unscrewing it slightly on "darken ship." In our dimly lighted conning tower it hung, unnoticed, exactly in front of my nose. When the warhead went off, the bulb was shocked into searing brilliance, burst into the night-adapted retinas of my eyes. It was minutes before I could see again; but it was only seconds before I knew I was still alive. Such a feeling has to be experienced to be savored.

We had been tracking an unescorted tanker at night, and judging the moon too bright for a surface attack, had submerged to close the range and fire our torpedoes. Sonar heard some of our fish detonate, presumably against the side or bottom of our target, and seconds later reported "high-speed screws" in her vicinity. Then came a distant explosion, which we thought might be a depth charge dropped by the tanker, and a moment later, with catastrophic suddenness, a violent detonation extremely close aboard which, in the words of our patrol report, was "absolutely not a depth charge." The report goes on: "After the explosion, Sound reported the tanker's screws were starting and stopping close aboard. Started for periscope depth. Sound reported high-speed screws near the target. . . ."

We sincerely believed we had sunk the target and that the high-speed propellers came from a motor lifeboat. But the official endorsements of our report credited us only with "damage," and it now seems fairly likely that it got away, totally unhurt. The "violent explosion" was one of our torpedoes, running in a circle and coming back upon us. The magnetic or "influence" exploder, fitted to our torpedoes with great secrecy, was designed to set off the torpedo warhead at the highest reading of a target's magnetic field, directly under its keel. Thus, since we were at one hundred feet keel depth at the time, the fish must have gone off directly overhead. Venting most of its explosive force upward, in the direction of least pressure, it had failed to sink us.

So ran the train of thought, but there were doubts which this theory could not explain. At one hundred feet depth to our keel, our conning tower was only about seventy feet below the

surface. The torpedoes had been set to thirty feet, and we knew, even if Washington refused to admit it, that they ran up to twenty feet deeper than set. An explosion of eight hundred pounds of torpex only twenty feet away, even if directly above us, would have finished us. Could it be that it had detonated farther away, some distance off to the side, upon entry into our magnetic field instead of at its strongest (and therefore nearest) point? Could our two "hits" on the tanker, heard and timed correctly, also have been upon entry into the target's field instead of on passing under her keel? Could they have failed to damage her, just as that extraordinarily violent explosion had shaken, but not damaged, us?

It is today my conviction, bolstered by similar reports from other submarines and innumerable stories of unreported incidents told by friends serving in other subs—and at least one more such experience myself a few months later—that this was the case. That torpedo should have sunk us, as I thought it had for an instant, given that it did run in a circle and did run deep. But it should not have run in a circle, and it should not have run deep, any more than it should have gone off on sensing the existence of our magnetism instead of waiting to detect its strongest point. I nearly died, with my shipmates, because our criminally defective torpedoes sometimes ran in circles and always ran too deep; and we survived because, in an entirely unrelated deficiency, they nearly always exploded just before reaching their targets!

On this concatenation of circumstances, so improbable that no novelist would have based a plot on them, hung my life and those of the seventy-five other men aboard.

On that same patrol I saw my first ship actually sink. It was a small, unescorted freighter which we had attacked on the surface at night, setting our torpedo data computer by "seaman's eye" and aiming through the target bearing transmitter on the bridge. As officer of the deck I was given the privilege of conning us into position and aiming the torpedoes. Two were fired and both hit, flinging highly satisfying columns of water, spume, and debris into the air. The freighter stopped, sank down by the bow, lowered boats into which the crew piled, and then stopped sinking. We decided on another torpedo to make sure of the now abandoned ship, lined up carefully. Our third torpedo took a sharp jog to the left, ran a quarter circle, then straightened out on the proper course. As a result, it missed aft. We fired again, and our fourth fish was a bull's-eye, like the first two. Its streak of white bubbles went unerringly to the center of the motionless target, passed under it, and kept on going, visible in the distance for two miles beyond the stricken ship.

After a few more minutes it was evident the old freighter was going to sink. But in the post-mortems which began immediately we were back to the same question. What in the world was wrong with our torpedoes?

Our submarine force was one of the most professional branches of our navy, rivaled, in our estimate, only by the comparable professionalism required of those who flew aircraft off the pitching decks of our carriers. The law of nature, death to those unable to meet the challenge of constant alertness, operated in both. And yet, with excellent ships,



The author as a lieutenant in 1942

well-trained crews, the highest possible motivation, our early submarine effort was an unmitigated failure, a debacle.

We could operate our submarines with safety and sureness and we could survive in waters controlled by the enemy. But we could hardly hurt the enemy at all. Try as we might, we could not interfere with Japan's advance into the Philippines and Southeast Asia. Our subs were present at the Battle of Midway but in total impotence.

