NAVAL AVIATION NEWS

Aircrewman in Action
Tire Conservation
Nanpo Shoto • Index

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RESTRICTED

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No. 3 in a Series

I'm all right, sir!

A SQUADRON of TBF's was scheduled to make a raid on Japanese shipping in the harbor of Rabaul. It was during this action that Marine Sgt. Lloyd Reed, Jr., radio gunner, won a letter of commendation for his gallant self-sacrifice and devotion to duty, proving again that Aircrewmen have what it takes.

Antiaircraft fire from ships and shore defenses was unusually intense. Seventy Jap fighters attacked the *Avengers* using aerial phosphorous bombs as well as machine guns and cannons.

Reed's pilot chose a large cargo ship for his target. As he started his approach, the TBF shook violently from the explosion of an antiaircraft shell.

Reed, who was busy firing his stinger gun to ward off Jap fighters, was suddenly thrown against his gun. The plane rocked dizzily while the pilot fought with the controls.

Back on an even keel, the pilot picked up his inter-com: "Pilot to gunner—Are you all right back there?"

"All right in the turret, Sir."

"How about you, Reed?"

There was a pause, and then Reed cleared his throat.

"I'm all right, Sir."

Reassured that no damage had been done to his crew or ship, the pilot started into his dive. The *Avenger* roared in at masthead level, and a 2,000 pounder crashed into the side of a Jap ship. Five seconds later it exploded. As the TBF sped out of the harbor, the pilot could hear Reed's .30 caliber gun firing and strafing the remaining Jap ships.

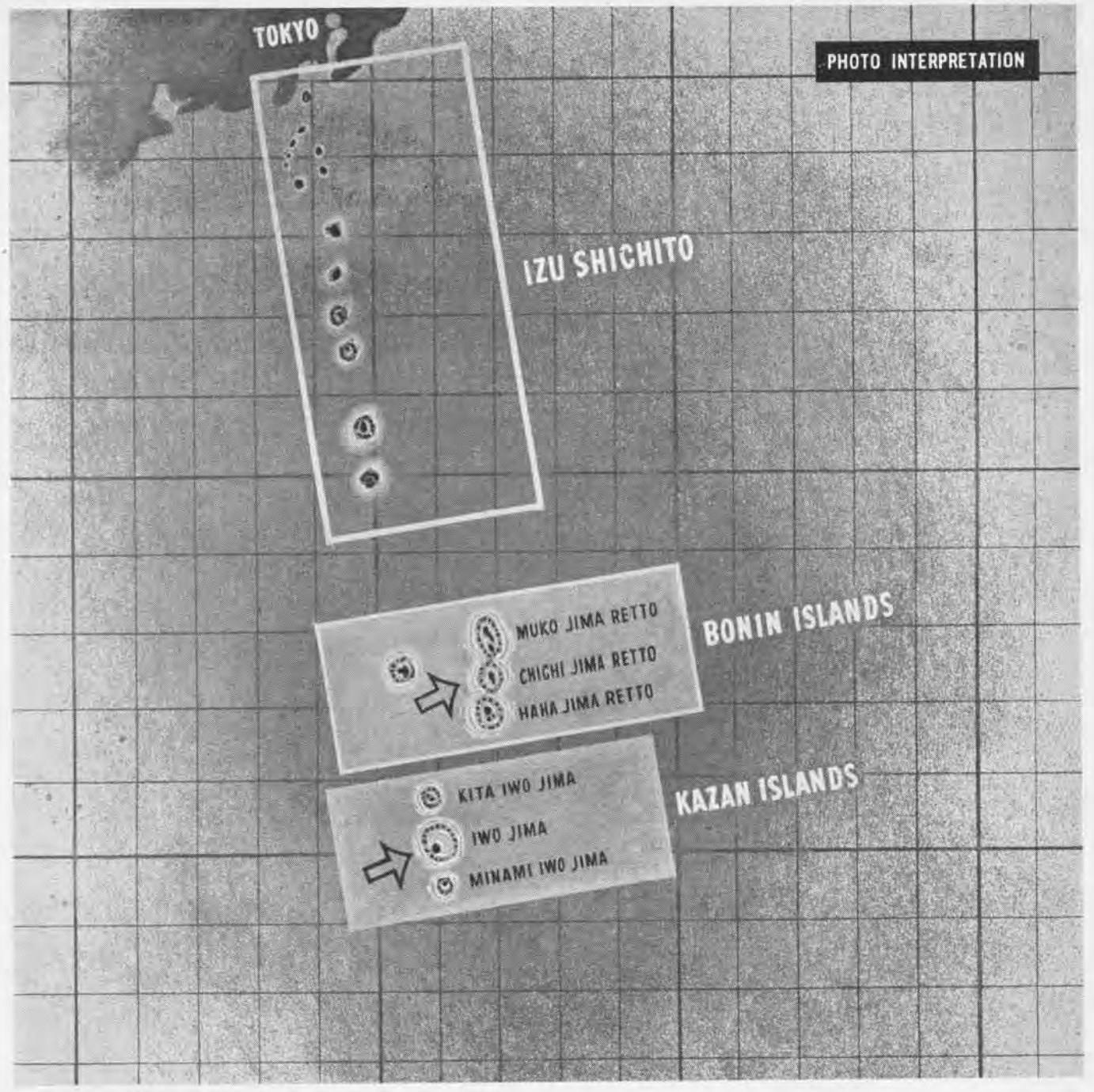
Divisions checked with each other. There were no planes damaged or shot down. No injuries were reported. The formation started home. Jap fighters heckled them for at least one-third of the way.

Reed, for the first time, forsook his gun. Everyone relaxed. Reed's pilot burst into his favorite song. Reed was silent.

Finally home base was sighted and the TBF began losing altitude. As they were circling the field, Reed called his pilot:

"Sir, would you mind making this landing especially smooth? My leg is broken."

Aircrewmen have what it takes!



NANPO SHOTO

THE NANPO SHOTO consists of a chain of volcanic islands beginning at the entrance to Tokyo Bay and stretching south for about 700 miles to Iwo Jima at the tail of the chain. Included among the "thousand unsinkable aircraft carriers" claimed by the Japanese in the Pacific, these islands lie in three main groups: the IZU islands in the north and nearest to Japan, followed by the BONINS and the KAZANS in a long linear arrangement which is continued southward through the Marianas to Guam. Vital link between Tokyo and the Mandated Islands, the Nanpo Shoto is an important strategic area of the Japanese Empire, an outpost protecting Japan on her southern flank and providing naval and air bases for any Japanese operations to the south of the mainland.

All the islands in the Nanpo Shoto are small, the largest barely exceeding 10 miles in length. All are hilly or mountainous, providing good sites for gun and observation installations and protection for the few beaches where landings might be made. These rugged islands lie in a direct line between our forces on Guam and Saipan and our target Tokyo—a last formidable bastion defending Japan from assault from the south.

CHICHI JIMA

KEY TO VITAL BONIN ISLAND CHAIN

THE BONIN ISLANDS, which the Japanese call Ogasawara Gunto, are the last rampart protecting the mainland of Japan itself and lie only 550 miles from the Japanese coast. Three groups of islands, Muko Jima Retto, Chichi Jima Retto and Haha Jima Retto, make up the archipelago. The largest and most important island in the Chichi Jima Retto is Chichi Jima, one of the most vital areas of the entire Nanpo Shoto and center of naval and seaplane activities.

As a naval station the Bonins came into their own in World War I. The thrusts which led to the Jap occupation of the former German colonies of the Marianas, Marshalls, and Carolines emanated from the Bonins. In 1922, when the problem of naval bases and fortifications in the Pacific was being discussed at the Washington Conference, the Japanese insisted that the Bonins be considered an integral part of Japan proper, outside the area to be restricted. An ensuing squabble delayed the signing for nine months.

During this time Japan rushed the building of new naval installations and fortifications in the Bonins as well as other outposts and was eventually ready to agree that the status quo could be maintained in these islands, the Kuriles, the Ryukyu islands and Formosa. Since that time installations in the Bonins have been considerably strengthened, and the islands have been strictly guarded from all outside visitors.

The Japs converted the islands into the northern anchor of their chain of "unsinkable carriers." Unlike some other links in that chain, the Bonins cannot be by-passed. Their rocky heights, encircling the main harbor of Port Lloyd, offer considerable shelter for Navy units and constitute an ever-present danger in the flank of any major air and sea-borne assault on Japan. Possession of these islands would bring Japan's capital cities into easy reach of long distance bombers.

The Emperor of Japan (wearing white suit and helmet) comes ashore for inspection tour of defense installations on Bonin Islands

The Navy visits the Bonins also. Pacific Fleet Task Force *Helldivers* re-form after striking islands 600 miles south of Tokyo

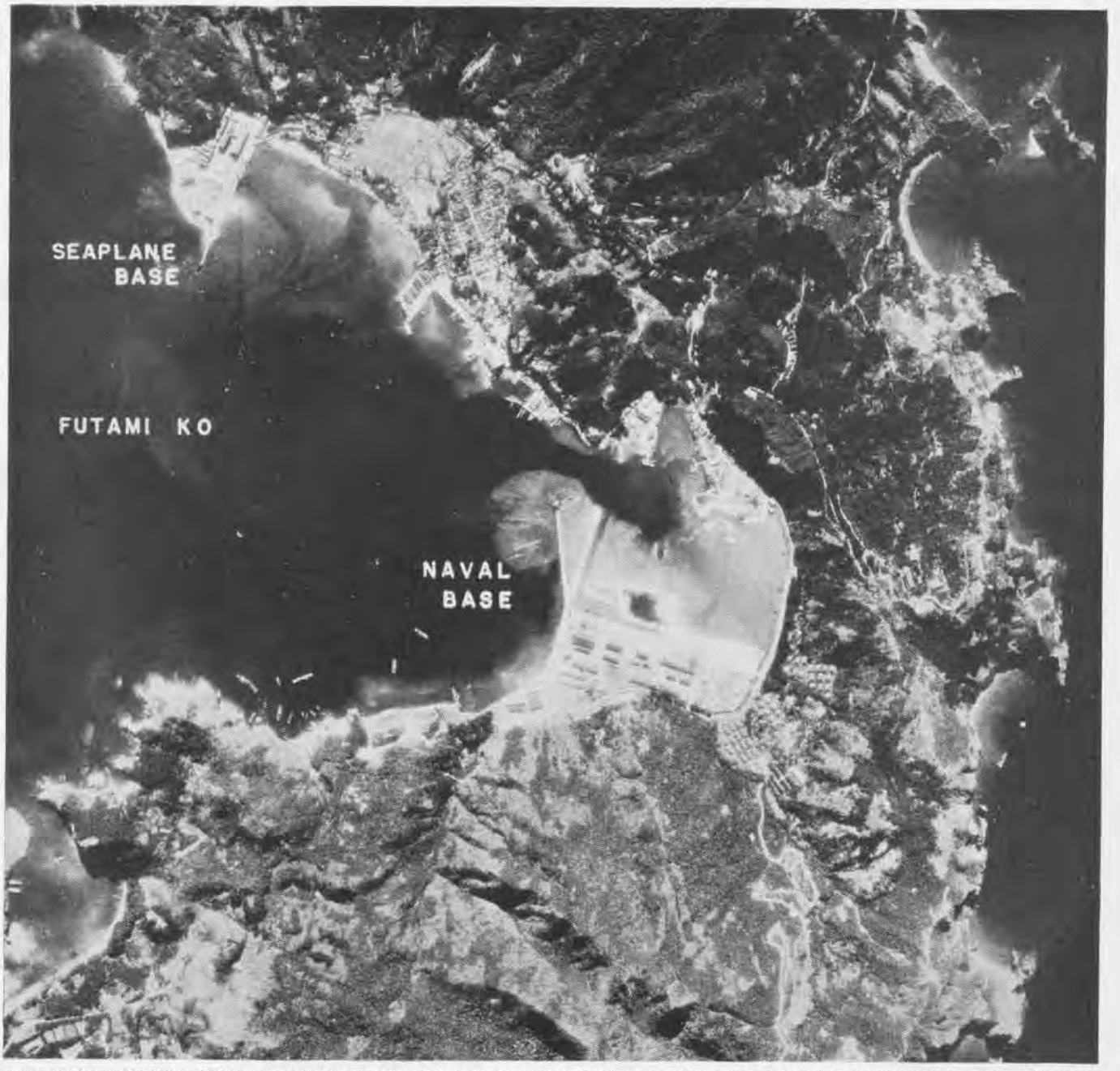
A LOW ALTITUDE VIEW OF THE SEAPLANE BASE ON CHICHI JIMA REVEALS INTERESTING MILITARY INFORMATION AND RESULTS OF NAVY BOMBINGS

UNITED STATES ONCE OWNED LAND IN BONINS FOR NAVY COALING USE

SADAYORI OGASAWARA, a Japanese navigator, is credited with the discovery of the Ogasawara Gunto in 1593. Because the islands were uninhabited the name "Bonin" meaning in Japanese "no men" became associated with them. There were no permanent settlers on the islands till 1830, and among these was one Nathaniel Savory of Massachusetts, whose descendants live today on Chichi Jima.

Commodore Perry visited Chichi Jima in 1853 and purchased a section of land in the name of the U.S., planning to maintain a coaling station there. With prophetic foresight he reported on his return to this country: "The duty of prosecuting our vast and rapidly growing commerce will make it not only a measure of wisdom, but of absolute necessity, to provide timely preparation for the events which must, in the ordinary course of things, transpire in the east." Bases not too far from the Jap mainland from which close watch could be kept on the island imperium and its budding expansionism were needed. Perry selected sites for two such bases in the Ryukyu islands and the Bonins. A glance at the map shows what foresight Perry showed in his choice of the Bonins. Situated in the same latitude as the Ryukyu chain, though some 15 degrees farther to the east, the little archipelago lies a mere 600 miles south by east of Tokyo, Yokohama, and the "Kiel of Japan," Yokosuka. But it was left to the Japs to cash in on Perry's dream. Though Japan took formal possession of the islands in 1862, because of civil war in Japan, no permanent settlement was established till 1875, at which time the U.S. renounced all claims.

These photos of some of the results of Japan's military planning and activities in the Bonins show the well-protected anchorage of Futami Ko where the Japs have built a naval and seaplane base and defense command headquarters close to the town of Omura. By filling in a reef and shallow water an airfield was built on the peninsula south of Futami Ko.



NAVY RECONNAISSANCE PHOTO TAKEN ON THE 4TH OF JULY AT 10,000 FEET ABOVE CHICHI JIMA SHOWS IMPORTANT FLEET ANCHORAGE OF FUTAMI KO

Navy camera looks down into cone of Suribachi Yama, 600 foot high volcano on tip of island. Airfield of Nanpo Shoto at center

Japs hide their planes in large excavated revetments covered with light framework for camouflage. Each "hide" houses several planes

IWO JIMA

KAZAN RETTO

THE KAZAN RETTO forms the southern end of the Nanpo Shoto. Three islands, Kita Iwo Jima, Iwo Jima and Minami Iwo Jima make up the group. Though less than 10 square miles in area Iwo Jima is the largest. Evidence of the volcanic origin of the island is the cone, Suribachi Yama, slightly over 600 feet in height, which forms the southwest tip of the island. The large northern end of the island is relatively level throughout the central portion. It has the appearance of a submarine volcano which has been truncated by wave action and elevated until far above sealevel.

From an air advocate's standpoint it is tactically and strategically the most important island in the whole Nanpo Shoto, offering the most practicable sites for bomber strips. The Japs have already built two airfields on the island. An arc drawn 750 nautical miles from Iwo Jima to the north and west would include a majority of the large industrial areas of Japan, and the cities of Nagasaki, Kobe, Osaka, Nagoya, Yokohama and Tokyo. That the Japs consider Iwo Jima a highly important defense center is evidenced in the extensive system of protection they have built along the shore, especially in the vicinity of the airfield. Navy Photo Interpreters have annotated the reconnaissance photo below, pointing out pillboxes, AA guns, machine gun positions, rifle pits, anti-tank ditches, trenches which make a bird-track pattern.

NAVY PHOTO INTERPRETERS ANALYZE BIRD-TRACK PATTERN OF SHORE DEFENSES BUILT BY JAPS CLOSE BY THEIR MAJOR AIRFIELD ON IWO JIMA

The major operative airfield in the Jap Nanpo Shoto is located on the flat ventral section of Iwo Jima. Clouds of smoke rise from Jap planes caught on the strips when Navy planes attacked the island on the 4th of July. Planes were scattered over the service apron, in areas paralleling the runways and in camouflaged blast shelters along the runways. Practically all of the building concentration on the low bluff north of the airfield, including barracks, warehouses and workshops, was completely destroyed or heavily damaged.

Connected to this airfield by two taxiways lined with excavated blast shelters is another airstrip, approximately 250 by 4750 feet and about a mile to the northeast. The Japs had started work on a third strip in the same vicinity, but the cut and fill operations were interrupted by Navy attacks.

GRAMPAW PETTIBONE

Blind Leading the Blind

A pilot with 1,050 hours was scheduled for a check-out in the J2F. Without inquiring as to who should give the check, he selected a pilot with only 1.5 hours in the J2F from whom to get the word. Either the check pilot forgot to give forth sufficient "gems" on take-off technique or the 1,050 hour pilot did not remember what he was told. On his first take-off, he did not apply sufficient right rudder tab and was unable to correct the inevitable left swerve. He then did not cut his throttle in time to avoid crashing into an embankment off the runway. The airplane was completely destroyed.

▸*COMMENT* — **Squadron commanders must make certain that only experienced pilots—experienced both in total flying hours and in the model airplane involved—are used for check-out pilots.**

Know What Your Plane Can Do

While spotting torpedoes, a TBF pilot dived to indicate the position of a torpedo and then pulled up into a steep climb. His plane stalled and fell into a spin from which he had insufficient altitude to recover. He and both crew members were killed in the crash.

The commanding officer said: "Prior to engaging in torpedo spotting, pilots are cautioned to observe proper tech-

nique and warned that numerous accidents have resulted from such a simple procedure. This pilot was new in the squadron and relatively inexperienced, even with his 386 flying hours. His actions indicated too much self-confidence in his ability; this is dangerous at any stage of flying."