Most inexcusable, those in ultimate authority refused to accept the continually renewed evidence that there was something wrong. All unsuccessful attacks, without exception, were blamed on the skippers, their fire-control parties, and their torpedo-overhaul personnel. We knew both British and German submarine torpedoes had had similar problems, which were solved by a few weeks of driven work (Admiral Doenitz is said to have refused to send any more U-boats on patrol until their torpedoes were fixed). Yet impassioned demands for similar investigation of ours were put aside. Our technical experts had produced a perfect weapon which, by the mechanical marvel of its design, could only function correctly and could never fail to function correctly. If our torpedoes did not function as designed, the fault could only be that they were not being used correctly, for there was no way that a perfectly designed torpedo like ours could fail to work. Any other explanations were merely self-serving excuses.

In 1941, when war broke out in the Pacific, the United States had three completely autonomous submarine forces:

the Atlantic and Pacific Fleet forces, and the Asiatic Fleet submarine force. The largest and most war-ready, based on Cavite Navy Yard in Manila Bay (the same from which an outclassed Spanish squadron fought George Dewey's some forty-three years before), consisted of twenty-nine submarines, twenty-three of them new, long-ranging "fleet" types. This Asiatic Fleet submarine force was under the direct command of Admiral Thomas C. Hart, himself an old submariner who clearly understood what his boats could accomplish. For the record, of all the top commanders in the Pacific on December 7, 1941 (west longitude time), Hart was the only one whose forces were not caught by surprise.

War was very much in the air. Hart was well aware of Japan's propensity for surprise attack. Formosa was the obvious base for an invasion by Japan, and the first thing to anticipate was an air raid to establish air supremacy. So ran Hart's analysis, and the event proved him right. His further evaluation, instantly and devastatingly substantiated by loss of H.M.S. *Prince of Wales* and *Repulse*, was that the surface units of the Asiatic Fleet were no match for the aircraft likely to be sent against them. He had, accordingly, sent his surface combatant ships to the south, beyond the range of Formosa-based bombers. His submarines he kept concentrated on Cavite, ready for instant deployment except for two under rapid overhaul. In the event of air attack, all subs able to submerge were to do so in Manila Bay until it was over. When they surfaced, after nightfall as instructed, Hart planned to send them to designated positions to oppose the invasion fleet he believed would be Japan's next move.

The anticipated air raid came on Monday, the eighth, at about noon east longitude time, roughly ten hours after the treacherous Sunday-morning surprise at Pearl Harbor, and well after receipt of definite information about it. Incredibly, despite full awareness of the disaster at our most important Pacific base, the new attack caught Clark Field also by complete surprise. Clark Field was Douglas MacArthur's principal air base, the source of virtually all U.S. air power in the Far Eastern theater. When the enemy arrived overhead, our bombers and fighters were lined up almost as if on inspection parade. The Japanese attackers fully availed themselves of the opportunity, and most of MacArthur's air force, nearly all of it new planes, was wiped out.

Although one can legitimately fault Admiral Hart, as Clay Blair does in his monumental *Silent Victory*, for not having had submarines on patrol along probable invasion routes, in the main he had shown himself far more closely attuned to the problems that actually developed than had MacArthur. He rightly appreciated that his subs would be the only weapons he would have available to check Japan's invasion of the Philippines once the enemy had established air superiority. He was confident that the situation would produce a conclusive demonstration of the strategic and tactical importance of his twenty-nine submarines.

That twenty-nine submarines could, and indeed should, have made a significant impact on the invading Japanese forces which immediately began landing in Lingayen Gulf is fully substantiated by history. In 1914 Germany achieved

impressive results against England with an initial force of only twenty-five U-boats, some of them very primitive. In 1939 the story was the same. With not many more U-boats than in 1914, Germany's underseas campaign very shortly began once more to appear potentially catastrophic to England.

And yet, two full years later, despite all the opportunity they had had to observe the Atlantic war, two years to prepare to render an equally good account of themselves if necessary, our submariners were found wanting.

The causes of this failure are well known today, though perhaps even yet not sufficiently studied. In brief, while German, British, Italian, and Japanese torpedoes functioned well, ours performed so poorly that had they been the subject of deliberate sabotage they hardly could have been worse. There were, of course, other problems, among them excessive bureaucracy. Our navy's concentration on paperwork and paper results overwhelmed reality. Torpedo firing tests, for example, *had* to be successful. All submarines regularly fired practice torpedoes (fitted with light exercise heads instead of TNT-loaded warheads), in which "hits" were assigned on the basis of passing under the target vessel. Occasional "warshot" firing tests were assigned, but these were very few in number because of the cost of the torpedoes. Each submarine taking part in these more realistic firings was expected to go to extraordinary lengths, far beyond what could possibly be done in war, to make the torpedo perform according to specifications. The exercises were considered not only tests of the torpedo but also of the submarine and her crew, and failure in so conspicuous an exercise was career-damaging.

In the barrage of required reports, there was neither time nor desire to study the firings objectively. In addition, a new top-secret exploder, which detonated the warhead by the target's own magnetism, was installed in all Mark XIV warheads (the latest and most numerous), but because of its secrecy its performance was required to be accepted on faith.

Our submarines were commanded by men who were products of a system that penalized those who questioned too hard the established order of things. None were fighters against illogical bureaucratic decisions. None were rebels, and none were warriors, although some of them clearly possessed the requisite potential. All were strong, sober, cautious, and jealous bureaucrats, although, again, some were less so than others. They were, in short, what they had been trained to be. When war came, the success many actually deserved would have brought out their latent potential for combat (and in a few celebrated cases such potential came out anyway). But when success was lacking, men schooled in bureaucratic caution became confirmed in their caution. Lack of success made them wanting in confidence; lack of confidence made them cautious; and fear of failure made them timid.

While there were a few fine, aggressive, combat-oriented skippers in our submarines during those early wartime months, most were wretched failures. It was not their fault but that of the mold in which they had been formed, and the fact that they had a criminally defective weapon.

Had the Germans been in our place in Lingayen Gulf, it is my opinion that the Japanese landing would have been frustrated. Of course this cannot be proved, but I will always believe the loss of the Philippines could have been prevented. As it was, the entire battle for the Philippines was not only a failure, it was a shameful failure. We lost control of the air on the first day, and our effort to control the sea with our submarines, or at least contest it, was pathetically inadequate. The root cause of the debacle at sea was almost complete failure of the submarine weapon, the torpedo.

The torpedoes, unfortunately, did not fail utterly. Sometimes they worked, though more often they did not; and sometimes they appeared to work when in fact they had not hurt anyone. This, of course, not only made the problems harder to isolate, it also made it much harder to convince Washington that there really was something wrong. In the denouement there were not one but four things wrong with the torpedoes, any one of which should have led to thorough investigation, fixing of blame, instant and urgently prosecuted correction, and disciplinary action against those who had failed in their duty. They were:

(1.) Running deeper than set. Report after report told of torpedoes running harmlessly under targets whose draft clearly was greater than the depth settings of the fish. Such reports were largely ignored as being self-serving excuses, since the ingenious magnetic, or "influence," exploder should have functioned even if the torpedo underran the target. Therefore, they had not passed under, they had missed entirely. Proposals to fire torpedoes through nets with their heavy warheads (believed to be at least partial cause of deep running, since they were much heavier than exercise heads) were dismissed as wasteful of precious torpedoes, a huge stack of which had been lost at Manila Bay. When such tests were finally made, the fish were found not only to travel much deeper than set but also to move up and down in a sine wave, sometimes at depths so great that the influence exploder would not have worked. The more successful skippers, by this time, had long been setting their torpedoes to artificially shallow depths, three feet against a big ship, zero feet against small ones. Or as in *Trigger*, they strove always to attain the same firing situation in each attack, since it produced good results. In our case, this was fifteen hundred yards with a six-foot depth setting (I think, now, that the combination caused the torpedoes to be on the "up" curve when they reached the target; naturally, we had no idea of all this at the time).

These became the secrets of our trade, exchanged over booze between patrols and in confidential conversations with fellow torpedo officers and skippers. They were not officially reported in our patrol reports because such flagrant disobedience of specific orders would have brought censure, particularly since most torpedoes missed anyway.

(2.) Premature explosions. Often the influence exploder functioned too soon, immediately upon entering the target's magnetic field—which, we finally discovered, was stronger in the Pacific than in the Atlantic, and therefore actually protected our targets. From the submarine these would look

like sure hits, and we could not understand how some targets kept on steaming unscathed—although, indeed, they usually began violent evasive maneuvers. This was a particularly invidious problem, since the natural tendency was to claim a hit. Many times it was not possible for the submarine to play the spectator, and sounds in the water, from whatever cause, could be interpreted as "breaking up noises" confirming a sinking; or in case of an attack at night, an excited lookout's report that he saw a ship sink after such an explosion might receive more credence than it deserved. Circumstances such as these caused inflated reports of success during the early years of the war and made enemy ships seem even better able to sustain damage than they were in truth. And later on, when intelligence or subsequent observations of the same ship showed that it had not been sunk, the sub skipper's veracity was thereby put in question.

(3.) Impotent contact exploder. When cumulative evidence against the magnetic exploder finally became too much to be ignored, some force commanders ordered it deactivated. The startling result was that the backup contact exploder, designed to set off the torpedo warhead if it hit even the slightest glancing blow against an enemy hull, would function *only* if the contact were indeed slight and glancing. A direct, solid hit, ninety degrees to the target's course, a perfect shot, in other words, would cause the exploding mechanism to deform before it could fire. Many submarine skippers reported noises that sounded to the sonar like a hit, without accompanying explosion but coincident with abrupt cessation of the torpedo's own machinery noise. Finally, Dan Daspit, the scientifically inclined skipper of the *Tinosa*, having damaged and immobilized a large tanker in mid-ocean, fired one perfectly aimed torpedo after another with carefully recorded data. All torpedoes hit. All were duds. Some he saw bounce out of the water, damaged, after striking the tanker's side. He returned to Pearl Harbor in a towering rage, with one torpedo which he brought back for a full-scale examination. This at last broke the back of the torpedo bureaucracy, which was now willing to concede that expending a few torpedoes in laboratory tests was better than expending them impotently in combat.