▸*COMMENT*—**This looks like another high speed stall. The pilot probably had ample speed for normal flight, but not enough to compensate for the acceleration ("g") which was added in the zoom. Remember the rule: The stalling speed of an airplane increases as the square root of "g."**

Every Organization Has One

An instructor and two students were scheduled for night flying in TBM's at a field where the north-south and east-west runways form a "T," so that to take off in a northerly direction planes must taxi down the E-W runway to the intersection.

During briefing, the pilots were notified that the north course was to be used. In addition, the planes had to taxi past an illuminated numeral which indicated the runway in use and near a lighted tetrahedron which clearly indicated wind direction.

All this, plus an instructor to follow, wasn't even enough. By the time the instructor had taxied to the intersection, he found one of his students bearing down on him, taking off on the *east-west* runway. He gave his plane the gun and got clear. However, the other student, who was trailing the instructor, either did not see the approaching plane or didn't realize his danger, for he failed to "scatter." The entire crew of this plane was killed in the ensuing collision.

The erring pilot was recommended for reclassification.

Grampaw Pettibone says:

This is the sort of accident that makes older pilots skeptical, distrustful and suspicious.

I have an old truck-driver friend who is like that. A few years ago he was proclaimed the National Champion because he had driven more miles without ever having had a single accident, than anyone ever did before. When asked by the press for a statement as to what he attributed his success, he replied, "Well—I always drive my truck just as though everybody else on the road is crazy."

It isn't enough to do everything right yourself. You must also keep a weather eye out for the guy who doesn't get the word. Seemingly, there's one of these in every outfit. When the word is passed, either they are doping off, they aren't interested, they "know it all already," or they are just plain dumb. In aviation, it doesn't make much difference which; the results are usually the same.

A Pilot's Best Friend

While tail chasing during fighter tactics, a section leader went into a barrel roll at 3,500 feet and then a split-s, recovering at approximately 2,000 feet. When he climbed and gave the signal to join up, his wingman had disappeared. Later, it was found that the other plane had crashed at a high rate of speed and at an estimated angle of 30 degrees. Apparently, the pilot either had blacked out or lost control of the aircraft.

In an effort to prevent recurrence of such an accident, the squadron commander directed that 6,000 feet be the minimum altitude for all radical maneuvers in the future.

▸*COMMENT*—**Before engaging in aerobatics, all pilots should be thoroughly familiar with the "effects of high acceleration," as explained in T. N. 22-44.**

To engage unnecessarily in violent maneuvers at low altitude is to invite disaster. If blackout, material failure or a spin occurs, the pilot needs time to recover. The time depends on altitude. Hence the adage: "A pilot's best friend is altitude."

Helldivers joining up above two carriers somewhere in the wide Pacific demonstrate the precision flight and timing so necessary for operating with vast task forces now in action

GRAMPAW'S SAFETY QUIZ

All aviators should know the answers to these questions. In the air, the penalty for not knowing may prove fatal. If you miss an answer on the ground, penalize yourself by looking up the reference. If you don't, I claim you're a sucker!

1. When two planes in flight approach head-on, what corrective action should each pilot take?
2. Are Civil Air Regulations binding on navy pilots?
3. How much pilot time do you need in any type airplane before you may be cleared to fly it on instruments?
4. You are flying at 16,000 feet and begin to feel either drowsy, nauseated, over-confident or hilarious. What do?
5. After leaving the cockpit in an emergency parachute jump, what should be your first consideration?

ANSWERS ON PAGE 48

He Asked For It

A PBM pilot (1,550 hours), about to take off in a river, called the tower to check whether his take-off path around the bend was clear. He was unable to contact the tower immediately, however, so he decided to take a chance—despite the overloaded condition of his airplane and the general prevalence of small boats in the area.

This faulty decision might have cost the lives of 15 people; his own crew and the five people who were in the canoe he hit as he rounded the bend. The pilot was lucky this time, however, for he only side-swiped the canoe, dumping the occupants in the water without seriously injuring anyone.

The Wrong Way to Go Home

This is the sad story of a naval aviator who lost his life in an attempt to give his home town a thrill.

As he flew over, he couldn't resist the urge to demonstrate what a hot pilot he was. He went into a screaming dive and pulled out just above the trees. He zoomed up, reversed his course and down he went again. But this time he struck a tree and crashed in flames, almost in his own front yard.

Poor chap! And to think that the biggest thrill he could have given them was seeing him home again, alive and happy.

Mis-matched Wings

After the left wing of an SNJ had been damaged during a taxi accident, it was replaced with a later model wing with a different type of aileron control system. After replacement, the plane was flown successfully on 31 flights with the respective pilots remembering that, with ailerons neutral, the stick was slightly to the right of center. The 32nd pilot, however, forgot and when just about ready to contact the runway during his landing, he centered the control stick. His left wing scraped the runway, resulting in extensive wing damage.

▸*COMMENT*—When issued, the modified SNJ wings were marked with a warning to use them only in pairs. Complete details were given to the service in SNJ-3 Bulletin #21 and SNJ-4 #15.

This accident was due to direct violation of these instructions.

Be Prepared

An FM-1 failed to return from a routine practice gunnery flight. Immediate search resulted in the discovery of the airplane on its back in a swamp. The pilot was dead—not from injuries, but from *asphyxiation*.

Further investigation revealed that the pilot had been making a forced landing when the crash occurred. It was determined that the plane had been in flight approximately forty minutes prior to the crash. The selector valve was on reserve. There was no evidence of leakage from the reserve fuel tank after the crash, but there had been leakage from the main tank.

All of these led the investigating board to believe that the pilot had taken off on reserve tank and thereafter had failed to switch to the main tank, resulting in fuel exhaustion and the forced landing. He attempted the landing with wheels down in soft terrain. The wheels caught in the soft mud of the swamp, causing the plane to flip over on its back.

▸*COMMENT*—Basic cause of this accident appears to have been the oft-repeated error of failing to shift fuel tanks. This should require no comment.

A second error was committed in this case, however, which probably cost the pilot his life. He landed with his wheels down. As pointed out in Flight Safety Bulletin 14-44, aircraft seldom turn over if landed *wheels-up* in swamp-land. Why this pilot elected to land wheels-down will never be known. Maybe he had never read this bulletin. Maybe he forgot what it said. Maybe he got rattled in the excitement of a forced landing. Or maybe he thought it wasn't important and just ignored the advice.

The moral is clear: Be so familiar with safety directives that compliance in emergencies will be automatic.

It can happen to you! *This happened when a simulated emergency was carried too low and contact was made with a tree. Both the instructor and student were injured.*

Neutral Blower for Diving

While practicing overhead gunnery runs, the pilot of an F4U-1 noticed his engine was cutting out. Power could not be regained, resulting in a forced landing in the ocean.

Upon questioning the pilot, it was discovered that he had been operating in auxiliary blower all during his gunnery practice. This was in direct disregard of instructions and probably caused the engine failure. *Pilot's Handbook* says that all diving should be done in neutral blower.

▸*COMMENT*—Prolonged steep dives should be conducted in "low" ratio for two-speed engines and in "neutral" ratio for two-stage engines. For the F6F, as well as the F4U, this means the "neutral" blower should be used. It is also possible that this pilot closed the throttle during his runs, a procedure that should never be employed with auxiliary blower.

See Technical Order #110-44, just issued.

SQUADRON NOTES

Venturas have a picnic. Destroying a Japanese convoy 200 miles south of Truk seemed like a picnic to officers and men of a Navy *Ventura* patrol squadron that ordinarily spends much of its time spotting subs and surface craft for the bombers to sink. "We had a whale of a good time" said the patrol squadron skipper.

Final score after two days of bombing and strafing the convoy showed one 1,100-ton transport and two small cargo vessels sunk, one 1,500-ton transport probably sunk, one gunboat severely damaged, one fighter plane shot down and another probably destroyed.

'Cats' Sink Barges. Thousands of Japanese soldiers were killed and tons of equipment and supplies sent to the bottom through operations of a "Black Cat" squadron, known as "Rankin's Night Raiders," now in this country after eight months in the South Pacific.

The black-painted PBY's destroyed 34 barges and two merchant ships in their night forays against enemy water supply lines around Choiseul, Bougainville, New Britain and New Ireland. They contacted a total of 186 barges and five ships, with most of those escaping the *Cats*, finally were sunk by PT boats or destroyers. Many of the planes served as contacts, keeping the enemy spotted and the area lighted with flares until surface vessels closed in for the kills.

The squadron did not lose a plane or a man during its tour of duty. Besides attacking shipping, it also went on bombing missions, spotted targets for cruiser and destroyer batteries, flew cover with convoys and task units, made weather intelligence flights, open sea rescue missions, carried mail, passengers and supplies.

In all they flew 1,777 sorties, piling up 7,616 flight hours, of which more than half were at night. They dropped 579,200 lbs. of bombs and rescued seven airmen.

Avenger Downs Jap Betty. Recent combat reports from the Pacific tell the story of an unusual seven-round fight between a Navy *Avenger* torpedo plane and a Japanese *Betty*. The torpedo plane was on a reconnaissance mission near the Marianas when the pilot sighted the Jap four miles away. The *Avenger* gave chase with both planes skimming low over the water. Several times during the fight the Navy pilot's guns jammed. On one such occasion the Navy pilot attempted to chew a wing off the *Betty* with his propeller and actually got within inches of the Jap. At another time the planes were so close together a Navy crewman, unable to bring his machine gun to bear, threw back a hatch and emptied his revolver into the *Betty*. In the *Avenger's* final run the Jap burst into flames and burned after hitting the water.

> "Operational accidents were cut to a minimum in our squadron. Each division leader was always careful to point out any errors made, so they were seldom repeated. We were picayunish about little mistakes and were very *particular about elementary safety precautions*. It paid big dividends!"
>
> (Excerpt from interview of a squadron commander recently returned from a successful tour of carrier duty, Pacific.)

Liberator Becomes a Fighter. Not long after passing a Navy task force enronte to Saipan, the pilot of a Fleet Air Wing Two *Liberator* sighted a Jap twin-engined fighter plane. The Jap was faster but he was on a course which would intercept the task force. Without hesitation the *Liberator* nosed down to escape detection by the Jap, circled to the left and began climbing to come up on the fighter's tail. At 1,200 feet the Navy plane opened fire and in a matter of moments the enemy went down in flames. Only six minutes elapsed from the time the Jap was sighted until he hit the water.

VC-1 Disbands. Battle records of Composite Squadron One, first of the Navy's "baby flattop" squadrons, Dive Bombing Squadron 98, and Air Group Five were revealed recently when the three units were disbanded or returned to the continent for rest and reassignment.

VC-1 pioneered carrier plane operations against U-boats, dividing its time between the *Long Island* and the *Card*. Twenty-seven of its members have been given decorations or commendations for combat service against submarines. After a tour of duty on the larger *Long Island* starting in 1941, VC-1 swapped its SBC's and F2A's for *Avengers* and *Wildcats* and went aboard the *Card* when that vessel was converted to an escort carrier.

Besides its Presidential Citation for anti-sub work on that vessel, the squadron also flew protective cover for American carrier task forces at Midway while on the *Long Island* and gave air protection for President Roosevelt while en route to Teheran. No Allied ship ever was lost in any convoy for which its planes flew protection. VC-1 recently was disbanded.

Air Group Five, one of the first based on the new 27,000-ton carriers, came back for rest after destroying or damaging 428 Jap planes, sinking or damaging 59 Jap ships totaling 292,000 tons, and causing incalculable damage to enemy shore installations by bombing. The group lost only 11 personnel and 15 planes.

Included in its record were strikes at Marcus, Wake, the Gilberts, the Marshalls, Truk, Saipan, Palau, Woleai and New Guinea—a record for sustained action unequalled by any air group so far to return home. These covered a period of eight months. Fighting Five, flying *Hellcats*, knocked down 59 Jap planes in aerial combat, losing only one to Jap fighters and six to anti-aircraft fire.

Bombing Squadron 98, returned to rest, put in 7,200 hours of combat flying, during which it damaged 25 Jap ships, made 85 hits on Jap antiaircraft guns and downed 41 Jap planes. The land-based squadron operated in the Solomons, New Guinea and New Britain for 28 weeks, losing only two pilots and two gunners in combat.

Hawky-Tawky. The vociferous "Hawky-Tawky" from the comic strip "Barney Google and Snuffy Smith" has been adopted as one squadron's insignia. The Hawky-Tawky is described as having profuse and highly colored plumage. Its habitat is the South Pacific and it speaks fluent English, Japanese and Melanesian as well as twenty-seven tribal dialects and 462 bird calls and warblings.

It is pictured in the insignia from a three-quarters view, sitting astride a *Corsair* with its long tail trailing in the wind and a Japanese flag indicating superiority over the enemy painted on its long and wickedly curved beak.

Catalinas Rescue 52 Men. Pilots of Patrol Squadron 19 which recently returned from its second tour of duty in the Pacific, rescued 52 aviators and PT boatmen during 20 open sea landings. In one landing, 13 PT boatmen and their dog were rescued by a member of this veteran Navy *Catalina* flying boat squadron. Five of the remaining landings were made under enemy shell fire, the rest of the 52 survivors being Navy, Army and Marine Corps aviators. All rescues were made during the last three months of the squadron's second tour. In its first tour the squadron took part in the battle of Midway and other engagements.

TIRE CONSERVATION

TIRES ON LINE OF SNB'S WEAR BLOUSES TO PROTECT THEM FROM SUN AND DRIPPING OIL. THIS IS NECESSARY PART OF CONSERVATION PROGRAM

Extreme Care Needed To Stretch Limited Supply Tires, Tubes

THE United States is suffering from an acute tire shortage. The nation's stockpile of crude rubber has shrunk to new lows. Despite large scale conversion to synthetic rubber, most aircraft tires are still made with blends of synthetic and crude rubber. Most tubes are made of a blend of crude and reclaimed rubber. Thus, aircraft tires and tubes require a large proportion of the crude rubber available. Although production of airplane tires was more than doubled between May 1943 and May 1944, tire inventories are deficient. Furthermore, manufacturers lack the facilities and manpower for continued expansion of production. Tire conservation is of critical importance.

EACH OF THESE TIRES SHOWS A BREAKDOWN IN TIRE CONSERVATION. PROPER INSPECTION AND MAINTENANCE OF TIRES PREVENTS SUCH ABUSES

Aircraft Tire Conservation Program

CONSERVATION Bulletin No. 2, prepared by the OP&M area supervisor for conservation in the Fifth, Sixth, Seventh and Eighth Naval Districts, contains a check list of items to be covered by a complete aircraft tire conservation program. A modification of this check list is presented below for use by tire conservation officers (appointed in accordance with BuAer letter Aer-Ma-128-SPB (92665) of 23 May 1944) and for all other personnel concerned with the problem of conservation.

If all activities concerned follow this check list, naval aviation will make a large contribution to the solution of what is at present the most critical of all material shortages—the rubber tire shortage.

A. Inspection of Tires on Airplanes.

1. Check for reversal of tires to effect even wear.
2. Check for correct inflation every 24 hours.
3. Check valves for leaks and valve caps.
4. Check for abnormal wear.
5. Check landing gear for objects caught between gear and tire, for broken or loose parts which might damage the tire.

6. Check wheel wells for objects which might damage the tire or prevent landing gear retraction.
7. Inspect wheel and brake drum for damage, checking all visible bolts and nuts.
8. Check tire for damage or wear requiring removal for repair or recapping. Identify damaged tire with tag stating date, squadron number, condition of tire. Mark damaged area with chalk.

B. Inspection of Dismounted Tires and Tubes.

1. Dismount and inspect tires and tubes after 50 to 100 normal landings.
2. Inspect tread, sidewall, bead and inside of tire.
3. Check for ply separation.
4. Submerge tube in water and check for leaks.
5. Scrap tubes with severe wrinkles.
6. Inspect tube for chafing.
7. Inspect tubes for thinning out due to brake heat.
8. Inspect wheels for damage.

C. Inspection of Turned in Tires and Tubes.

1. Inspect tires and tubes and classify; *Useable, Useable after repair, Useable after recapping, Useable on ground vehicles, Useable on ground vehicles after repair or recapping, Scrap.*
2. Analyze tire and tube damage and record by serial number of tire, squadron number, and type of abuse, i.e., uneven wear, bead damage, bruise, run-flat, premature removal, tardy removal, flex break, etc.
3. Route tires and tubes to channels indicated by classification.
4. Report in detail all abnormal failures to BuAer by RUDAI so that corrective engineering action can be taken.

D. Inspection of Tires and Tubes in hands of local contractors.

1. Inspect and classify tires and tubes, as above, making sure that none are wrongly classified as scrap.
2. Route to proper channels tires and tubes suitable only for use on ground vehicles.

E. Tire and Tube Maintenance.

1. Use central tire changing location where experienced personnel, bead loosening press, or Polt tire machine, and other necessary tools are available.
2. Use axle device to hold wheel while tire is being changed when tools other than Polt tire machine are being used.
3. Use Polt tire machine for drop center wheels with non-removable flanges.
4. Lubricate the bead with soapstone paste when changing a tire.

5. Cover tires on standing planes to protect from sun and oil.
6. Cover tires when engines are changed.
7. Keep runways, aprons and beaching ramps free of foreign objects by frequent periodic cleaning.
8. Wash off beaching gear tires with fresh water and cover when not in use.
9. Trace tire injuries to source and start preventive maintenance.
10. Remove tires from stricken planes as soon as possible, keeping them inflated and free of damage until removed.
11. Cover ends of steel planking and landing mats used in forward areas and keep mats in repair.

F. Storage and Issue.

1. Store tires vertically in racks in a cool, dark, dry place free of drafts. Store tubes in original containers.
2. Keep inventories of tires and tubes at a minimum.
3. Issue no new tires of a given size until recapped tires are used up.
4. Issue no tires except in exchange for turned in tires.
5. Store tires properly even in Class 265, A&R, scrap yard, etc. Keep them away from sunlight and oil and do not pile one on top of another.

G. Repair and Retreading.

1. Use local contractors for repair and recapping whenever possible to relieve load on tire manufacturers.
2. When not available, establish tube and bead repair facilities on the station or at plants of local contractors.

H. Airplane Operation.

1. Avoid excessive use of brakes during landing runs, taxiing and turning.

I. Education Program.

1. Distribute to cognizant personnel technical information and manuals on tire maintenance and conservation.

2. Place tire conservation posters in conspicuous locations where interested personnel will see them.
3. Hold periodic meetings of personnel directly concerned with tire conservation (such as squadron or auxiliary field tire conservation officers), demonstrating typical examples of abuse and correct procedures.

J. Organization.

1. Hold responsible selected personnel for the performance and supervision of all the above functions.
2. Select a single officer to supervise all phases of tire conservation program.

HOW NOT TO TEACH

NEGATIVE APPROACH EXPLAINING WHAT NOT TO DO IN TEACHING OPERATIONAL STUDENTS MARKS ADVANCE AT JACKSONVILLE INSTRUCTORS SCHOOL

KNOWING a subject doesn't mean knowing how to teach it to others, so the teacher must be primed in the best way to transfer knowledge from his own head to the student's. That is the doctrine upon which the Jacksonville NAOTC School for Instructors works to make sure that operational students will retain a maximum of what they are taught by instructors brought back from action arenas in the Pacific.

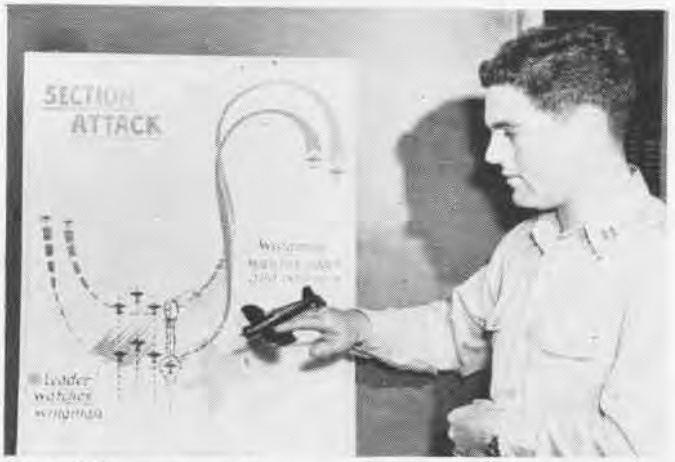
The instructors know plenty about their subjects, having picked up first-hand knowledge in gunnery, tactics, communications, engineering and navigation right in the smoke of battle. What they get in the School for Instructors is how to present this knowledge in a way that excites a desire to learn.

To accomplish this, the School exposes its future instructors to the most modern teaching techniques in a series of round-table conferences in which effective and ineffective methods are demonstrated in the light of the impact they make on the student.

Chief objective in teaching, the instructors learn, is to attract the interest of the operational student in the subject, selling him on the idea of learning, *not* remembering, all he can. Besides finding out how to arrange material for their courses for vivid presentation, instructors are introduced to modern "presentation teaching," which outmodes old and slower methods of "passing the word," and involves use of visual aids, audience participation movies, synthetic training devices and other methods that have passed acid tests.

IRRESISTIBLE to incipient instructors are demonstrations on "How *not* to teach" which mimic horrible examples of what not to do and how not to act.

Conferences outmode conventional classroom when future instructors from Pacific learn latest techniques to interest students



Demonstration with models against descriptive chart background makes the plane's action real, enables students to visualize easily

SHORE STATIONS

▸NAS CLINTON—Biscuits are more dangerous than bombs to soldiers' teeth, according to a report published recently in the *Army Journal*. Dentists have reported that K rations impair more teeth than bomb concussion. And their advice to fighting men is—"dunk."

▸NATC MEMPHIS—A breakdown of totals of all naval personnel as of 30 June 1944, discloses that the State of New York leads all other states in their number of men in the Navy. Its total of nearly 300,000 is closely followed by California, though California has but half the population of the Empire State. Pennsylvania and Illinois run third and fourth respectively.

▸MCAD MIRAMAR—Transforming raw recruits fresh from all walks of life into skillful barbers within a few weeks is not an easy task, according to tonsorial experts at the PX barber shop.

The shop trims the heads of approximately 17,000 Marines every month. To handle this flow of shaggy Leathernecks, the shop maintains a staff of 35 assistants.

A constant turnover of staff demands the continuous addition of new men. Under the tutelage of the NCO who has had 18 years' experience, a class of 10 "haircutters" is turned out every three weeks. As fast as the men are trained, they leave for combat zones to ply their new trade.

▸NAS OTTUMWA—Last summer most of the cadets who came here for their primary flight training were directly from the nation's college campuses. The only warfare they had seen was in the newsreels.

This summer, however, the cadets being ordered to Ottumwa for flight training are typified by the 35 members of Cadet Class 6C. Of the 35, there are 29 who have seen foreign duty and more than a dozen who have actually traded shots with the enemy.

▸MCAS SANTA BARBARA—A $15,000 gymnasium is under construction at this station and will be completed sometime in November. The playing floor will be 128'x80'. The building will take care of all standard games such as basketball, volleyball, indoor baseball, boxing, and wrestling, as well as space for lectures, drill and movies.

▸NATC PENSACOLA—Two French-speaking WAVE officers play a unique role in naval air training by acting as interpreters, instructors and, at times, as virtual guardian-advisors to a group of chief petty officers of the French Navy who are receiving refresher flight training here. The Frenchmen, all pilots from North Africa, speak little English. It is the job of the WAVE officers to interpret lessons, orders, schedules and assist them in all places where their lack of knowledge of the English language handicaps them. An innovation in air training, these two WAVES have aided in conducting the Frenchmen through their entire training, even accompanying them to auxiliary stations where they received specialized instruction.

MCAS EL CENTRO—Gyrenes at this station have designed a unique campaign ribbon of their own. It has a bit of dark sandpaper for its background (regular ribbon size) and attached thereto is a one-quarter-inch screw with nut to match. To merit this coveted chest adornment one must be able to bear excessive amounts of heat, or the next thing to Hades itself. Coupled with this, the candidate must masticate a quart of dust daily, with beer as a chaser.

▸NAS DALLAS—Although the jeep easily could be termed the modern version of the Army mule, it is really the "flying horse" at this station. French cadets have been having difficulty with throttle coordination, use of brakes and rudder, etc., because most of them have never driven an automobile or operated any other piece of machinery powered by a gasoline engine. They now are given preliminary flight instruction in a jeep, and the standard size air field is none too large for such training. After they have been taught to understand the use of the throttle and how to control the engine, they enter an airplane for the first time with more understanding of what makes it tick.

▸MCAD MIRAMAR—Approximately 2,500 long distance telephone calls a week now are flowing through the new telephone exchange at this depot. All Marine aviation personnel returning from the South Pacific funnels through Miramar, and the result is that calls are made by veterans to relatives and friends in every part of U. S.

▸NATC CORPUS CHRISTI—Aviation cadet training now includes a comprehensive study of the war. Subjects include background of the conflicts, issues, forces involved, objectives and ambitions of all belligerents. War orientation officers who teach these subjects plan to discuss the current news each week. Although the courses vary in length for specialized, basic, and instrument squadrons, the syllabus will include: "The Problem of Germany," "Hitler Germany on the March," "Japan's Rise to Power," "Why Japan Fights," and "Our Fighting Allies."

▸MCAD MIRAMAR—Here's a nice gesture. The driver of a large truck pulled onto the shoulder of the highway and took aboard a group of Marines headed for Los Angeles on liberty. The truck carried approximately 50 men. Nearing the Los Angeles city limits, the Marines passed the hat, collecting $50 for the driver.

▸NATTC JACKSONVILLE—A Marine sergeant, now at AEM school, was formerly stationed at Henderson Field. He and his buddy constructed one of the better foxholes there to protect themselves from Japanese raiding parties. The MP's at the field, who were negroes, knowing this particular foxhole to be a good one, used to beat the Marines to it whenever there was a Nip bombing. "My pal and I," said the Marine sergeant, "got a Jap skull, polished it and mounted it on a post in front of the foxhole. We then rigged up a couple of lights for eyes and waited for the alarm. It came, and so did the MP's. The latter did not stay. When those eyes lit up, the boys took off and may be running yet." From then on the foxhole was reserved without difficulty for the owners.

▸NAS LAKEHURST—Civilian and service personnel, who gazed skyward recently, were bewildered to find Jap *Zeros* in the area. Several training planes at Lakehurst had been painted with Japanese insignia and were being used by M-G-M in filming the movie, "Airship Squadron Four." One of the sequences calls for a blimp attack.

▸NAS ST. LOUIS—A recently attached officer arrived on the breeze of a good laugh. Newly commissioned and painfully proud of the gold braid on his sleeves, the ensign boarded a St. Louis train in Chicago. The porter, with prospects of a fat tip, proceeded to do his diplomatic best.

"Mo'nin' lieutenant," he grinned. And a few minutes later, "Find it too warm in here, commander?" In a short time he volunteered: "We's a speck late today, captain." Then as the ensign made ready to leave, "Brush your coat, admiral."

Three minutes later he was inspecting the 10 cent tip. With a bellow that could be heard throughout the car, he shouted at the departing officer, "Goodbye, Mac!"

▶NPFS ST. MARY'S—An elderly lady was making the rounds in one of the wards at the naval hospital recently, when she came to the bed of a Y2c stationed here in the personnel office. "And where were you injured, my good man?" she asked. "In Lafayette," he answered. Before he could tell the kindly woman that he was in an automobile accident not far from the hospital, she said sympathetically, "That French invasion was tough, wasn't it?"

▶NATC CORPUS CHRISTI—Conventional hay-making tools would not serve the purpose of this activity, and there was a

CORPUS CHRISTI MOWS TALL GRASS ON FIELDS

possibility the crop might impede cadet training. So Texans invented the "Grass Blitzkrieg." Fast mowers and a carry-all which will haul up to five tons at a time are the essentials of the Texas method. Now a 250-acre field can be cleared in two and a half days instead of six, and the crew has been reduced from 40 to 15 men.

▶NAS BUNKER HILL—A weekly foreign service round-table discussion group was inaugurated in July. Various officers, who have recently returned from foreign duty, are called upon to lead the parley, and officers who have not had sea duty feel free to question the more experienced men. General subjects have included the following: "Carrier Duty," "Foreign Shore Duty," "Duty with Fighter Squadrons," and "Administrative and Damage Control Duty Aboard Carriers."

▶NATC CORPUS CHRISTI—A fully equipped instrument panel is being installed to increase the realism of navigational classroom problems in aviation cadet training. Drift, speed and other factors affecting the student pilot's hypothetical position will register directly on the instruments. Reading this data, he will plot his course as if he were at the controls of a plane. Thus it will seem as if classroom problems have been lifted bodily from the log of some carrier or operational base.

▶NAS PEARL HARBOR—Denizens of Hut No. 7 believe in expressing anniversary greetings the old-fashioned way—one whack for each year. A custom-made paddle, finely sandpapered and shellacked, is used for the purpose. While making use of this beautiful paddle, one sailor suddenly remembered that his own birthday was only a couple of days off. He paused in mid-air and solicitiously inquired of his victim, "Sure I'm not hitting you too hard?"

TOKYO TALKS

—TO CHINA

A Compulsory labor service law for all unmarried able-bodied girls and women from 12 to 40 years of age, with the exception of those whose families are dependent on them, went into effect recently in Japan.

—TO JAPAN

The Japanese Domei agency said recently that the Philippine president, Jose P. Laurel, had ordered the closing of all Philippine night clubs, cabarets, dancing schools or dance halls, because they are not serving a constructive purpose at a time when the entire nation is geared for reconstruction. Mayor Leon G. Guinto of Manila proposed the closing, said Domei. Guinto was said to have informed Laurel that the public supported the proposal.

—TO JAPAN

The Tokyo home radio announced recently that the Japanese Ministry of Finance would start a movement soon for the collection of privately owned silver throughout the nation. The domestic broadcast said that the Central Material Salvage Association would be in charge of buying the silverware. Articles to be collected are silver articles used in homes, other than Imperial gifts, such as toilet articles, trinkets, tableware, smoking facilities and writing materials. Obsolete or foreign silver coins will also be collected.

—TO CHINA

As Japanese troops advanced on Chinese soil, the Tokyo radio attempted to persuade the Chinese that the troops merely were seeking to protect them from the evil designs of America and Great Britain.

—TO JAPAN

"Frankly, the war situation in Pacific waters is not favorable to us," the Mainichi Shimbun of Osaka, one of Japan's largest and most influential newspapers, said a short time ago, but declared that the efforts of the United States Navy to "lure our combined fleet out in the open and engage it in decisive battle" offered Japan a "rare opportunity" and promised that "without the slightest doubt, our combined fleet is now mapping the strategy to defeat the enemy with one swoop."

"The Japanese people live on inspiration," the Mainichi Shimbun continued. "Even the best plan and the best ideas become worthless if the right time is lost. The government should remember the people are waiting for the coming inspiration at a propitious moment."

—TO THE UNITED STATES

Following are two excerpts from the Japanese *Elegy for Saipan:*

Land of the Gods, fear not:
Come a million American barbarians
Our fighting spirit, once aroused,
Shall make the nation rise as one.

We, who revere Mount Fuji today,
What is there to hold us back?
The day of retribution nears,
The hour for annihilation nears!

—TO JAPAN

Committee for the "study of policies for post-war programs" advanced a six-point plan for a "new world order" a la Japanese style. The objectives were "propagation of the Imperial way"; spreading of the "idea of the common fate of friendly allied powers"; a "study of harmful ideas"; the "exposing of tricky enemy propaganda"; "research on post-war plans"; a "practical study of a new world order." The committee has scheduled future monthly meetings "to deliberate with the expectation that the plans will materialize."

—TO MANCHURIA

The Japanese have launched a new conscription of men for their army in occupied Manchuria with a solemn warning that the mounting seriousness of the war situation has placed an increased responsibility on that force in guarding the northern border and defending the national territory. Boys between the ages of 15 and 18 will be conscripted under provisions of a partial revision of the national army system to provide a boys' army in the national army. These youths are to serve as members of antiaircraft units, mobile units, airplane crews, and communications units and pilots in Manchuria.

SHOW ME THE WAY TO GO HOME

CELESTIAL FIX

On January 1, 1943, the navigator of a patrol plane whose ZT 0900 DR position was Lat. 27° 00′ N, Long. 120° 20′ W, Cus 360°, PGS 150 k, took the following observations of the sun and moon with a bubble sextant: I.C. + 15′, watch error one minute slow on ZT. Flight altitude 5,000 ft.

Body	Sun	Moon
WT	08-56-00	09-02-30
h_s	21° 54′	47° 20′

Fill in the following blanks:

Sun		Moon	
a—Hc	.....	d—Hc	.....
b—'a'	.....	e—'a'	.....
c—Zn	.....	f—Zn	.....
		g—ZT 0900 Fix	
		Lat.	.....
		Long.	.....

(Answers on page 48)

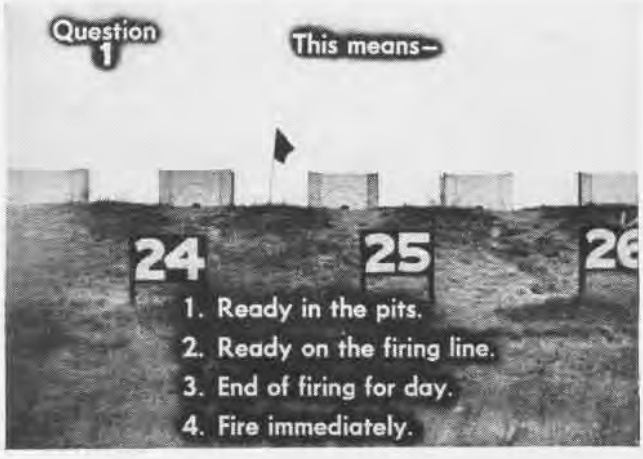
PIX QUIZ WHAT DO YOU KNOW ABOUT SMALL ARMS?

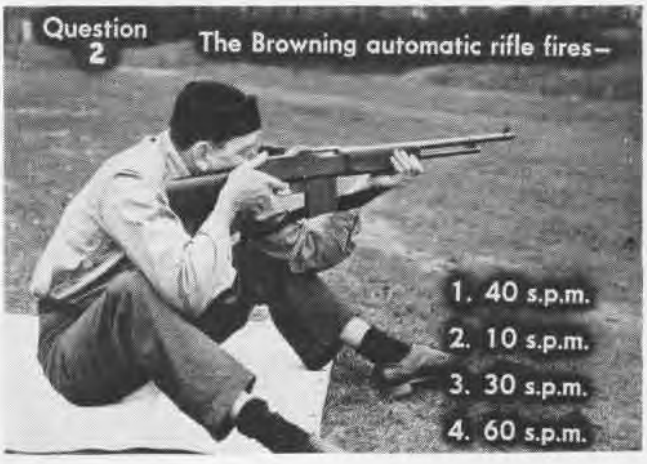
TIME was when marksmanship was considered by many as nothing more than another sport. World War II changed that attitude, and marksmanship now often spells the difference between victory and defeat in battle. Check these questions. Answers on Pg. 48.

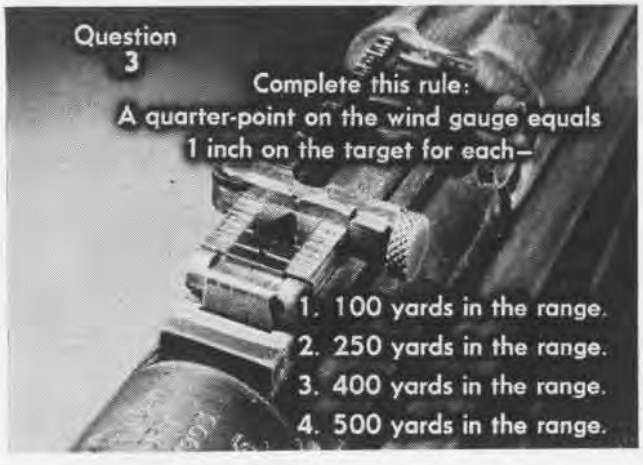
[QUESTIONS FROM BUAER SPECIAL DEVICES VISUAL QUIZZER FILM NO. 62, MILITARY DRILL & SMALL ARMS]

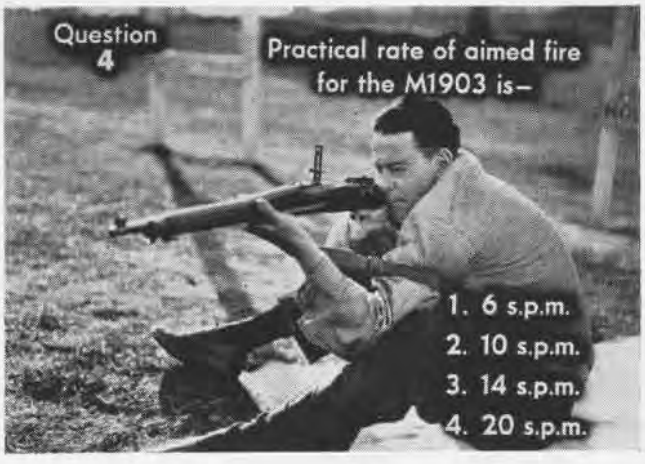
Write answers here

1. ..... 4. .....
2. ..... 5. .....
3. ..... 6. .....