And so, late in 1943, all known defects in the torpedo exploders had at last been discovered and eliminated. Or so we thought; three problems had been solved, but there was no one around to complain that he actually had experienced the fourth and final problem. No attention was paid to those who voiced suspicions before the war's end. So the fourth difficulty, which had been completely obscured by the others, remained hidden, a very real danger to our subs during the entire course of the war, very likely more dangerous at its end

The Sealion, our first submarine casualty of the war, is destroyed by Japanese bombs in Cavite Harbor. This dramatic version of the event was painted by Fred Freeman. Though not himself a submariner (he put in thirty-six months of Pacific sea duty on a subchaser), the artist was commissioned by the Navy to illustrate a 1949 history of American submarine operations in the war.

FRED FREEMAN

than at the beginning. For, after 1943, the torpedoes were lethal when they hit home.

(4.) Circular-running torpedoes. Torpedoes whose rudders jammed ran in a circle and returned, with warheads fully armed and ready to explode, to the spot from which fired. Nearly every submarine experienced one or more of these. Three times during my service aboard, one of *Trigger's* torpedoes ran back toward us, and two of them exploded magnetically while we were desperately going deep to avoid them. Destroyer torpedoes had an "anti-circular-run" device, but for some reason this had not been installed in submarine torpedoes. As Rear Admiral Dick O'Kane suggests in *Clear the Bridge* (his memorial to his lost submarine, the extraordinary *Tang*), someone may have thought a submerged sub, under depth-charge attack, might try to sink the enemy overhead by firing a torpedo set to run in circles. No one tried this, for one went deep if under threat of depth charges, and our torpedoes would flood and sink if fired at such depths. But at least two of our subs, the *Tang* and the *Tullibee*, were lost because their own torpedoes, fired at the enemy while they were on the surface, turned back upon them.

We know about the *Tang* and *Tullibee* because both submarines had survivors who were picked up by the Japanese and came back from prison camps after the war. But what of the others? Of the fifty-two submarines we lost in the war, one was bombed while under overhaul at Cavite when the war began, and nine were lost to various operational accidents. Forty-two were sunk on patrol, and of these we know exactly what happened to seven because survivors came back. The remaining thirty-five were lost with all hands. Correlation of all known circumstances and action reports from both sides causes us to feel fairly sure of what happened to fifteen of these (we believe my poor old *Trigger* was depth-charged to extinction on March 27, 1945). Lost to unknown causes, with all hands, were twenty fine fleet submarines, and the only thing we know for sure is that no agency of Japan can be given the credit. It is possible that some of our boats struck moored mines, and some, I suppose, may have suffered improbable internal or operational casualties. But if the same percentages hold as for the seven from whom we do have survivors, as many as six of the twenty unexplained losses could have been from circular-running torpedoes they themselves had fired. Or figuring the statistics in another way, if the seven with survivors are added to the fifteen whose losses we can correlate, then, statistically, two of the uncorrelated twenty *must* have been lost because of circular runs. The known circumstances point this way, but of course it is something we shall never know for sure. It will always remain only a dark murmur in the shadows.

In *Silent Victory*, Clay Blair treats our torpedo fiasco at considerable length and with authority. In his summation he says, "The torpedo scandal of the U.S. submarine force in World War II was one of the worst in the history of any kind of warfare." With this, all submariners in our navy will wholly agree, and many of them still passionately feel all those responsible should have been court-martialed. Nothing, in fact, was ever done (except that the torpedo factory at

Newport, Rhode Island, is still a silent monument to its disgrace). Blair's carefully researched tome fails in only one thing: it cannot reproduce the anguished uncertainties, the self-doubts, the lack of confidence, which were attendant upon the total reversal of all pre-war training results. Nothing can be more demoralizing to men who must risk their lives in combat than to be forced to use weapons which they know, from experience, are not dependable, and for which they have no substitute—unless it be stubborn, unrealistic opposition by "experts" who, in the face of the evidence, refuse even to investigate it.

Thus, in the same time it took for an approximately equal number of German subs to have England hanging on the ropes, ours had sunk only a couple of dozen Japanese ships. Our subs made not the slightest dent in the Japanese timetable for conquest of the Philippines. We succeeded only in evacuating some trapped personnel—and several million dollars in gold bullion—from Corregidor. These exploits were well publicized, for we had little else to be proud of.

But by the end of 1943, when our torpedoes became dependable, the damage to Japan mounted rapidly. What could have been accomplished in December, 1941, and in the early days of 1942, with the right weapons and the resulting skill and self-confidence, became a reality our enemy could not cope with. Not only were weapons reliable in 1944, but also new equipment of other kinds began to come our way: new, tougher-hulled, deeper-diving boats; more powerful surface-search radar; a new periscope, with a radar inside; better sonar; a radar detector to warn against enemy radar; electric torpedoes which had no wake to betray their approach. We no longer felt like orphans fighting a war no one was interested in. And finally, many of the older skippers, conditioned by two years of futility, were being relieved by younger ones with many war patrols in junior billets and much frustration over missed opportunities.