PUBLICATIONS

The following Flight Safety Bulletins, Aviation Circular Letters, Technical Orders and Technical Notes have been issued since 1 August 1944. Copies are available on request to Publications Section, Bureau of Aeronautics.

FLIGHT SAFETY BULLETINS

24-44 *Oxygen—Orders Regarding Use of.*
25-44 *How to Regain Fuel Suction.*
26-44 *Model F4U-1 Airplane, Model F3A-1 Airplane, Model FG-1 Airplane Carbon Monoxide Contamination—Prevention of in Pilot's Cockpit.*
27-44 *Model F4U-F3A-FG Airplanes Wingfold Mechanism—Instructions to Prevent Folding of Wings in Flight.*
28-44 *Automotive Equipment on Flying Fields.*
29-44 *Emergency Landings PB4Y Series.*

AVIATION CIRCULAR LETTERS

77-44 *Field Maintenance Program for the Gun Fire Interrupter of the Martin CH and Martin CE Turrets—Establishment of.*
78-44 *Airborne Radio/Radar and Special Equipment—Requests for Parts Not Provided in Bulk Spares.*
79-44 *Hoisting and Tricing Slings for Aircraft Carrier Type Airplanes.*
80-44 *Airframe and Engine Accessories Repair and Provisioning Policy—Issuance Of.*
81-44 *BuAer Policy Relative to Overhaul, Reconditioning, and Workload Schedules for Combat Type Aircraft.*
82-44 *Direction of Aircraft by United States Navy Control Tower Personnel.*
83-44 *Night Vision Training.*
84-44 *Weight and Balance of Aircraft—Location of Weighing Equipment.*
85-44 *Airborne Radio/Radar and Test Equipment—Procurement, Distribution, Inspection, Installation, Supply Storage, Transfer Security, Maintenance, Overhaul and Survey.*

TECHNICAL ORDERS

99-44 *Exterior Color, Insignia and Markings of Naval Aircraft—Policy For.*
100-44 *Model RY-1 and RY-2 Airplanes—Restrictions and Permissible Maneuvers.*
101-44 *Model SB2C-1, -1A, -1C, -3 and -4 Airplanes; Model SBF-1, -3 and -4 Airplanes; Model SBW-1, -3, and -4 Airplanes—Restrictions and Permissible Maneuvers.*
102-44 *Model F6F-3 Airplanes; Model F6F-3N Airplanes—Restrictions and Permissible Maneuvers.*
103-44 *J-17A/ARC-5 Junction Box in VSB/VTB Aircraft—Installation of.*
104-44 *Weight and Balance Control—Airplane Classifications for.*
105-44 *De-Greasing of Night Fighters Windshields—Fluids for.*
106-44 *Restrictions and Permissible Maneuvers.*
107-44 *Ignition Disconnect Plug on Firewall—Warning Stencil Concerning.*
108-44 *Use of Grade 91/96 Fuel for Ferry Operations.*
109-44 *Fluids to be Used in Hydraulic Equipment of Naval Aircraft.*
110-44 *Operation and Care of Two-Speed and Two-Stage Two-Speed Superchargers.*
111-44 *Engine and Propeller Operation in Prolonged Dives.*

TECHNICAL NOTES

68-44 *Ventilator; Portable Self-Powered.*
69-44 *Sealing of Life Raft Emergency Equipment Containers.*
70-44 *Anti-Freeze Agents for War Emergency Power Water Injection Systems.*
71-44 *Droppable Fuel Tanks—Stabilizers for (Models F4U-1, F3A-1, FG-1, F4U-1D, F6F-3, F6F-5 Airplanes)*
72-44 *High Speed Diving.*
73-44 *Aircraft Armor Plate—Fabrication Of.*
E-44 (Conf.) *Operation of ASB Radar Systems from NEA-5 Generators.*
F-44 (Conf.) (JFF) *ANIAPX-2 — Production Wiring Error.*

TECHNICAL NOTES CANCELLED SINCE 15 JUNE 1944

20-38	*cancelled by*	72-44
4-41	*cancelled by*	*Miscellaneous Letter, dated 30 June*
20-38	*cancelled by*	73-44
4-41	*cancelled by*	*Miscellaneous Letter, dated 30 June*
38-41	*cancelled by*	87-44
20-43	*cancelled by*	52-44
71-43	*cancelled by*	10-44
15-43	*cancelled by*	*General Engine Bulletin No. 7*

MARINE TANGLES WITH SHARK

EIGHTEEN SBD's *were scheduled for a strike against enemy gun positions at "AA target C." Before leaving the deck, Lt. L. ran the engines on all tanks, and encountered no mechanical difficulties enroute to the target. Every half hour he changed the tanks to assure an adequate amount of gasoline in case of possible leakage from antiaircraft fire. Just before the attack, he changed from the left-hand auxiliary to the right main tank. Said Lt. L.:*

WHEN I made my dive at the target and released the bomb, there was some AA, but the plane was apparently undamaged. I ran on the right main tank until 1000. At this time, I tried to switch to the right-hand auxiliary tank, but the selector valve was jammed. I attempted to switch to the left main tank. No luck.

There was nothing to do but drop behind the formation and work on the valve. I jiggled it for fully 15 minutes and finally in desperation tried to force the valve.

There was a snap and the handle swung around without catching. What could be worse! The rod was jammed and I had only 10 minutes' fuel remaining in my connected tank. Furthermore, I wasn't able to make radio contact with the flight leader as the transmitter didn't work.

Pilot and Gunner Take to the Water

A landing with power was the only solution. I tightened my shoulder straps, put the tail hook down and made a full stall landing cross wind and right in the trough of the swells. Sgt. C. climbed out quickly and extricated the emergency rations and rubber raft. The plane was settling rapidly as we both jumped clear.

After we got the boat inflated, it took us about five minutes to climb aboard. Once in the raft, we took off our shoes and bailed out the water. Then we stretched out for a little relaxation. Two SBD's circled overhead and finally a PV relieved them. We devoted all our energy to keeping the raft in the dye marker slick which was 40 rods long and 50 yards wide.

Leathernecks Use Their Survival Training

At about 1115 I noticed a large fish moving near the surface of the water apparently curious about papers and bits of debris from the plane wreckage. He swam leisurely beside the boat, put his nose out of the water, and looked us over. I could have reached out and touched him. He was about six feet long, a foot or so wide, rather flat, and in my opinion, a shark.

All of a sudden, the old brain cells swung into action, and I started to remember pertinent extracts from *Survival on Land and Sea*, particularly that the nose of the shark is the sensitive part. I gave Sgt. C. the high sign, and then we both took our paddles and hit him on the nose. We accompanied our pummeling with blood-curdling yells!

The shark made an about-face and left. Then he approached us from a different angle. We hit him again on the nose, and he retired once more to gather up momentum for another sortie. This went on for about five times. He finally gave up. I could easily have shot him with my .45 but feared a lurch would upset the boat, and then the other sharks would be attracted by the blood.

About 1145 Dumbo appeared and landed into the wind about 200 yards away from us. They took us aboard and flew us to one of the islands for treatment. Aside from a little seasickness, exhaustion and sunburn, neither man had any bad effects.

DID YOU KNOW?

75,000th Landing on 'Sara'

Pilot Wins Cake in Celebration

An SBD hovered over the flight deck of the *Saratoga* recently and finally came in for a landing. Out of it stepped the pilot and aircrewman, to receive a cake in honor of the occasion.

That may sound odd, but the event was something special for the country's oldest and largest aircraft carrier, because it was the 75,000th landing made on the ship. Sixteen years had passed since Lt. Cdr. Marc Mitscher, now a vice admiral, landed the first plane on the *Saratoga's* deck. Since then many famous naval aviators helped increase the number of landings, not to mention Charles A. Lindbergh, who made a cruise aboard while an Army colonel.

CAKE-CUTTING HONORS EPIC 'SARA' LANDING

The biggest spurt of landings came when the *Saratoga* provided fighter and bomber support for Guadalcanal operations and in the period following when she was one of the few carriers in the Fleet and the only one in the South Pacific. Later landings were chalked up at Buka and Bonis and during the repeated attacks on Rabaul.

Small Gun Is Training Aid

.22 Cal. Is Useful at Pensacola

NAS PENSACOLA — An experimental .22 cal. link belt range, designed to coordinate classroom instructions in gunnery with actual firing to give the student practical demonstrations in "position firing" has been set up.

The device, recently given the approval of the Free Gunnery Standardization Committee, is now past the experimental stage and is being used by classes here and will also be established at other naval gunnery ranges. According to the report of the Free Gunnery Standardization Committee, only a few mechanical difficulties remain to be straightened out before it will be in use in naval air gunnery schools and aviation free gunnery units.

Briefly, the .22 cal. link belt range was set up for the sighting department so that sighting could be taught by more practical methods and in conjunction with classroom instruction. The range is so designed that it gives the student the sensation of firing at an attacking enemy fighter from a bomber. When the student gunner has been introduced to "position firing" in the classroom, he is immediately taken to the .22 cal. moving target range where he is taught to put theory into practice.

The student at first fires at a stationary target and later is provided with a moving target consisting of head-on model planes which fall when hit.

Notice to Pilots

Attention of all activities is invited to the fact that BuAer letter A4/VV, Serial 60504 of 24 April 1943 (reprinted in Aviation Circular Letter 7-44) directs that "Naval aircraft in which members of any of the armed services' women's corps are embarked shall be limited to *straight* and *normal* flight; acrobatics or any violent maneuvers are strictly prohibited," it states.

A FAR cry from their boyhood days when a bath was to be shunned, these Navy men on Treasury Island in the South Pacific seem to enjoy primitive open-air showers

Battle in Box Is Developed

Plane Mock-up Aids Mechanics

A small table mount for the panoramic "battle in a box" gunnery trainer has been developed by BuAer's Special Devices Division. This mount replaces an entire turret, but simulates the real turret in shooting at approaching enemy planes. The student manipulates turret control handles just as when the mock-up turret is used. Movement of the handles transmits motion to the sight reticle. The turret hydraulic system and turret maintenance are eliminated in the table mount (Device 3-A-19-e).

DEVISE TABLE MOUNT FOR GUNNERY TRAINER

▸ Mock-up maintenance trainers now are used in connection with all the Navy's principal operational planes. Mechanics say they can learn more about a plane system in a day with the device than in several months without it. These trainer systems have even suggested modifications in the actual plane. One aircraft engineer never realized an unnecessary length of hydraulic tubing was in the plane until he saw the mock-up maintenance trainer (Device 12-BC).

▸ Small arms firing may be self-taught through use of the "trigger trainer" also developed by the Division. By recording pressure exerted by the hand and trigger finger on the pistol the trainer teaches the correct method of firing. Device can be procured under No. 9V.

BEST ANSWERS

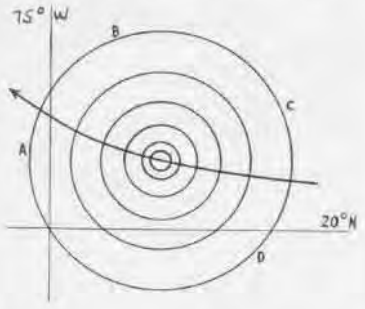
Tropical Hurricanes

Pick the best choice to complete the statements below, then check your answers on page 48.

1. Pilots based at Pensacola or in Cuba or Puerto Rico should be most on guard for tropical hurricanes during—

- ☐ *a*–late spring or early summer
- ☐ *b*–late summer and early fall
- ☐ *c*–late fall and early winter
- ☐ *d*–late winter and early spring

2. Three of the four following weather signs occurring together in latitudes 20° to 30° may predict a tropical hurricane. The one sign that is *least* helpful in predicting an approaching hurricane is—



- ☐ *a*–increasing wind velocity
- ☐ *b*–increasing height of waves on the open ocean
- ☐ *c*–rapidly rising temperature
- ☐ *d*–high cirrus clouds followed by lowering cloud formations

3. A plane flying in the edge of a tropical hurricane at about 15° Lat. south of the equator would be in greatest danger if the wind is blowing from the—

- ☐ *a*–west
- ☐ *b*–northwest
- ☐ *c*–southeast
- ☐ *d*–north

4. A pilot flying at point A (with plenty of fuel aboard) should—

- ☐ *a*–land and remain on the ground
- ☐ *b*–fly to the northwest
- ☐ *c*–fly to the southwest
- ☐ *d*–fly to the southeast

5. At point C, the winds are probably from the—

- ☐ *a*–southeast and decreasing
- ☐ *b*–north and decreasing
- ☐ *c*–northwest and increasing
- ☐ *d*–southeast and increasing

6. The most dangerous spot for a pilot would be at—

- ☐ *a*–A
- ☐ *b*–B
- ☐ *c*–C
- ☐ *d*–D

FIRE DRILLS *and tests of equipment help to emphasize the importance of fire protection in naval aviation operations. Firemen at* NATC *Corpus Christi are shown here combining a practice workout with a test of an overhead sprinkling system. They are putting the final touches on a bonfire ignited in one section of a hangar on the enormous base.*

NATB Makes Flight Record

Pensacola Pins Wings on 12,315

NATB PENSACOLA—What is believed to be an all-time record in number of naval aviators graduated and hours flown was established by this activity during the 1943-44 fiscal year. There were 12,315 aviators graduated during the year, a figure which represents 42½ percent of all fliers turned out in the entire history of the Pensacola NATB. The previous year this activity graduated hardly more than half as many pilots, the exact figure being 6,297.

Although 80 flying days were lost because of bad weather, 1943-44 saw 2,007,898 hours flown, which is a 74 percent increase over the preceding fiscal year. The better than two million flight hours represents more than a third of the total hours flown at this activity since 1919, when the first class of students to enter Pensacola as a group

ONE OF THE *most remarkable crashes in naval aviation history in which the pilot walked away from what was left of his plane is illustrated above. Shot up over Palau, the ensign started back with his hydraulic system gone, his flaps useless, a large hole in his right wing and his ailerons smashed. Coming in on his carrier he sheared off a wing and the tail on a gun turret, but emerged from his wrecked* Hellcat *with only a few scratches.*

began their training. The highest daily figure of hours flown was reached March 2 with a total of 9,626 in contrast to the daily average of 7,056. A record number of 198 flight surgeons graduated.

Best month of the year was May with 212,131 hours flown and 1,397 grads.

New Field Service Branch

Maintenance to Provide Field Help

Technical assistance to operating units already is being furnished by the new Field Service Branch, Maintenance Division, despite its present skeleton organization. Within a month or two, Field Service expects to be operating with a full complement of officers whose duties will include giving technical maintenance assistance to personnel in the field. This aid will comprise quick fixes, explanation of forms and publications and maintenance of an information flow to and from BuAer.

Officers are assigned to Field Service on the basis of past experience. Before going out to the field, all of them are thoroughly indoctrinated in current practices and in maintenance problems. Representatives will be assigned to ComAirLant, ComAirPac and CNAT.

The Field Service Representative office, ComFairWestCoast, already is established with the address, BuAer Field Service Area Representative, ComFairWestCoast, San Diego, Calif.

Mars Makes Hop to Brazil

Flies 4,375 Miles Without Stopping

NAS JACKSONVILLE — Four thousand three hundred and seventy-five miles, non-stop, from Maryland to Brazil, were flown by the Navy's giant seaplane, the *Mars*. When fully fueled, the *Mars* carries more than a tankcar of gasoline for her four 2200 hp. engines.

The Martin *Mars*' wings are so thick that members of the crew can enter them to service or repair engines while in flight. If stood on one wing tip, the Navy's largest plane would tower 200 feet into the air—higher than a 20-story building. Three million rivets were used in her manufacture, 7½ miles of wiring, 1.9 miles of piping, and she uses 24 interplane telephones.

Navy Will Get New Flattop

'Block Island' to Carry on Name

A new U.S.S. *Block Island*, carrying on the name of the first and only U. S. aircraft carrier lost in the Atlantic thus far in the war, will be launched this year, it has been announced. The new ship also will be an escort carrier of the type used so successfully against German submarines. Most of the crew of the original *Block Island*, now home on leave, will be assigned to the vessel.

WORD GIVEN TEACHERS, STUDENTS

Two more illustrated pamphlets have been published by the Aviation Training Division, Office of the Chief of Naval Operations, and are now receiving wide distribution. They are:

Hints for Gunnery Instructors —Above all, remember that you are not teaching gunnery, you are teaching men. It's not what you put out, it's what gets into a student's head that counts. In other words, you've got to help him learn for himself. Teaching by voice alone gives only one avenue to the student's brain; appealing to his eyes opens up a second avenue. Two roads are better than one! A good instructor, multiplying himself a thousandfold through the performances of students well-taught, is a menace to the enemy of unmeasurable range. May his tribe increase.

Studying for Your Navy Wings—For the first time in your life, you've got to learn to hit the 100% level. Out in the South Pacific, if 90 is your best grade in navigation, you may still be damn good—but you'll soon be very wet and very lonely. Pilots who have been out there say that there are only two grades in navigation—100 or 0. So you're going to study. Your life and lives of others depend on it. *Studying for Your Navy Wings* contains six basic rules for effective studying. A little thing like inefficient study habits easily can ground a potentially great pilot.

USE THIS FORM TO ORDER PAMPHLETS

Regular distribution is in process. Coupon should be used for those whose copies may have gone astray.

TO: Office of the Chief of Naval Operations, Op-33J11, Navy Dept., Washington 25, D. C.

SUBJECT: Pamphlets—Request for.

It is requested that copies of new pamphlets be sent as indicated to this activity.

COPIES	PAMPHLETS
_____	Hints for Gunnery Instructors
_____	Studying for Your Navy Wings

FROM (Unit Commander): _____

Delivery Address: _____

_____

Attn: _____

Cut here

1919: FIRST FLEET AIR DETACHMENT

Shawmut Converted to Carrier in Guantanamo Bay Winter Maneuvers

CONSIDERING the vast size and tremendous power of our present air force, the beginning of fleet aviation at the end of the last war will be interesting to recall.