The Germans had done their worst execution among Allied convoys by attacking at night on the surface, until radar and aircraft made this tactic too hazardous. Since we held the radar advantage, we felt we could do at least as well. Some of the new skippers spent virtually entire patrols on the surface; but this should not be misunderstood, for it was the ability to submerge that enabled us to remain, alone and unsupported, in enemy-controlled seas. In the old days, when a warship had to contend only with others of her own kind, superior skill or speed, usually a combination of the two, could allow her to survive in unfriendly waters and even carry out hostile military missions. Times had changed by World War II. The *Prince of Wales* and *Repulse* could not survive, but our submarines did, even though they could not accomplish much.

The airplane is a strike weapon; it can bring overwhelming destruction to anything it can see to aim at but it does not stay. It seeks, strikes, and goes. Most of the time it is on land, or on the decks of an aircraft carrier, but it can control the air nevertheless, and with that goes control of the surface of the land or sea under that air. Unless it takes to the air itself, with

its own missiles and aircraft, the surface ship—or the installation on land—cannot continue to exist under enemy air dominance. Only the submarine, which can depart the surface at will, can function in such an environment without diversion of most of its capabilities to its own defense. This was true in 1944, and it is true today. In the wild sea, only the submarine is free.

In 1944 Japan began to discover that her own home waters were no longer friendly. She had entered on the World War II adventure to secure unto herself the resources of the Asian mainland, but military conquest proved to be not enough. The sea lay between; and despite strenuous efforts at air cover, entire convoys would be wiped out in only a few hours.

At night, radar coverage was at its best and enemy air surveillance at its poorest. We, in the submarine, could cover a swath of sea forty miles wide, and all ships picked up by our radar, with the exception of other U.S. submarines (whose locations we kept track of), were enemy. Usually they traveled in convoys under escort of destroyers or antisubmarine ships of some kind. When an enemy contact was made, the radar tracking party would be called and quick initial observations plotted to determine the direction of movement and some idea of the speed. Then the boat would be swung to the intercepting course, using if necessary the full power of her four diesels, twenty knots. From the bridge we could see only the dark gray of night, the dark sea and the dark sky. With the wind whipping against our faces, spray thrown from our rushing bows spattering on deck and over us, larger seas sometimes coming entirely aboard and drenching us, we could tell, from the manner of its rotation, what the radar antenna was doing: taking a fix on the convoy for plotting, searching the area to guard against surprise from some other quarter, or taking a navigational fix on the nearest land. Down below, the two plotting parties, one in the dimly lighted control room and the other in the brightly lighted wardroom, would be working out the many-times-practiced solutions, vying with each other for speed and accuracy: enemy base course and speed; the zigzag plan; the interval between successive zigs; formation of the convoy; location of the biggest ship or ships; locations of escorts; and their manner of patrolling station. In the conning tower, the radar operators with their circular, red-lighted dials, could see the pips representing vessels. From their size and configuration, they determined which were the most valuable and most accessible targets, and they also became intimately familiar with the appearance of the escorts as reproduced on the scope.

Depending on the various considerations—time to first light, the phase of the moon, time of moon-rise or -set, visibility, the proximity of land, probable enemy course changes, the zigzag plan, number of escorts, where and how they were patrolling, what types they were (if we could deduce this), the number of torpedoes we had remaining and their locations, forward or aft, whether steam or electric—we would select the position from which to begin the attack. It was, of course, necessary to remain out of enemy sight or radar range, but within our own, during the entire tracking period. Often this was difficult, for an alert escort on the convoy's near



LIFE ABOARD

In 1943 Life magazine summoned the painter Paul Sample from his duties as artist-in-residence at Dartmouth College and sent him out on a war patrol aboard a submarine. "Painting pictures of the war," said Sample, "is no different from the year in and year out painting at home." This wasn't quite true, of course, as Sample spent his time in the closest quarters the Navy had to offer, making hasty sketches that he fleshed out into paintings when he got back to dry land. The submarine happened to be the Trigger, and the painting above was almost the portrait of our author. Commander Beach recalls that he posed on the bridge, but at the last moment the artist substituted the face of the sub's captain, Roy S. Benson. "Captains often stole junior officers' girls," says Beach, "but this is the first time one stole a body." Bodysnatching notwithstanding, Benson was a good skipper. "He not only controls the ship during attacks," said Sample, "but he is the ship's doctor and father and heart. Little things he does—chinning himself on the conning tower in the afternoons, puffing quietly on a cigar on the bridge, kidding his men about their girls or their haircuts—set the tone and maintain the morale of the whole ship."

U.S. ARMY

bow would force us to stay farther out than desired. And the way this escort patrolled his post had a great deal to do with our choice of attack position. Ideally we would want to come in at high speed fairly sharp on the convoy's bow, preferably beginning the run-in immediately after completion of a zig. This would give the fastest closing speed and the longest interval before another zig would be due.

If a convoy had two escorts, their normal placement would be one on either bow. If more, the extras would patrol the flanks and quarters. At the beginning stage, the one on the near bow would be our greatest worry, for we would have to pass close aboard him during the run-in. Sometimes the zigzag plan would have him out of position during one of the legs, and if so, we would choose this leg for the attack. Otherwise, we might plan to run in under his stern, reasoning this would be his least alert sector. In this case the resulting approach might be on a much broader track than we would have desired and thereby cause us to fire from a point nearer than we'd like to the flanking or quarter escort. Once past the bow escort, we feared the flank or quarter escort most, for it would be heading directly toward us.

It was always with a sense of total commitment that the order would be given to put the rudder over, go to full or flank speed, and start the run-in. Previously we might have been cruising along at convoy speed, outwardly leisurely, making our final observations, checking convoy disposition, ensuring that the situation remained as predicted by the plotting parties, that we had not been detected during the last few minutes. Once the rudder was put over we would be closing at high speed, nearly the sum of our speed and the convoy's, and there would be little or no chance of changing our mind about anything. Everything now hinged on remaining undetected as long as possible. Even detection by the target ships themselves could put us into peril, for a simple rudder movement on their part could place us dead ahead of them, our fire-control solution spoiled and our boat herself in danger of being sunk by ramming.

All four main engines would naturally long since have been on the line, waiting the climactic order, muttering gently through their exhaust ports. With the order to the rudder would go another to them, and their deep, throaty response would bellow as our propellers dug in. White spray, mixed with dark engine exhaust, would spurt out of four huge water-cooled mufflers squeezed under the main deck aft of the bridge, two exhausting to each side, and the light steam vapor produced would rise gently in the still air, drift quickly aft and to port, the plume to starboard floating across our low-lying afterdeck, as hard left rudder caused our stern to scud across the roiled waters of our wake. To me this was always a scene of defiance and poetry combined, even though total destruction, for someone, lay at the other end of the fantasy. This was the instant which divided those who could, and would, from those who could not.

Depending on all the local factors, and what we had been told about enemy radar, we generally reconnoitered the convoy from eight to ten miles—sixteen to twenty thousand yards—away. Escorts usually patrolled stations about five

thousand yards away. The run-in, therefore, always involved passing an escort at uncomfortably close range, with our broadside exposed to him, throwing spray high above our bows, frequently over the bridge as well, and blaring our intentions to him through the rocketing roar of four big locomotive diesels he hardly could fail to hear. If he was listening, that is. The whole idea was to remain undetected and then to make our move so swiftly that we'd be come and gone before he had a chance to react. If we had picked the right time to begin, the escort would be at the far limit of his station, with his stern more or less in our direction at our closest point of approach. At worst, he would still have to turn completely around; at best, he wouldn't see us at all. . . .

Once past the escort, we would have a few precious minutes to get set. Optimum firing range, with the electric torpedoes, would be about one thousand yards, half a nautical mile. The silhouettes of the enemy ships, originally tiny or completely invisible, would now be big. Slow down. The fish cannot be fired at high speed. The angle on the bow of the lead ship in the convoy should have been slowly increasing. What should it be now, conn? The answer, instantly back from the torpedo data computer, the TDC, checks with the visual estimate. The lead enemy ship can now be seen clearly. Two columns, six ships. We know this from radar, but now we see them. Our eyes on the bridge are at their maximum night adaptation. The nearest is a big ship, with a big superstructure, probably once a combined passenger-freighter type with white upper works and black hull. Now totally darkened, she is simply a black silhouette against a cloudy gray of night, clearly outlined in form but without depth: the shadowy substance of a ship.

Angle on the bow is now estimated at starboard forty-five degrees. That checks with TDC. Speed the same as before, twelve knots. Plot, where's the ahead escort we just passed? Starboard quarter, still going away. Good. He hasn't seen us. How about the other escort, the tin can coming up to port? Still patrolling on his station, range closing but no sign of having detected us yet. What's our speed, conn? Fourteen knots. Still too fast. All ahead one-third. Our speed drops perceptibly. We roll easily to the slight chop. Range to leading ship? Two thousand. Angle on the bow now starboard fifty-two.

She is doomed, if the torpedoes work right. So is the ship next astern, also in clear view. Three fish to each. Then we'll swing hard right, so as to maintain maximum distance from that astern tin can coming up to port, and let fly with stern tubes at the third ship. Radar is now reporting ranges steadily. Bearings have been going in from the bridge target bearing transmitter, the TBT. No indication anywhere that we've been spotted. *Open outer doors forward!* In the older subs these had to be cranked open by hand. With us, in our rugged, just-built death weapon, they're opened hydraulically.

This picture celebrates an event that never happened: our subs were at the Battle of Midway but they sank no Japanese carriers. The torpedoes weren't up to the job.