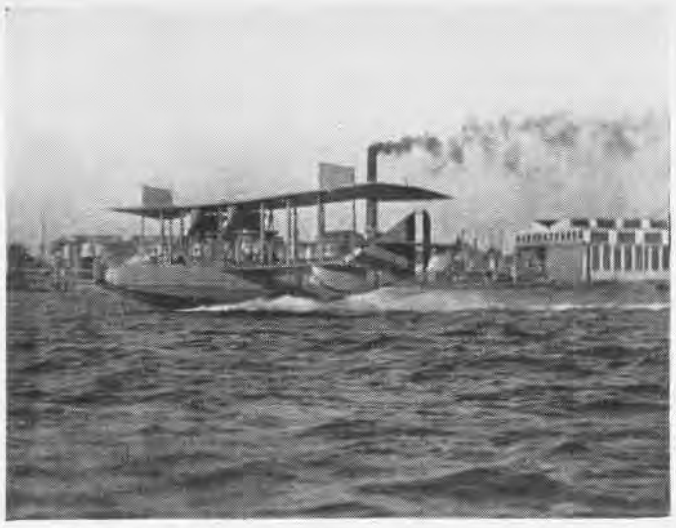
The Air Detachment, U. S. Fleet, was organized in January, 1919. The minelayer *Shawmut*, commanded by Captain G. W. Steele, was assigned as tender and flagship, and joined the fleet at Guantanamo for the winter exercises. (The *Shawmut* was renamed the *Oglala*, and later sunk at Pearl Harbor, 7 December 1941.)

Little conversion of the *Shawmut* was possible in the time available before sailing. But her spacious mine deck was divided, however, with wooden partitions to make store rooms and workshops, the whole after-end forming storage for hundreds of flasks of hydrogen, which was to be used to inflate kite balloons. The wheels of a field hydrogen generator, obtained from the Army, were removed, and the generator was bolted to the after-deck. A number of kite balloons also were taken aboard.

The heavier-than-air equipment consisted of six H-16 flying boats and two seaplanes, the latter carried on deck. The H-16s, constructed during the war, were built of wood and canvas and powered with two Liberty engines. Gasoline for the engines was carried in steel drums, which, when loaded aboard, completely covered the after-deck. This presented the problem of a fire hazard, for the flying boats were fueled astern.

SINCE part of the winter was to be spent in Guacanayabo Gulf with the fleet where there were no seaplane repair facilities, means for docking and repairing the flying boats had to be provided. Fortunately, a number of seaplane barges were available at Norfolk, and six of these were brought south by train. Made of steel, these barges were provided with tanks for effecting partial submergence and a cradle running on a track, thus forming a practicable seaplane drydock. These barges had been used during the war by destroyers to tow bombers as far as possible toward their objectives in German-occupied territory, as the bombers did not have enough radius of action to fly from England and back. Consequently they were built on lines enabling them to be towed rapidly.

ABOVE IS THE MINELAYER SHAWMUT AT ANCHOR IN GUACANAYABO GULF, SHOWING ONE SEAPLANE ON THE DECK, AND ONE ABOUT TO BE TAKEN ABOARD



An H-16 seaplane plows a path in the water as it takes off on the first leg of its journey from Norfolk to Guacanayabo Gulf

Members of the crew beach one of the H-16 seaplanes by hand on concrete ramps, comparable to World War I seaplane barges

Flying Boats Spot Hits; Kite Balloons Delivered to Outbound Battleships

SINCE there was only one tender, or mother ship, the flight of the H-16s from Norfolk to Guantanamo, Cuba, was unattended.

Joining Admiral Mayo's fleet at Guantanamo was the beginning of a busy season. The flying boats performed innumerable duties, and were commended for their accuracy in spotting for long range target practice. The crews, inspired by the squadron commander, Lieutenant Commander Bruce G. Leighton, carried on with enthusiasm in spite of very sketchy accommodations on board the *Shawmut*. The maneuvers were not, however, without minor disasters. Several H-16s suffered engine failure, and had to be towed to port by the nearest vessel through the rough seas. One was wrecked, through engine trouble, near a rugged lee shore.

Kite balloons were inflated on the *Shawmut* and delivered to battleships outbound on various missions. Their behavior in the air was such as to render them suspects by their unwilling hosts, and more than one basket observer had a narrow escape, when the kite balloon came to grief.

SEVERAL battleships carried on deck small single-seat airplanes employed as spotters. They were powered by radial engines of the Gnome-Rhone or similar type, which were far from reliable. Launching them was a complicated operation. Beams were laid from the muzzles of the forward high-turret guns to the top of the turret, and boards were laid across the beams. A tackle was rigged which lifted the airplane from the deck to the board platform, where it was held in place by a pelican hook. Engines warmed, the plane headed into the wind. The engine was given full throttle; the pelican hook tripped; and away she rolled with a great rattling of the loose boards on the platform. No airplane, thus launched, failed to get away, which speaks well for the plane captains.

Near these launchings on the shore of Guacanayabo Gulf was an extensive mud flat covered with a sun-baked crust hard enough for airplanes to land on. Once down, the planes taxied to the edge of the flat where their tails were secured in a native oxcart and slowly towed to the village pier. There they were man-handled aboard one of the before-mentioned seaplane barges and taken back to their ships.

ONE of these little planes, through failure of its engine, landed on a tiny island in the chain which encloses the bay, and was found only after three days of search by every available flying and surface craft. Although very weak, the pilot recovered.

At the end of the season, a division of destroyers was assigned to tow the seaplane barges back to Norfolk. They started out in an impressive formation, but during the trip, all the barges but one were lost. That one was recovered by the *Shawmut*. Little blame, however, was attached, for these barges were old.

The H-16s made their way to Philadelphia and were turned in to the Naval Aircraft Factory in exchange for F-5s, a similar flying boat but one which could stand rougher treatment.

Recalled After 36 Years Service

APPOINTED from Indiana, Captain G. W. Steele graduated from the Naval Academy in June, 1900. He joined the Flagship *Brooklyn* off Taku, China, the following August. May, 1917, brought him the command of the new transport *Henderson*, which sailed with the First Expedition to France in June, 1917. During the war, he made seven trips to France carrying Marine troops.

CAPTAIN G. W. STEELE, USN, (RETIRED)

From the fall of 1918 to February, 1919, when he took command of the *Shawmut*, Captain Steele served in the Division of Aviation in the Navy Department. He later supervised the construction of the ZR-3 in Friedrichshafen in 1924 according to the provisions of the Versailles Treaty.

Although retired in December, 1932, at his own request, he was recalled in April, 1942, as commanding officer of the Naval Aviation Pre-Flight Training School, St. Mary's College, California. Captain Steele was retired again in April of 1944.

NAVY WINGS

THE UNITED States Navy has authorized four types of wings to be worn by those qualified and trained in specific branches of aviation. They are NAVAL AVIATORS, AIRCREWMEN, FLIGHT SURGEONS and NAVAL OBSERVERS. So far as is known, a large jewelry house in Philadelphia designed the first wings in 1916 which were adopted by the Navy in 1917. A year later a list of qualified aviators was compiled, and the Navy purchased $1380 worth of wings. Now qualified aviation personnel buy their own insignia.

OFFICERS and enlisted men who have fulfilled requirements of BuPers are entitled to wear the AIRCREWMEN insignia. "To qualify, a man must have served subsequent to 7 December 1941, for a total period of at least three months as a regularly assigned member of the flight crew of combatant aircraft of the fleet or sea frontier forces, or as photographic personnel assigned to duty involving flying for the purpose of participating in missions as an additional member of such flight crew." Further details on qualifications are outlined in the Bureau of Naval Personnel CL No. 174-44.

The first group of officer aircrewmen recently completed operational training and were awarded wings. In addition to performing the regular duties of aircrewmen in squadrons, they carry out special and administrative tasks for air group and squadron commanders in the fleet. Their duties in all cases involve flying.

NAVAL OBSERVER wings are seldom seen, as the practice of using trained observers has been gradually abandoned. At the present time, however, regulations do allow any commissioned or warrant officer in the Navy or Marine Corps who has successfully completed a specific course and has been in the air at least 1000 hours to be designated a NAVAL OBSERVER.

It has been brought to the attention of BuPers that many officers under duty involving flying as technical observers, navigators, navigation instructors or other crew members are wearing the Naval Aviation OBSERVERS' insignia. This is not in compliance with Navy Uniform Regulations.

FLIGHT SURGEON wings are worn by men of the medical profession who have completed an additional course in aviation medicine as well as flight training. The central device of their wings is surcharged with a gold oak leaf and a silver acorn which is the symbol of the Medical Corps.

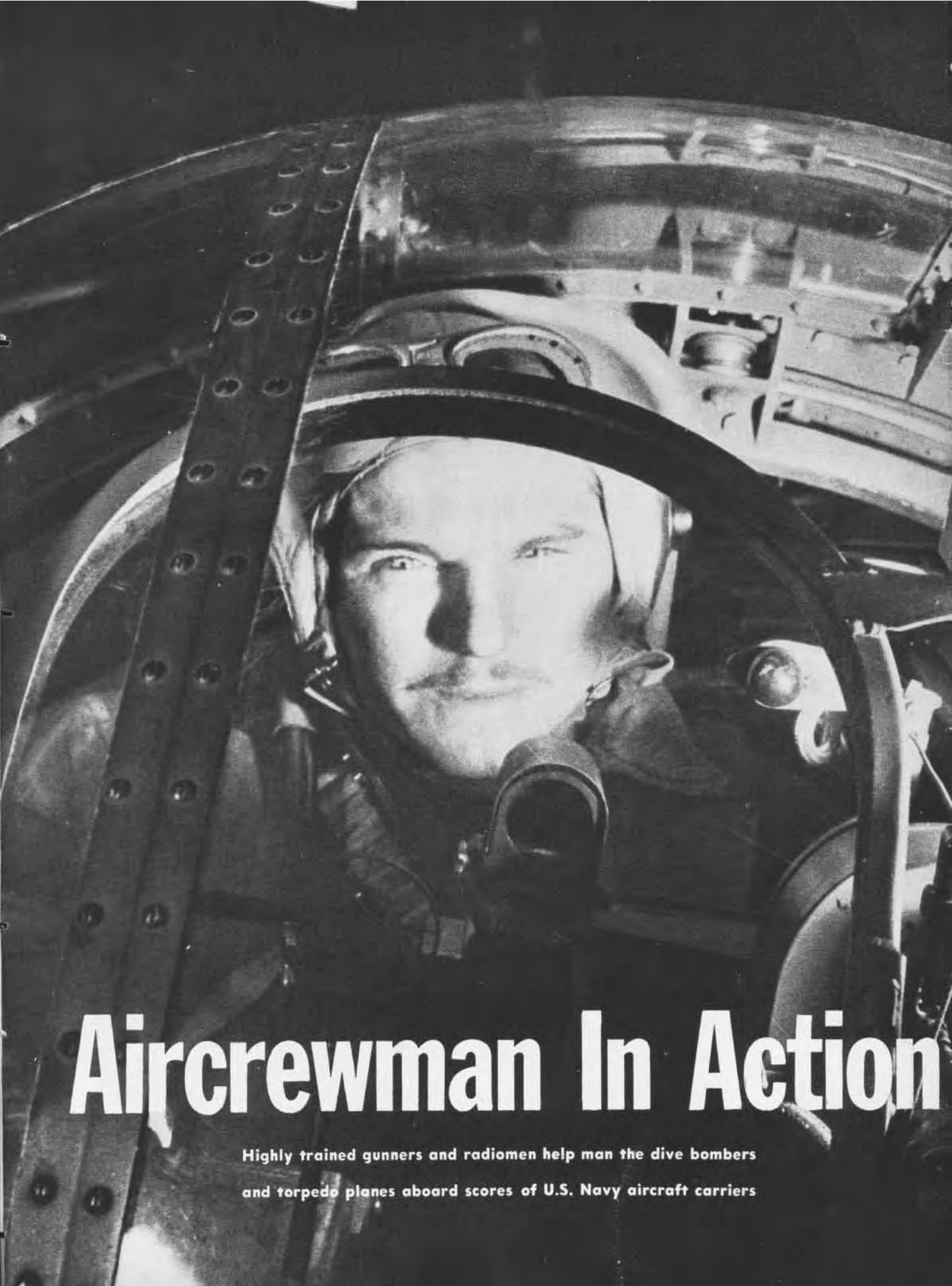
All wings are worn on the left breast, and when worn with ribbons, the aviation insignia is uppermost. The pin-on devices of all aviation insignia may be worn on all uniform coats. The embroidered device (naval aviators) can be worn only on blue coats and on coats of the winter working uniform. When the summer working coat is not worn, place device on shirt.

NAVAL AVIATOR Awarded to pilots after completion of intermediate training. Chief of Naval Personnel may at any time revoke pilots' right to wear wings. Justifiable causes include any breach of flight regulations or air discipline; refusal to fly; malingering, discontent.

AIRCREWMEN Both officers and enlisted men must complete specific courses to win these wings. Ordnance men, radiomen and machinist mates become proficient gunners groomed for combat. Officers complete operational training, work with squadron commanders.

FLIGHT SURGEON Worn by men of the medical profession who have completed fifteen weeks intensive training at Pensacola which includes approximately 50 hours' stick time. Cross country hops, night flying, acrobatics give these men insight to pilots' problems.

NAVAL OBSERVER Still seen and worn by only a few. Training and duties of observers are now obsolete and have been absorbed by other activities. Technical observers, navigators, navigation instructors are not authorized to wear this type of insignia.



Aircrewman In Action

Highly trained gunners and radiomen help man the dive bombers and torpedo planes aboard scores of U.S. Navy aircraft carriers

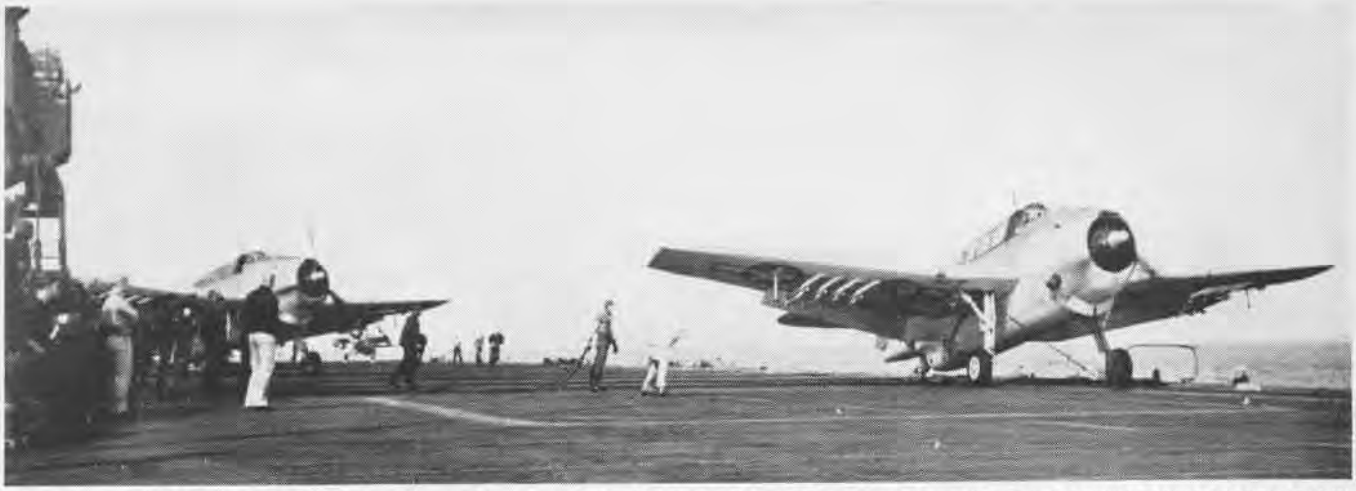
AIRCREWMAN'S-EYE VIEW OF CARRIER TAKE-OFF IN AVENGER TORPEDO BOMBER. OTHER PLANES WARMING UP ON DECK ARE READY TO FOLLOW

Carrier Aircrewmen Fly From Floating Base

TO THE combat aircrewmen who fly in dive and torpedo bombers, an aircraft carrier is not only a floating airfield and hangar, but a floating home. Aboard ship, the carrier deck seems long and broad. But as a plane takes off, joins up with the squadron and heads away on a mission, the carrier shrinks against the vast background of the sea until, at a distance, it seems incredible that planes can land aboard. Yet, as planes return from a strike and enter the landing circle, the carrier deck is like a great magnet pulling them in to roost. Aboard the carrier again, the airmen find food and rest and the companionship of shipmates waiting to hear of the day's operations.

Assignment to a combat carrier is the climax of long months of training for the aircrewman. Only after he has been through boot camp, NATTC, gunnery school, operational training and finally a squadron-forming base, does the combat aircrewman get a chance to go to sea. It's an exciting, but exacting and rugged life the aircrewman leads aboard a combat carrier. His day may begin long before dawn and end after dusk. As an AOM, AMM or ARM, he helps to keep his plane in combat condition. In the air he mans a machine gun or the radio and electronic equipment, or both. He has no specific ship's duties at sea. His are squadron duties.

IN COMPENSATION, he gets flight pay and all the comforts the Fleet can provide. Above all, he fights as a member of a hard-hitting team. He sees his bombs hit and his tracers tear into the enemy. He fights from the air, secure in the knowledge that he is getting in his personal licks against the skilled and deadly Japs.



WITH EIGHT DEADLY ROCKETS TUCKED UNDER WINGS, IN ADDITION TO USUAL BOMB LOAD, A TBM TORPEDO BOMBER BEGINS CARRIER TAKE-OFF RUN

COMBAT AIRCREWMEN GET ACTION ON NAVY'S TASK FORCE CARRIERS

JUST as the Navy shore establishment exists solely to serve the Fleet, so the Navy's aircraft carriers exist to get combat aircraft within range of the enemy. From the first offensive operations against the Gilberts and Marshalls, in February 1942, to recent task force raids on the Bonin Islands, within 600 miles of Japan, carrier-based planes have spearheaded the Navy's great Pacific drives.