ALDORE IMAN

the work of an instant. Range is twelve hundred, torpedo run a thousand. Angle on the bow, starboard sixty-five. Gyros five right, increasing. *Outer doors are open forward! Stand by forward!* Standing by, bridge! Final TBT bearing, *mark!* Set, bridge! *Shoot!*

Three electric fish are away, running unseen in the dark water. The target is bigger than ever, looming above us. It is unbelievable that he can't see us. He's gone now, but he doesn't know it yet. That is, if the fish work right. They'll work. Quit worrying about them. *Shift targets!* TBT bearing, *mark!* Mark the radar range to the second ship! Angle on the bow, starboard sixty. Set! Range, fifteen-twenty! Gyros eight left, decreasing! Final TBT bearing and—*mark! Shoot!*

All torpedoes away forward, bridge! *All ahead flank! Right full rudder!* Six fish in the water, but nothing has happened yet. We think we can hear the machinery of our targets, the swish of water under their bows. Our own engines are roaring again. Our bow is swinging right, and we're closer than ever to the convoy. It will take about a minute for the first torpedo to get there. *What's the astern tin can doing?* He's closer, bridge, but still no sign of speeding up—BLAM! A flash of light, stunning! A column of white water, right amidships! BLAM! Again! Another hit, aft. Must be the third fish; the second must have missed forward. Still a chance for it; it had been spread forward to allow for last-minute maneuvers or errors in our solution and, running on, it may hit something in the second column. Our speed has begun to pick up, and we're approaching the stricken ship as we swing to starboard. She's listing toward us—you can tell because her silhouette now shows the curve of her deck on the far side—clouds of smoke are pouring out of her stack. She's badly wounded. There's the bustle of much movement about her decks, humanity, disorganized, seeking to save itself. The ship must have been crowded with people. Almost certainly a troop transport. Well, these particular troops won't be campaigning anywhere for a while... BLAM! A hit in the second ship! Forward, and she goes down immediately by the bow! There should be another hit in her, at least one more—there it is, well aft! Another troop transport, and she's done for, too! Our stern is sliding across the greedy waves, which will soon claim two more ships, lining up for the third. There has not yet been enough time for the convoy to disintegrate, or the ships to maneuver, but the third ship in the column certainly will throw his rudder one way or the other. A quick adjustment to TDC will take care of him.

Range to stern escort is closing fast! The yell from the conning tower means that the tin can on the convoy's starboard quarter, the one from whom we expected most trouble, has speeded up, and has probably stopped station patrolling. He's coming over to investigate and no doubt calling his crew to general quarters at the same time. We are practically dead ahead of him. A quick look: will there be time to get off the fish aft as originally planned? He is close, lean and ugly, headed straight for us. No doubt he's seen us at last. Funny that I don't hate him for wanting to kill me. *Four thousand yards to astern escort, bridge!* A fast decision; our torpedoes in the four stern tubes may be needed for a desperate defensive shot. The boys in the forward torpedo

room have not had time to reload—difficult anyway with the motion of the ship on the surface. If we have to dive they'll have to be given warning well in advance, so as not to be caught with a down angle and a two-thousand-pound torpedo in midair. *What's the ahead escort doing?* Swivel around to steady the TBT on him. This is the lad we passed at high speed only a few minutes ago. While radar and the plots are hurriedly evaluating the range and bearing, we can see clearly enough what he's doing. He's already broadside to us, obviously turning around. *Range to ahead escort, four five double oh! We think he's closing slightly!* Both of these destroyers will be on us soon. *Forward torpedo room, secure the reload! Rig for depth charge!* We have opened out slightly from the convoy, our rudder still at right full, our engines complaining somewhat less as our speed builds up. If there was time, now would be the moment to slow down again and shoot the four stern fish at the third ship. But he, too, has waked up, has evidently put his rudder right, and is sheering out of column toward us. Maybe he's trying to ram; more likely he is simply trying to avoid his sinking fellows.

There is shambles in the convoy. Two big ships are hit and sinking, their forward motion swiftly dragging to a halt, lights flashing around their decks (no need to worry about darken ship any longer), lifeboats and life rafts hastily being readied, men working madly, others seeking their abandon-ship stations on the sloping decks. No time to waste thinking about them, nor of the probability of wholesale destruction and death in broken engine rooms and scalding firerooms. This is what we came for! It's what they deserve! Let them die! It's what they did to our people at Pearl Harbor, on Bataan, and everywhere they touched! But I can't really hate them. I've killed them; I've done what had to be done, but I don't hate them. I'd do it over, but I feel sorry for them.

Both ships are listing badly now. How to avoid the convergence of three others, one of them a big transport, headed our way with unfriendly intent? The rudder is still hard over, our propellers at full thrust—well, not quite. *Shift the rudder! Put your rudder left full! All ahead emergency! Maneuvering, give her everything you've got!* Everyone below is fully awake to the perilous situation. Even the rudder mechanism seems to respond faster than usual. One can instantly feel the effect on the motion of the ship. The closest ships to us are still the two just torpedoed. There's room to slip between them, and it's what the enemy might least expect. Moreover, they'll not be able to do the same as easily, and they'll not be able to shoot at us with those others in the way.

Having had time to build up speed, throwing increased smoke from the exhaust ports as the last notch of power is demanded from her diesels, our boat swings rapidly left, toward the sinking ships. We steady her on the open space

Depth charges give the Guardfish a bad time. Despite this attack, the boat not only survived the war but received two Presidential Unit Citations.