During the Saipan campaign, for example, Navy carriers of Task Force 58, led by ships of the new 27,000-ton *Essex* class, performed an unheard-of feat when they maintained an air umbrella over the Marianas and Bonins, 1,200 miles west of their Marshalls bases, for a solid month without let-up. They not only smothered 13 Jap airbases during this period but downed 767 enemy planes and sank 32 ships, including two carriers. They damaged three carriers and a battleship, not to mention 21 other ships and a number of smaller craft. They did this without the loss of a ship.

The records set by individual carrier air groups are likewise impressive. To mention but one: in eight months of combat, the torpedo planes, dive bombers and fighters of Carrier Air Group 5 destroyed or damaged 428 Japanese planes and sank or damaged 59 ships totaling 292,000 tons. They also did considerable damage in numerous raids against land targets. They accomplished this destruction with the loss of eleven men.

Thus, airplanes are key weapons and aircrewmen, though they are only a handful in a carrier complement, are key personnel. In every Navy operation, countless men ashore and at sea contribute to the final results, but aircrewmen are there in the air with the pilots, manning the radio and guns.

THE NAVY takes great pains to give its aircrewmen the best possible combat training. It is only after boot camp and four and a half months at a Naval Air Technical Training Center, studying for his rating as an AOM, AMM or ARM that the aircrewman begins gunnery training. The five weeks at gunnery school are followed by two months of operational training in which the student takes to the air in combat planes. On graduation, he moves on to a squadron-forming base. He now knows his ground and aerial duties, but he needs operational experience.

At the squadron-forming base he helps keep his plane in fighting trim and continues his ground studies. Above all, he practices gunnery in the air. Even when the airmen fly aboard their carrier at sea, the ship is their training base. The ready rooms serve as classrooms. Scouting and anti-sub patrols not only protect the task force but provide an opportunity for trial strafing runs. Frequently, planes are sent out to simulate dive and torpedo and strafing attacks, using the ships of the task force for practice targets. The aircrewmen get sharper day by day. There is no such thing as being too good in combat against the Japanese.

TBF AIRCREWMAN PHOTOGRAPHS BOMB HITS IN STRIKE TO NEUTRALIZE JAP AIR FIELD AT ROTA IN PREPARATION FOR SAIPAN LANDINGS NEARBY

Veteran Aircrewman Aboard a Carrier

DONALD F. FARRELL AMM2c is a typical Navy combat aircrewman. He went to boot camp at Newport, R. I., won his rating at the Naval Air Technical Training School, Jacksonville, then went on to gunnery school and operational training. In August 1943 he joined VT-2 at NAS Quonset Point. There he was assigned to fly as turret gunner with Lt. (jg) Roy M. Porterfield, Naval Aviator, and Wilfred M. Foisy ARM2c, radioman and tunnel gunner. The trio went aboard one of the Navy's big new carriers of Task Force 58 early in 1944. Farrell has flown against the Japanese at Palau, Wadke, Sewai, Truk, Ponape and Saipan. He shot down a *Hamp* fighter plane on his first hop at Palau. His plane missed the rendezvous and went in without fighter protection. Just as the pilot was making his run, the *Hamp* made a high side pass from four o'clock. It opened up at 900 feet and riddled the port wing of Farrell's plane. Farrell went into action, firing until 100 feet when the Jap broke away over the port wing. Farrell's .50-cal. began hitting the Jap's engine at 500 feet and, as the Nip passed over the wing, Farrell ripped his belly. The Jap plane burned and crashed.

Farrell AMM2C gets his shaving gear from his locker aboard new combat carrier. The time is 0300. Aircrewmen hit the deck early the day of strike. Aircrewmen bunk in special quarters aboard ship. They sleep in triple decker bunks slung from the bulkhead

At breakfast, Robert Thiebaud, AMM2c, a TBM crewman, pours a cup of milk for Farrell. Food aboard carriers is plentiful and good. Aircrewmen eat separately from ship's company. Chow always is ready for them before take-off and on return from mission

Checking the oil in the engine of TBM *Avenger* torpedo bomber. Farrell, an experienced mechanic before entering the Navy, has had thorough Navy training as a machinist's mate. With plane captain and deck crew he keeps his plane in tiptop shape

The pilot gives his crew, Farrell, turret gunner, and Foisy, radioman-tunnel gunner, a last minute briefing before the take-off for strike over Saipan waters. These three veterans have flown together as an *Avenger* combat team for more than a year

FARRELL AND MATES IN SQUADRON READY ROOM BEFORE SAIPAN STRIKE. AIRCREWMEN READY ROOMS, LIKE THE PILOTS' ARE AIR CONDITIONED

Making his way along the catwalk to plane, Farrell, followed by Foisy, wears coveralls, helmet with earphones, goggles, Mae West, harness for quick-attach chest type parachute, revolver, with cartridge belt over shoulder. He's ready for action against Japs

The pilot and Farrell, his veteran turret gunner, make a cockpit check of their rugged TBM *Avenger* before taking off on strike at Saipan. Before lifting plane off the deck, the pilot will fasten his safety belt and shoulder harness. Farrell will be in turret

The pilot and his crew, the turret gunner and the radioman-tunnel gunner fly high over ships of Task Force 58 on the way to Saipan where the Japs got a shellacking. Some ships are visible in background. Others are concealed by clouds. All combat aircrewmen are volunteers. Like their pilots, they get flight pay, a 50 percent boost. They earn it playing a key part in hunting down and blasting the Japs. Airmen of Task Force 58 destroyed more than 400 Jap planes in one day of Saipan operations

Farrell has a slight smile as he climbs from the tunnel compartment of his TBM after successful operation over Saipan. He saw his squadron plaster Japanese airfield. The job naval airmen did on Japs at Saipan was one of the most thorough of the war

After reporting to intelligence officers on what they saw during Saipan strike, aircrewmen Steadman, Farrell and Foisy load trays with chow. Smiles are for beefsteak. They don't get it often at sea, but steak is fare on days when there's action

Back in the ready room, Farrell, in thoughtful mood, lights a cigarette and settles down to write a letter home. Ready room serves as recreation hall during off duty hours. Aircrewmen have a small canteen where they get sandwiches, candy, cokes, coffee

It's only 2100, but Farrell has had a busy day since 0300. He takes a shower before getting in some sack time. Farrell regrets tattooing he had done in an impulsive moment. Shower is fresh water distilled from sea water. Aircrewmen have comforts

WHILE ORDNANCEMEN AND MECHANICS WORK, GETTING READY FOR NEXT DAY'S OPERATIONS, AIRCREWMEN AND PILOTS SEE MOVIE ON HANGAR DECK

Fresh out of boot camp, AMM strikers tear down a twin-row radial engine under chief's watchful eye as part of training at NATTC

Wave instructor with student, NAGS Miami, one of three naval air gunners schools. Post-mounted shotgun has a reflector sight

QUALIFIED MEN VOLUNTEER FOR COMBAT AIRCREWMAN TRAINING

ALL COMBAT aircrewmen are volunteers. Many of them volunteer for aircrewman training while still in boot camp. The requirements are that a man pass the flight physical examination and that he be no more than six feet tall and weigh no more than 185 pounds. There is a further limit for torpedo plane aircrewmen who must be no more than five feet ten inches tall and weigh no more than 165 pounds. The TBF *Avenger* turret is not big enough to accommodate larger men in comfort when wearing flightgear.

The combat aircrewman training program is administered on the basis of quotas set up to meet Fleet requirements. The number of men selected at a given station depends on the quota for that activity.

The boot who likes guns and planes and flying may tell his selection officer that he wants to volunteer for combat aircrewman training. If he meets the physical requirements and the quota at his station is not filled, on completion of boot training he will be sent to a Naval Air Technical Training Center to strike for one of the three rates, AOM, AMM, ARM, from which combat aircrewmen are drawn. Men who are already at Class A schools (NATTC) striking for one of these rates may volunteer in the same way—through their selection officers—subject, of course, to quota needs.

AFTER FINISHING NATTC, the student goes on to a Naval Air Gunners' School at Miami, Yellow Water or Purcell. NAGS Miami specializes in training torpedo plane aircrewmen. Yellow Water and Purcell train gunners for other types of operational aircraft, such as the OS2U's, TBF's, SBD's, SB2C's, PBM's, PBY's, PB4Y's and PV's. From gunnery school, the aircrewman goes to an operational training unit to specialize in one of these types. It is in an OTU that he begins getting flight pay and that he earns the silver aircrewman's wings which mark him as an airman.

Student aircrewmen and pilot are ready for hop in TBF *Avenger* which they fly in operational training unit, NAS Ft. Lauderdale

Captain pins silver wings on proud aircrewmen at graduation ceremony, NAS Ft. Lauderdale. Aircrewmen are ready for the Fleet

TECHNICALLY SPEAKING

Change Improves P&W Sling

Easy to Install with Bent Hooks

MBDAG-44—Difficulty has been encountered in hanging a Pratt & Whitney R-2800 engine with a PWA-2258 engine lifting sling. This is owing to the fact that the two aft hooks are straight. The intake pipes on cylinders #3 and #17 and adjacent exhaust stacks interfere with attaching the straight hooks to eyes provided for the purpose.

By replacing the two straight aft hooks with hooks that are bent, the intake pipes and exhaust stacks are by-passed, as well as the engine section group cowl flap support, part No. VS-10677-1, and the sling can be quickly installed without removing the pipes and stacks.

BENT HOOK PERMITS EASY SLING INSTALLATION

▸ *BuAER COMMENT*—**This is an excellent suggestion!**

Stone Punctures Water Cans

Specifications for Kits Modified

The sharpening stone in the back pad kits specified in NAVAER Specification M-592 at the present time is stowed between the two cans of water. This condition has been found undesirable due to the abrasive action of the stone on the bottom of the water cans.

In order to preclude the possibility of puncturing the water cans, a technical order is being issued directing the interchange of the 25 feet of 75# test line and the sharpening stone in all back pad kits procured under NAVAER Specification M-592. All back pad kits under procurement are being modified.

Blower Remover Saves Time

Device Lessens Danger of Damage

NAS BERMUDA—A machinist's mate has developed a tool for removing the rear case from the blower section of R-985 engines, an idea which saves considerable time and lessens possibilities of damaging the case.

Guides may be manufactured to slide through the magneto drive shaft bushings to assist in assembly of the cases. The cases may be disassembled and assembled without damaging the blower case when starter and magneto shaft bushings, oil transfer pipe fit into it.

At present the work is being done by prying off the rear case with a 2 x 4 on each side of the case. It cannot be pulled straight this way and may become cocked, thereby damaging blower case bushings or both.

[DEVELOPED BY W. L. HEATH, MM1c]

BLOWER PULLER SAVES TIME, REDUCES DAMAGE

A & R Shops

LET NANEWS HEAR FROM YOU!

Hydraulic Mock-up Trains

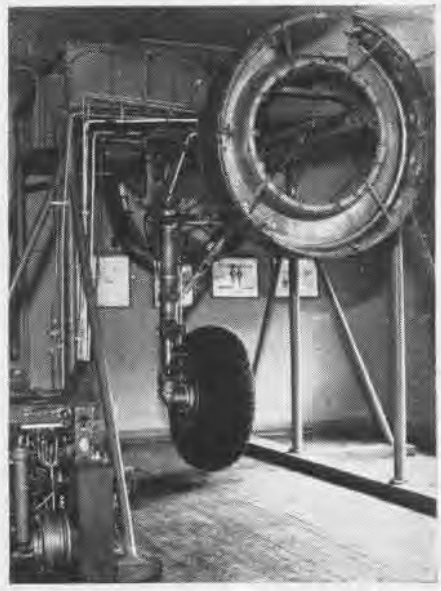
Device Completely Operational

MCAS EDENTON—A hydraulic mock-up that includes main landing gear, wing flap, cowl flap, brake and emergency systems schematically set up to incorporate all units of the power system has been developed by hydraulics enlisted personnel of this activity with material salvaged from junk piles of various stations.

Pressure for the unit is obtained from an electric pump salvaged from a power turret, and the 24 v. DC necessary for pump operation is supplied by an electrical mock-up in an adjoining room.

The mock-up is used extensively in classroom work on hydraulics, it being possible for other hydraulic systems of the PBJ to be added as they are made up. Lines are identified by color so that students can trace them visually. Students also make schematic drawings by tracing out the lines, checking and operating each part as it is explained by the instructor.

The mock-up is completely operational and every phase of hydraulic check, maintenance and trouble-shooting occurring on actual aircraft hydraulic maintenance can be duplicated in the classroom. Personnel of MOTG-81 who aided in building the unit were commended for their initiative by the Chief of Naval Air Operational Training Command, located at Jacksonville.



HYDRAULIC MOCK-UP IS USED IN CLASSROOMS

WITH THE CATWALK BETWEEN, STANDS MAKE A WORKING PLATFORM AROUND NOSE OF SBD PLANE

PLATFORM CAN BE EXTENDED TO SERVICE PB4Y

STAND PROVES USEFUL AT THE LOWEST POSITION

END TO END, WITH CATWALK BETWEEN, WORKMEN CAN SERVICE THE WINGS AND ENGINES OF AN R4D

Service Platforms In Stock

Facilitate Servicing Propellers

There are now available from stock portable, demountable platforms, adjustable in height, which can be grouped together in various combinations as illustrated, to facilitate servicing propellers, engines, wings, and other portions of aircraft. The complete platform consists of two individual platform sections and a catwalk section.

Each platform section is mounted on four swivel type 5-inch diameter steel wheels and provided with a floor truck lock to prevent movement of the platform while in use. Each section also includes a hinged extension at one end and a propeller well with hinged cover at the opposite end. The treadways are supported on telescopic uprights fitting into the base and posts and anchored by pins allowing various height adjustments to suit the working conditions. Lightweight plus high strength of the unit is obtained through tubular steel constructed framework and plywood treads. The approximate overall dimensions are as follows:

Platform width 34″; length 84″; length including extension 108″; propeller well width 12″; catwalk width 34″; length 60″; minimum height, deck to top of platform treadway 42″; maximum height, deck to top of platform treadway 78″.

These platforms can be obtained by requisitioning ASO Philadelphia. Correct nomenclature and stock number follows: Platform, Aircraft Servicing—R89-P-415250.

Pump Trouble Is Overcome

Adapter Rigged Up For Bench Test

NAS BERMUDA—Bench tests have been adopted by the engine overhaul shop of A&R to overcome difficulties on oil pumps for R-2600-12 engines at this station. The new system is meeting with a high degree of success.

An adapter plate was made up so that the pump might be mounted on Pesco Test Bench, Serial PE 180, with lines running from the adapter plate to the pressure, suction and flow instruments of the test bench. By this means it is possible to check for pressure and flow on the delivery side of the pump and for suction on the scavenger side. An orifice in the delivery line approximates restrictions imposed by the engine. Test standards were established by obtaining readings from several pumps known to be in good condition.

Numerous pumps that had been reported as malfunctioning already have been tested and placed back in service, while others that had been thrown out by visual inspection were proved to be usable when placed on the test bench.

[DEVELOPED BY R. M. BAKER, AMM1C AND W. MULLEY, MM3C]

CVE Designs Crash Dolly

Combines Two Desirable Features

The U.S.S. *Kasaan Bay*, needing a crash dolly which combined two desirable features, *i.e.*, wheels big enough

CVE CREW DESIGNS SIX-WHEELED CRASH DOLLY

to enable it to cross the deck pendants and body low enough to be slid under the fuselage of a wreck with a mini-

mum of lifting, designed one, using sheet steel and old TBF tail wheels.

There are six wheels on the dolly, three on each side with the forward two fixed on a fore and aft line to the dolly. The cradle is deep enough to hold any type of plane up to a TBM without danger of its rolling off in a heavy sea. It has a 2 in. clearance.

The usual method of handling crashes with this dolly is as follows: tail of the crashed plane is lifted by manpower high enough to enable the dolly to be slid under the fuselage; dolly then is shoved as far forward as possible to a point near the center of gravity. Tail of the plane is pulled down to allow the entire plane to rest completely in the cradle of the dolly and thus walked to the elevator, guided by its tail.

BuAER COMMENT — Present crash trucks are considered satisfactory for such types of crashes. The majority of crashes in which landing gears are washed out go into the catwalks, in which case the planes generally are jettisoned.

Burr Remover Saves Time

Air and Cutters Scrape Out Tubes

Air pressure and steel cutters are utilized in a unique tool developed by a Navy inspector at Quincy, Mass. It removes burrs from the inside of pipes or tubes through which holes previously have been bored. Successfully demonstrated in the pipe shop of a major steel company, the tool reduced the time required for the usual hand removal method by as much as 90%.

Principal parts of the burr remover are the collar bolt, a body and two replaceable cutting edges. The round cutters are slipped over the collar bolt, held apart by the body of the tool and secured in position by an end washer and nut. The collar bolt and body will accommodate all sizes of cutters to fit the standard sizes of pipe and tubing such as is used for air escape and sprinkler pipes or for sounding tubes.

An air hose is connected to the pusher rod of the tool which is inserted in the pipe and shoved backward and forward, shearing and removing burrs.

A STEEL COMPANY DEMONSTRATES THIS DEVICE

[DESIGNED BY HUGH L. MCKINNON]

NEW FILMS

Stop-and-go films. A brand-new treatment in motion pictures is the Navy's recently produced MN-1933a *Simulated Combat Missions—Attack on a Jap Task Force*, first in a series. The movies tell the story of a typical attack by carrier planes on the enemy fleet, from the time the pilots are briefed in the ready room until they return to the ship.

What makes the film unusual is the innovation of interrupting the picture from time to time to allow the audience to work out problems posed during the flight. It is believed that this is the first instance in which this "stop-and-go" technique has been used. It presents a new and effective method for using motion pictures in advanced operational training.

The navigation, recognition, communications and other problems covered are not treated as isolated subjects. They are presented for solution as they would occur on an actual mission. The result is a sleep-proof film with enough realism in the combat photography to sustain interest even for seasoned pilots.

When the film was first produced, test prints were sent to Fleet Air Commands for experimental showings. Favorable comment from ComAirLant, ComFairQuonset and ComFairWest-Coast was instant and unanimous.

Most enthusiastic endorsement came from ComFairAlameda. After a staff review of the film the Command was moved to issue a directive strongly recommending that "all Squadron Commanders schedule pilot and aircrewmen groups to see the film as a test of proficiency and as an important training aid," and that the Squadron Commanders "personally carry out the screening."

The film is the first of a series on Simulated Combat Missions. Six other "stop-and-go" films are in production and will follow shortly. The idea for the series originated in NAOTC and the films are produced under that Command's technical supervision.

Tagged at home. Three of the Navy's most recent slide films (with color and sound) in the *Theaters of War* series give convincing evidence that the Japs, having been left on base all over the Pacific in the most recent inning of the Far East World Series, may expect to be tagged out at home in the ninth.

SN-1538h *The Jap—His Home Field*
SN-1538i *The Jap—His Honorable Self*
SN-1538j *The Jap—His More Honorable Neighbors*

For pilots and crewmen who find themselves uninvited guests of the Nips in the line of duty, these three films have one purpose in common: to help a man survive in enemy territory and, if possible, escape to fight again. The idea is that the more a man knows about such things as enemy terrain, weather, food sources, customs and prejudices, the more likely he is to return.

Jungle know how. The jungle adventure books that used to while away idle hours take on a sinister significance when a man suddenly finds himself playing the lead in the real-life story. That sobering fact makes the Army Air Force's latest survival film important for pilots and aircrewmen who run the risk of being forced down in the South Pacific:

MA-4206 *Land and Live in the Jungle*—1 hr.

In story form, the film gives tips on such life-saving matters as: malaria, first aid, trail blazing, picking camp sites, identifying tropical plants and jungle life, preparing food, making friends and influencing people in the native villages.

International killer. Murderess Borgia was a small-time operator compared with Ann (anopheles mosquito), round-the-world carrier of the deadly malaria parasite. Ann brings death to 2 million people in India every year. She disables 7 fighting men for every one knocked out by the Japs.

A new motion picture attacks the problem from the standpoint of early diagnosis and quick treatment:

MN-1963 *Clinical Malaria*—28 min.

Three types of malaria are illustrated by charted fever peaks and patterns in relation to the life cycle of the parasite.

Tactical films move up. From Fleet Air Staff Officers comes evidence that tactical and operational films maintain their usefulness and popularity not only in forming and staging areas, but right up into forward bases. Two typical comments from overseas:

▸"The expansion in film use is amazing. For the month of May, one activity showed training films (not general interest) to 8,450 men in classroom work. This represented 297 showings for a total of 240 hours for this one activity.

"Another activity which had no film program until a few months ago is now showing training films to approximately 4,000 men a month. This activity is building a projection room and has assigned a Training Film Officer."

▸"Increase in use and popularity of training films in this command and associated activities is undoubtedly due to the excellent subject matter of the films and unusually fine treatment of the subjects."

Chinese indigestion. You can't swallow 450 million people even piecemeal without considerable discomfort. A motion picture recently released shows Japan in the throes of the world's biggest bellyache:

MN-1719f *The Battle of China*—1 hour

As in *The Battle of Russia* and other films of the *Why We Fight* series this picture mixes action with history—probes the motives back of the gunfire.

Where to get 'em. THE FILMS DESCRIBED ABOVE HAVE BEEN DISTRIBUTED TO AVIATION FILM LIBRARIES LOCATED AT COMAIRPAC, AIR CENTERS HAVE BEEN DISTRIBUTED TO AVIATION FILM LIBRARIES LOCATED AT COMAIRPAC, AIR CENTERS NAVY #140 & #145, NAS SEATTLE, ALAMEDA, SAN DIEGO, NORFOLK, PATUXENT, FLOYD BENNETT, QUONSET, ATLANTA, CLINTON, NAS #115, #117, HEDRON #3, #4, #11, #12, FAW #7, #10, #15, #16, #17, NATC PENSACOLA, CORPUS CHRISTI, NAOTC JACKSONVILLE, NATEC LAKEHURST, NAS MOFFETT, MCAS CHERRY POINT, MCAS NAVY #61, MARFAIRWEST, 4TH MBDAW, MCAS EAGLE MOUNTAIN LAKE

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Proper Use Lengthens Life of Brushes

Requisitions being received for caliber .30 and caliber .50 cleaning brushes are far in excess of quantities estimated for replacement purposes. A check of the cause indicated two things.

1. Use of the brush for normal cleaning that should be done with a patch.

2. Improper use of the brush. This is defined as the practice of reversing the direction before the brush has traveled the full length of the bore. If the brush is not permitted to clear the end of the bore before the direction of travel is reversed, the wire becomes crimped.

Bomb Racks to be Improved, Redesigned

A high priority program is under way both to improve and to redesign the Mark 47, Mark 50, and Mark 51 type bomb racks. This will be accomplished in two stages. The first stage involves the introduction of new modifications to correct promptly the known defects of the racks without consuming the time necessary to redesign completely the basic mechanisms. The second stage involves the complete redesign of the racks, maintaining, if possible, interchangeability with present racks.

Mark 47 Type Bomb Rack—In the present design light gauge aluminum sheet is used to form the bomb rack shell resulting in a weakness in the structure which permits the doors to warp out of alignment, especially when the rack is improperly loaded. Carrier Aircraft Service Unit 22, after making many hundreds of practice bombing runs using these miniature bomb racks, during which a number of inadvertent releases were experienced, undertook to correct the fault locally by strengthening the hinge line of the shell. The modification proved successful after rigorous tests and has been adopted by the Bureau of Ordnance. An OMI-V authorizing the necessary changes to the racks in service and in production has been prepared and will be distributed.

To supply the Fleet with a new foolproof miniature bomb rack, a completely new design is being developed. The new device will carry the same number of bombs, will have the same mounting provisions, and will have approximately the same shape. Like the Mark 47 type, the redesigned rack will have an electrical release with provisions for manual ground testing. Since its design will employ an entirely different release principle, it will be assigned a new mark number.

Mark 50 Type Bomb Rack—Bomb Racks Mark 50 Mods 2 and 3 have been modified in a number of ways to assure more reliable operation (see OTI V18-44). The modified racks, designated Bomb Racks, Mark 50 Mods 4 and 5, are equipped with continuous-duty arming solenoids, improved arming wire retainers, and low temperature release solenoid caps to permit their improved performance at low temperatures. Features which characterize the new mods are protection against corrosion by the use of a special lacquer and low temperature grease in place of tectyl, improved design of suspension hook, release pawl and steadying fork assembly, elimination of transfer switch.

In the development stage are two completely redesigned racks; the better of which is destined to replace the Mark 50 type. An important improvement in the new development is the use of a sealed "pack" for the critical components such as switches, latches, and other small moving parts. The protection thus provided against dirt, moisture, ice, etc., is expected to render the rack very reliable under all service conditions. It is intended that such "packs" will be provided for both the arming and release assemblies, and that they will be readily removable and replaceable to facilitate maintenance. The present sideplates and mounting provisions will be retained, but the stroke of the manual arming and manual release cables on the rack will be increased three or four times.

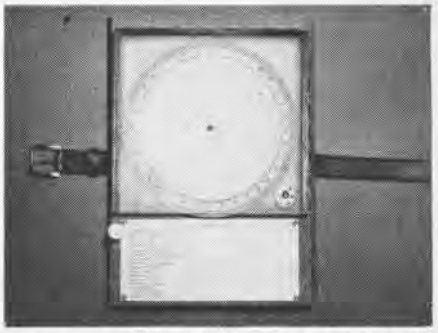
Mark 51 Type Bomb Rack—First deliveries were made in August of Bomb Racks, Mark 51 Mods 8 and 9 which were designed to replace Bomb Racks AN-Mark 51 Mods 6 and 7 *in new aircraft only.* These mods provide for a number of minor improvements such as better latching pins and continuous duty solenoids. Additional protection of steel components against corrosion is effected by a new plating process and a coating of special lacquer. These racks will not be available for replacement of racks in service, but, instead, OMI-V's and OTI-V's have been issued to enable most of these improvements to be made locally. They will be used only until the Mark 51 Mod 11 rack, the design of which is already completed, is produced in quantity. The latter rack will supersede all Mark 51 type racks both in service and in new aircraft. In addition to the above changes, the Mark 51 Mod 11 racks will have an improved arming assembly with continuous duty solenoids, stronger release solenoid, improved wiring, modified bomb suspension hooks, and stainless steel rather than ordinary steel components. Bomb Rack, Mark 51 Mod 8 was designed to operate on a nominal 12-volt circuit, Mod 9 and 11 on a 24.

Three different and complete redesigns of the Mark 51 type rack are now being developed, and prototypes are expected in September. Production deliveries are planned for about April 1945. As in the redesigned Mark 50 rack, removable and replaceable "packs" will be used to enclose the small moving parts. And here again, the present sideplates and mounting provisions will remain unchanged, but the stroke for manual arming and releasing will be increased by three or four times.

New Plotting Board Is Used

Aids Link Navigational Training

NAS FORT LAUDERDALE—A navigational plotting board for use in Link Trainers and training planes without installed navigation devices, has been developed at this station through the efforts of the navigation officer and a public works civilian assistant. The



DEVICE IS HELD BY THE USE OF BELT STRAP

device is a miniature of the Mark III plotting board and includes a chart tray, computer, log, and pencil holders. It is a belt-strap held knee-pad device.

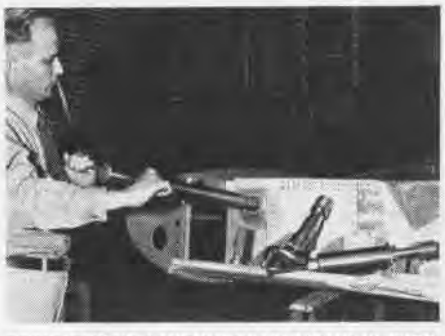
BuAER COMMENT — A small side-mounting chart-plotting board, based on the illustrated device, now is being designed for possible future use where the space available does not permit installation of the standard chart board.

Tools Repair Gear Casting

New Tools Save Many Man-Hours

NATB PENSACOLA—A set of tools that will enable mechanics to repair and replace center section landing gear castings without having to take castings off the plane has been designed by a quarterman toolmaker in the A&R Department here.

Officers estimated the new tools will save about eight man-hours of work, formerly necessary in detaching and re-



TOOLS PERMIT LANDING GEAR REPAIR IN WING

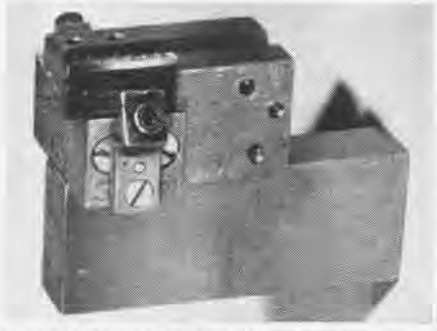
placing that section of the landing gear in each plane.

The tools will permit replacing of pivot pin bushings and boring and reaming of the castings and bushings with the gear still attached to the center section. Another tool provides for

adjusting and smoothing of the base of the lock hoist. They are designed for SNJ-type plane.

[Developed by L. W. Weekley]

▶*BuAER COMMENT*—**The field has encountered lots of this sort of trouble, requiring removal of casting from plane. This is a good shortcut to an A&R maintenance problem. BuAer requests more detailed information from Pensacola.**



NEW DEVICE HAS PROVED TO BE LABOR SAVER

Grinding Is Made Precise

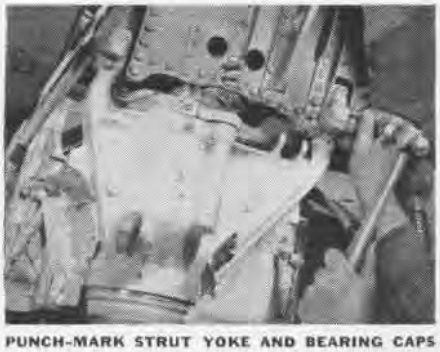
Fixture Fits the Die Head Chasers

NAS San Diego—Exact uniformity in the grinding operation on Landmatic die head chasers is being achieved here as a result of a device developed by a toolmaker in the machine division. The new machine also saves a great deal of time in the grinding.

Both right and left hand cutters can be ground in the same device by inserting the chaser in one side or other of fixture. The clamp is so designed as to force the chaser against the shoulder of the fixture when a screw is tightened. This assures proper angle.

In operation the fixture, as shown in the accompanying photograph, first is placed in a vise. Then the vise is mounted on a universal tool and cutter grinder, the table is swung to the desired angle and grinding proceeds.

[Designed by Guy E. Russell]



PUNCH-MARK STRUT YOKE AND BEARING CAPS

Reversed Parts Freeze Up

Marking Parts Prevents Mistakes

The pilot of an F6F-3 airplane was forced to make a crash landing when his right landing gear froze in a semi-extended position. Investigation by the squadron engineering officer showed that the yoke caps on the landing gear had been interchanged or reversed the night before by the CASU night engineering crew. The yoke seized on the torque tube support, fixing the gear so that it could not retract or extend.

▶*BuAER COMMENT*—**This accident was the result of not following good hop practice in marking the yoke caps so that they could not be inadvertently interchanged or reversed. If, before removing the yoke caps, the shop crew had prick-punched on the end of each yoke and yoke cap an identifying mark, then reversing or interchanging the caps would have been impossible so long as corresponding punch marks were kept together. Such a system of marking should be applied wherever symmetrical parts are encountered which must always be assembled in the same relation to each other.**

Yoke caps or similar parts should never be reversed or changed. Bearing surfaces wear so that infinitesimal grooves and ridges appear in the surfaces and, if the bearings are changed, these grooves and ridges will not correspond, and galling and seizing may result. It is also possible that the hole in the yoke and cap may not be bored exactly on center; so that changing or reversing a cap may result in a journal that is not a true circle. This, too, may cause seizure of the torque tube.

Check Failure Is Blamed

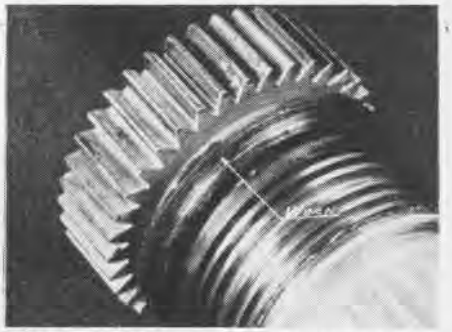
Hellcat Crash Lands In Salt Water

An F6F-3 with Model R-2800-10, total operating time 324.4 hours, crashed in salt water during take off. When engine was removed and disassembled, it was noted the main impeller plates had failed. Excessive wear on plates and ring carrier flange permitted the impeller to move aft until the fuel slinger contacted the fuel feed insert. Excessive impeller shaft end play allowed the impeller to contact the auxiliary blower sections.

Under recommendations the RUDM states: "There is no notation in engine log stating that Pratt & Whitney R-2800 Engine Bulletin No. 133 dated 20 May 1944, pertaining to checking the impeller end clearance, had been complied with at the time. It is strongly recommended that this be completed at the 240-hour engine check and at each succeeding 60-hour period on all engines that have not had Bulletin No. 133 incorporated."

The RUDM also recommended that engines showing symptoms of misfiring, backfiring, intermittent cut-out or complete cut-out be checked in accordance with Pratt & Whitney R-2800 Engine Bulletin No. 133. Such symptoms may sometimes be detected by misfiring around 2200 RPM and the condition is aggravated during forward acceleration.

▶*BuAER COMMENT*—**Unfortunately this RUDM is too typical of those being received. The photographs which accompanied the RUDM showed very clearly that checks given in R-2800 Engine Bulletin No. 133 would have revealed the wear on the impeller shaft thrust plates and a salt water crash would have been avoided. The Bureau was well aware of the time and trouble necessary to remove the carburetor and make checks. For that reason the manufacturers and overhaul activities were requested to mark engines in which impeller shaft thrust plate lubrication had been changed, so that engines not needing check could be readily identified. A great many checks could have been made with 50,000 man hours lost when plane crashed.**



WEAR INDICATES INADEQUATE LUBRICATON

Studs Fastened to Helmet

Method Eliminates Old Difficulty

NAS Alameda—A great deal of difficulty was experienced by this activity in sewing the tabs provided with the A-14 oxygen masks to the summer helmets. It was found that a very satisfactory substitute method was to fasten studs directly to the helmet in the same manner in which they are fastened to the leather helmets. A small piece (½" x ½") of reinforcing tape was placed under the head of stud to reinforce it.

This method made it possible to obtain a more satisfactory fit of the mask as well as speed up the process and improve the appearance of the product.

[Suggested by Ens. Forst D. Fuller, USNR]

SUMMER WEIGHT HELMET MUST BE REINFORCED

▶*BuAER COMMENT*—**It is suggested that a longer piece of tape be used so that the tape may enfold the exposed head of the stud and fasten the free end under.**

PILOT AND CO-PILOT IN OPERATIONAL FLIGHT TRAINER FAMILIARIZE SELVES WITH INSTRUMENTS

OPERATIONAL FLIGHT DEVICE

ONE OF the Navy's largest special devices – the Operational Flight Trainer–has been put in operation to train pilots and crews of PBM's and PB4Y-2's in night combat missions and use of their instruments.

First installation of the trainer was made at NAS Banana River. There it is used to teach coordination of the crew members and familiarize them with the way their PBM's operate. Use of the trainer, produced by BuAer Special Devices Division, saves considerable time on the line and prevents tying up of aircraft while crews are learning where the instruments are located and how the plane operates.

In five months of use at Banana River, the trainer has turned out approximately 2,000 pilots and crewmen. Other installations are being made at Patuxent River, Alameda and San Diego. Trainers for PB4Y-2 personnel also are being readied for distribution.

While pilots fly the plane on instruments, the trainer permits navigators and radiomen to operate their instruments and flight engineers to keep close check on engines. Coordination of their work is stressed over the intercommunicating system and constantly checked by instructors on their panels.

CONDITIONS OF FLIGHT SIMULATED BY TRAINER

OPERATING very closely like a real plane, the new device gives much wider flight experience because its instruments register just as though it was in actual flight. By means of a control room outside the "fuselage," instructors follow all maneuvers made by pilots and crewmen by means of duplicate instrument boards. As the crews "fly" the trainer, these instructors introduce various kinds of "trouble" to give pilots and crew full practice in remedying them, just as though they were in the air. It is capable of much greater realistic operation, even to operational radar.