FRANK FRENCHMAN

between them, let her lunge ahead. Our engines, so suddenly put on maximum emergency power, have left a large cloud of exhaust smoke at the spot where we did our fishtail maneuver. That will confuse the issue a bit more for our opponents. Passing between the two sinking ships, there is a moment to savor the full impact of the disaster we have wrought on them. The first one hit is now virtually on her beam ends and down by the stern. Everything on deck is in impossible confusion. Deck gear, hatch covers, loose barrels and lumber, lifeboats and life rafts—equipment of all sorts is sliding and falling down vertical decks into the water. The outlines of men can be seen everywhere, many of them apparently wearing their knapsacks, for their shoulders are bulky. Some are standing in clear silhouette on the now horizontal port side. Our engines are drowning out all other sound, but we can imagine the hoarse shouts, the screams, the sound of heavy objects falling into the water and the duller thuds of them falling inside the broken hull. The ship to port is a little farther away, but in equally bad shape. She was nearly as big as the lead ship, and she, too, is covered with agonized humanity.

Neither ship can last many minutes longer. Nearly everyone we see is doomed. For many, trapped inside in what is by now a topsy-turvy nightmare, the nightmare will be mercifully short. For some it is already over, in the stillness of a flooded compartment. Most important, here are two ships whose service to our enemy is now terminated. Their absence will bring the Empire of Japan that much closer to the end.

On the other side of the convoy, the port side, the situation is as chaotic as on the starboard. One of our torpedoes, running through the near column of ships, has struck a freighter in the far column. Her bow is completely gone, from halfway to the bridge. She'll be under inside of an hour. The two escorts on this side are not visible, yet, anyway. The two remaining ships of the port column have radically altered course and, so far as we can determine, are simply fleeing the scene. This is made to order. We are already going as fast as our diesels can drive us; we simply parallel the nearest ship, taking care to stay out of visual range, drive ahead and then slow way down, with diesels muttering softly again, keeping our stern toward him, barely maintaining steerageway, waiting for him to come on. He does not even zigzag; he maintains a steady course, no doubt wishing to put maximum distance between himself and the mayhem he has just witnessed. In vain, for two torpedoes come out of the blackness, and he is finished.

We have, in the meantime, directed the reload forward to resume. *Radar! Search all around and report!* The thing of greatest interest is the escort locations, for on this will depend our own next movements. There are two undamaged ships left of the original convoy, and four destroyer types with whom we'd as soon not tangle except in situations of our own choosing. While plot is evaluating the radar reports, we maintain moderate speed and steady course to ease reload. Eventually—it seems an interminable time—all torpedo tubes are reloaded and ready. In the meantime, we have begun to hear depth charges, under the circumstances a delightful sound. Plot announces that the two starboard escorts are milling around the spot where we made our first

attack. Evidently they think we made all that smoke when we dived, and whatever they are depth-charging, it is not us.

Daybreak is not far away. The two port-side escorts have joined with the single remaining ship of the port column and are escorting her on the original course, now zigzagging more radically than ever, and the third ship of the starboard column, which had sheered out toward us, is going it alone, still in that direction, diverging from the convoy's initial base course. We will have to select one of the two potential targets, for we cannot reach a submerged attack position for both. In the instant case, there is no choice. Up goes the power of our engines again, and plot is directed to steer us clear of all contact with the enemy until we can submerge unseen, just before first light, dead ahead of the track of the single ship.

It is dawn when our target comes over the hill. He is zigzagging, but he should have made a radical course change, too. Possibly he was on the point of doing so at daybreak, which was why we planned our diving spot so as to be shooting before sunrise. With no escort, the approach is simple, submarine-school textbook, despite the zigzag. To make sure, we fire three torpedoes in a standard spread and get one hit. It blows her guts out in a highly satisfactory manner, and we let everyone in the conning tower have a look as she goes down.

Five big ships on the bottom; an excellent night's work. One we could not by any stretch have accomplished in 1942. But this was in 1944, and the steady execution of her shipping had become a national disaster for Japan. Not nearly able to cope with the hemorrhage by building new ships to replace those being lost, she took to sending her ever fewer vessels in short daylight dashes from anchorage to anchorage. Instead of sending ships across the Yellow Sea, she sent them around its perimeter, along the coast of Korea to Tsingtao or Shanghai behind outlying islands whenever practicable. Anything to make the night surface attack less likely. Statistics backed up Japan on this, for by far the greatest damage to her shipping during those climactic last two years of the war came from submarines attacking on the surface at night.

But now, finally, there was nothing Japan could do.

Still, Japan had nearly succeeded at the outset of the war because we were unready, because we were materially deficient, and because some of our top people were culpably negligent. It was a very hard lesson, but it is one we must ponder very carefully, lest, in different ways to be sure, and over different details, we let it happen again.

☆ "Ned" Beach has been writing about the Navy since midshipman days and is author of *Run Silent, Run Deep*. He retired from active service in 1966 after commanding four submarines and is now at work on a history of the U.S. Navy.

Once they got weapons that worked, American subs could put in a night like this one, in which the Harder sank two destroyers with a single spread of torpedoes.

FRED FREEMAN