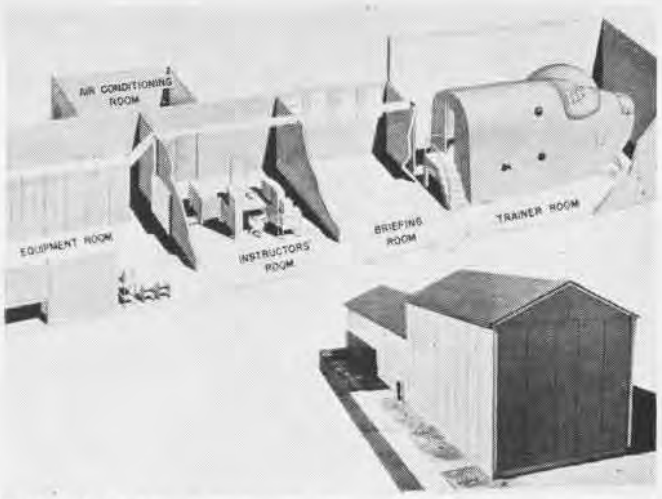
The first models of the trainer were operated by compressed air, patterned after the RAF's "Silloth" trainer, but present ones are electrically controlled and operated.

When pilots and aircrewmen report to Banana River for operational training in PBM's they spend their first week reviewing radio, gunnery, turrets, recognition and engines. The second week they go into the Operational Flight Trainer, spending 12 hours "flying" it. The third week they start flying *Mariners*.

The 12-hour syllabus of training for the second week is divided into six days. First they get a complete cockpit checkout to familiarize themselves with the 20-ton plane. The first two hours the men do straight flying, with takeoffs and landings, using all settings given. The second two hours the new pilots make minor turns, climbs, leveling off and trimming the ship. Operators introduce wind for them to make landings into.

The third day is spent flying a bounce hop pattern of 800′, making turns into the wind, using flaps and different speeds. The flight engineer gets a real baptism of fire when instructors introduce problems for him to meet, such as cutting down generators, blowing out lights, cutting down gas, knocking out pumps and requiring selections in the fuel system.

The fourth period is devoted to single engine operation, plus complete radio use. Pilots take the plane up to 1500′, then one engine is cut out. First they tend the good engine, then keep the plane flying, and finally secure the bad engine. The last two days of "indoctrination" in the trainer are given to radio range work and instrument flights. The plane is made to climb and glide, turn, using only a single engine. Pilots, navigators and crews solve other problems introduced at control panel.



Schematic drawing of operational flight trainer shows location of various units of device, one of largest used by Navy to train its pilots and aircrewmen. Lower picture is exterior view of the installation at NAS Banana River where PBM crews are turned out

Radio communication between pilot, navigator, radioman and flight engineer is maintained at all times while operational trainer is in use. Instructor at control panel checks on proper procedure and advises students when they are making any bad errors

Instructor at control panels watches how pilots in trainer fly the plane. "Crab" in foreground operates same as in regular Link trainer, following the flight problem being flown. Experienced men act as instructors. Device saves tying up planes on the line

Special instrument panel in control room permits instructor to introduce "trouble" for flight engineer, navigator or pilot by flip of dial. He may increase weight, change wind direction or velocity, or produce rough air or wing ice for them to remedy

Flight engineer gets the word on PBM engine panel from instructor. Instruments react exactly as though plane was in flight so men get realistic though synthetic training. Crew coordination is an important value gained through use of this special device

Radioman checks his instruments in trainer to see that they are working properly. He assists navigator in plotting position and operates other classified equipment which improve PBM's fighting qualities. Engine noise used to give men more sense of reality

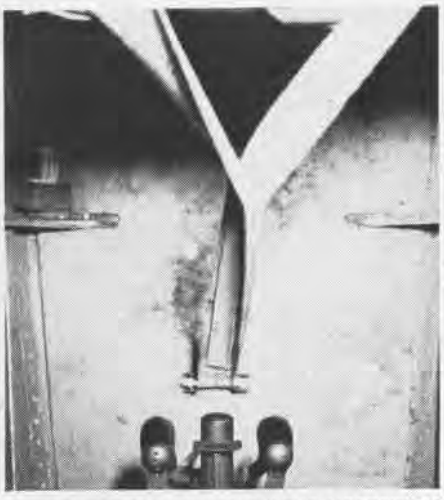
Harness Proves Its Worth

Crash Straps Anchor To The Deck

VT-81—A radioman's crash shoulder harness designed recently by a parachute rigger of this squadron, already has demonstrated its value in an actual crash landing of a TBM-1C attached to this squadron. Because he was wearing the new crash straps the radioman was protected from possible serious injury.

Four strips comprise the shoulder harness. There are two lengths of type VIII webbing 30 in. in length, one strip of the same type webbing 120 in. and one length of one-inch elastic 8 in. long. Fittings include two double adapters, two adjusters made up of Loop 215384-1 and Loop 215384-2, one left hand link loop and one right hand link loop.

WEB STRIPS COMPRISE THE SHOULDER HARNESS



STRAPS ARE SECURED BELOW THE AIRCREWMAN

The 120-in. piece of webbing first is folded double. Allow the two ends to separate and form straps passing over the shoulders. Pass each of the shoulder straps through the respective adjusters and fold the strap back upon itself before attaching a double adapter to it.

An R&L link loop should be attached to one end of each 30-in. piece of webbing after which the other end of these pieces of webbing should be passed through the adjusters. The elastic should be attached to the webbing six in. from the folded end and should allow eight in. of slack. This will allow operator to handle instruments and at the same time keep his shoulder straps in place.

The harness is anchored to the deck and can be used in either TBF-1C or TBM-1C aircraft. It not only prevents the radioman from being thrown forward, but also lessens the possibility of his seat being thrown loose if hold-down clamps are loosened by impact of a crash landing.

[Designed by Joseph F. Malouf, PR2C]

▸ ***BuAER COMMENT***—**VT-81 is to be complimented for developing what appears to be a satisfactory method of providing shoulder strap protection to the radioman. However, it is considered that the shoulder harness installation described in Model TBF-TBM.**

Airplane Service Change No. 196 recently promulgated by the Bureau, is more desirable for the following reasons:

1. It makes use of the standard NAF 1201 shoulder harness, thus eliminating the necessity for fabricating a special strap, and

2. The straps are fastened to the airplane structure at the level of the occupant's shoulders rather than on the deck, and therefore will introduce no downward load into the pilot's body, a condition which may cause spinal injury.

SBD Inverted to Break Jam

Procedure Unlocks Landing Gear

NAAS Cecil Field—An addition has been made to the procedure for lowering SBD landing gear which are jammed in the retracted position. After completing all prescribed procedure with no results the pilot climbs to safe altitude, relieves all hydraulic pressure by shifting cowl flaps to "open" or closed and then to "neutral," rolls to inverted flight, places landing gear selector lever in the "down" position and applies hydraulic pressure by use of the pump.

As the wheels are unlocked and begin to extend, the pilot completes the maneuver by pulling through, applying positive acceleration to lock them down. This procedure has worked on four occasions where all other methods failed. Caution must be used with the SBD-5 in not remaining in the inverted position too long. Also flaps should be used in recovery to prevent excessive speed which may damage landing gear.

▸ ***BuAER COMMENT***—**The above procedure is considered to be a desirable addition to that outlined in TO 79-43. Care must be taken to not subject the gear to excessive speed or acceleration when it is either fully or partly extended. No reports have been received indicating that trouble has been experienced in extending the gear after it has been unlocked from the retracted position. It is therefore considered that after the gear starts to extend with the airplane inverted, the maneuver may be completed by rolling back to normal flight rather than by pulling through.**

The only fuel and oil available to the engine when the airplane is inverted, is that which is in the lines when the airplane is rolled to the inverted position. The length of time the engine will operate before this fuel and oil is consumed consequently is dependant upon the power being developed. Also, prolonged flight is an inverted position will seriously damage the engine. If the above procedure results in the gear unlocking, success will be immediately obtained. There should therefore be no reason for maintaining an inverted position for more than a very few seconds.

Aircraft Accident Reports

Some aviation activities are submitting incomplete despatch reports of accidents. Items (a) to (g), referred to in paragraph 6 of Aviation Circular Letter 48-44, are urgently required. Please review this reference and conform.

DUAL PURPOSE STAND

An adjustable work stand which can vary in height from 5′ 6″ up to 16′ has been developed and put into use by the Engineering Division of A&R at Kaneohe Bay Naval Air Station. With an adapter, floats can be lifted and installed for PBY's, PB2Y's and PBM's. Channel, standard pipe and surveyed aircraft float screws were used to construct the stand. Surveyed ball bearings from aircraft engines, which were available, were used for bushings. In addition to the adapter used for the installation of floats, the stand has an extension which folds down out of the way and provides a working platform for two, 16′ above the deck. In high and low positions, tests made on stand show that at the highest position it will hold 700 lbs. safely. This adjustable stand, Dwg. No. KB-E-64-C, can be manufactured by any A&R Division. Welding requires about 150 man-hours. Kaneohe has plans and specifications.

POWER PLANTS

Rocker Box Plug Oil Leaks Reported

Rocker box plug oil leaks in R-1820-56 engines have occurred frequently on new engines sent to the airplane contractor. At present this trouble is being remedied before the airplanes are released to the fleet but many airplanes and engines now delivered may have. The fix is to remove the plug, cover it with Permatex No. 1 or other suitable compound available and then reinstall the plug.

Instruct F6F Pilots On Fuel Pump Use

BuAer has received a request that instructions for use of auxiliary fuel pump in F6F's be clarified. Tech. Order No. 23-44 describes conditions under which auxiliary fuel pumps should be used. However, in the case of the F6F-3, a large number of preliminary pilots' handbooks bearing dates up to 28 July 1943, and a lesser number of pilots' handbooks dated 7 December 1943, are out in the Fleet. All these handbooks contain a flat statement that auxiliary fuel pump should be on during all flight operations. This instruction is not correct and should be stricken from the handbooks.

While the auxiliary pump should be used whenever adequate and steady fuel pressure cannot otherwise be maintained, there should be no occasion for constant use of the pump unless failure of the engine-driven pump has occurred, or trouble has developed in the fuel system.

Indiscriminate use of the auxiliary fuel pump could conceal the onset of such trouble, which obviously should be corrected as soon as a landing can be made where repair facilities are available. Constant use also makes failure of auxiliary pump much more likely to occur.

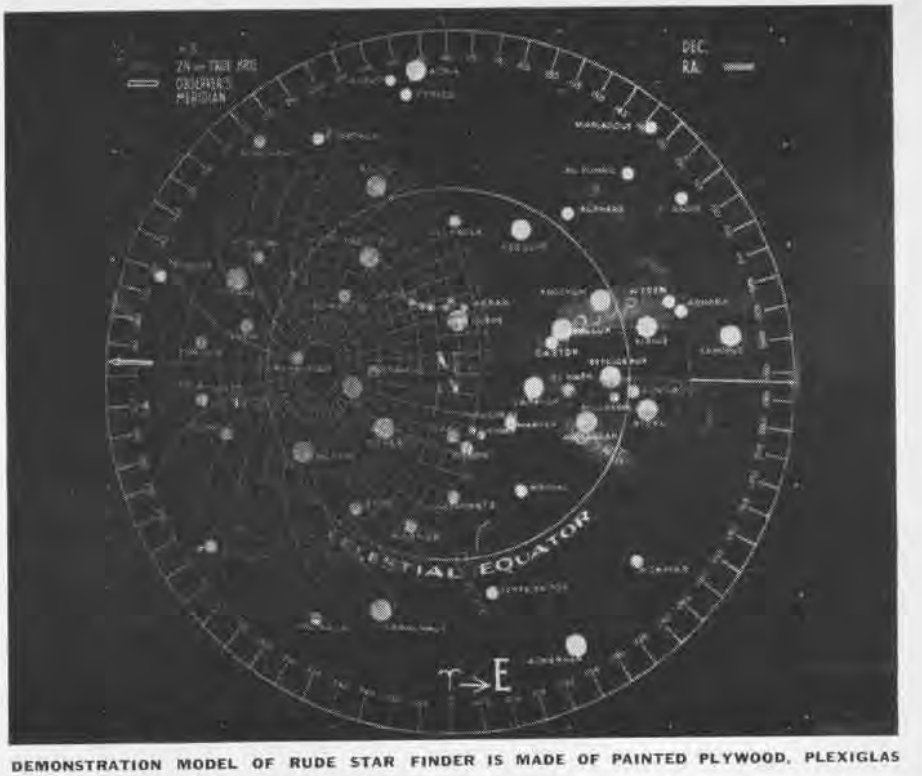
The offending instruction was eliminated before publication of F6F pilots' handbooks dated 1 June 1944.

Should Carry Supply Replacement Seals

A recent epidemic of generator drive oil seal failures due to hardening and cracking of seal in R-2600-20, -22 engines has been traced to a change in critical material of the oil seal and to the increased friction and heat due to the higher speed built-in generator drive incorporated in these engines. A new oil seal material is under development at a high priority.

Until the new oil seal is available and installed in all engines, it is suggested that all activities carry a supply of replacement seals with them especially if they are going to advance areas.

When the present seal is installed as a replacement it should be burnished to a larger I.D. Coat seal with engine oil then turn it in a lathe at 1500 to 2000 rpm. Use a smooth rounded end steel rod about ⅜" in diameter dipped in lubriplate or graphite in grease to lightly burnish the I.D. of the seal. To test for correct I.D. use a slightly tapered mandrel with lines at 1.620 and 1.625 diameters. Burnish seal until it will check between the lines on the mandrel.



DEMONSTRATION MODEL OF RUDE STAR FINDER IS MADE OF PAINTED PLYWOOD, PLEXIGLAS

Star Finder Aids Study

Teaching of Navigation Simplified

NAS OTTUMWA—A demonstration model of a rude star finder, designed by an officer of the navigation department, is being successfully employed as an aid in ground school. The model represents a five and one-half times enlargement of a rude star finder with all numbers referring to south latitude eliminated for purposes of clarity.

It is constructed on a 48" plywood base painted black with stars marked in white. On it is mounted a 48"x32" plexiglas template on which altitude lines are painted in blue, azimuth lines in orange and local meridians represented by a red arrow outlined in white. There is also a planet plotter scale with the declination scale marked in green and the right ascension arrow in yellow. A color key is appended on the black base.

This demonstration model has proved quite an advance over other teaching methods which rely heavily on blackboard explanation.

[DESIGNED BY LT. GORDON REIS]

▶ ***BuAER COMMENT*—Ingenuity and resourcefulness in the field is encouraged.**

Jack Helps Escort Carrier

Tire Changing Job is Speeded Up

U.S.S. SUWANNEE—An aircraft with a flat tire is an aircraft out of commission. On small carriers, where flight deck space is at a premium, wing jacks must be kept below, thus when a plane blows out a tire in landing either the jack must come up or the plane go down.

Either process consumes too much time. The fairing used on F6F's precludes use of standard automobile jacks. An ensign on this ship devised a rim

WHEEL JACK PERMITS REMOVAL OF F6F WHEEL

jack which fills the need by raising the plane to a desired height so a standard jack can be placed under the axle.

The rim jack is removed and the wheel then can be removed. This jack does not damage the wheel and has proved quite satisfactory. It does not take up much space and can readily be moved among parked planes. It has been used on the outboard wheel of planes parked close to the flight deck edge. Tires can be changed while the remainder of the flight is landing, thereby causing no delay.

The jack was made of scrap channel, angle and pipe using only a cutting torch and electric arc welder.

[DEVELOPED BY ENS. E. W. GEORGE, USN]

▶ ***BuAER COMMENT* — F6F's can be jacked with conventional jack when Bureau**

Change 63 (Grumman Serv. Bul. 98) is installed. This change provides for elongation of hole in fairing so that a bar may be placed in hollow axle for lift point.

Tire Changer Saves Labor

Eliminates Wheel Damage Danger

VJ-16—One of the biggest headaches confronting the structural department of Squadron VJ-16 was eliminated by design and construction of a simple but efficient tire changer.

Tires which formerly required two or three hours to break loose from rims by means of sledge hammers and conventional tire tools under the ever present possibility of damaging both casing and wheel, can now be broken loose in a few minutes with a standard hydraulic jack and the new device.

Designed originally to handle JM-1 side wheels and tires only, it was found by experimenting that it could handle with the addition of a few simple parts all types of wheels and tires from the smallest to the largest.

The changer has a horizontal metal base 5′ x 5′ in dimension which is mounted on casters. Two metal bars are welded across the center section of the base parallel and 18″ apart. Extending over the base at a height of 39½″ at apex is a metal arch which forms a pressure point for the hydraulic

HYDRAULIC JACK FURNISHES PLENTY OF POWER

jack. Steel adapter rings are fitted over flange of wheel and forced down by the jack.

▶ *BuAER COMMENT*—**This tire changer is of general interest. Changing a tire formerly required a great amount of hard work with the possibility of damage.**

Moisture Affects Launcher

Current Caused in Junction Box

That moist conditions may produce stray low voltages in the firing circuit of MK IV Aircraft Rocket Launchers is indicated in service experience by the Hedron Detachment of Fleet Air Wing 16. In one instance a potential of one-fourth volt resulted from electrolytic action between the brass terminal lugs and the aluminum walls of the small junction box located near the aft end of the launcher rail. Similar effects can be expected wherever salt water can form an electrolytic cell between dissimilar metals in the junction box.

Tests will be conducted to determine whether the stray voltage will fire rockets. At present the following procedure is advised to eliminate the electrical potential and attendant corrosion:

1. Take precautions to prevent the accumulation of moisture in junction boxes.
2. Replace the brass terminal screws with aluminum screws where moist service conditions prevail.

Although MK IV rocket launcher installations are being replaced by MK V-1 (zero-length) launchers, they will continue to be used on certain types of VPB aircraft. Zero-length type launcher installations should be free of trouble.

(Succeeds List of August 1, 1944) *1 September 1944*

THE FOLLOWING SHOWS THE NUMBER AND DATE OF ISSUE OF THE LAST SERVICE AND OBSOLESCENT AIRPLANE BULLETINS AND CHANGES

(Contract changes are not included)

Airplane	Bulletin	Date	Change	Date
F6F	58	8-16-44	70	8-14-44
FM-1	27	8-8-44	52	6-5-44
FM-2	16	8-4-44	20	8-17-44
F4U-F3A-FG	76	7-22-44	188	8-18-44
GH-1	8	7-31-44	19	5-31-44
GH-2	1	7-31-44	3	6-21-44
AE-1	2	3-28-44	2	8-6-44
J2F-5	13	8-17-43	16	3-27-44
J2F-6	1	2-25-44	7	7-14-44
JRB-1	15	8-5-44	13	3-2-44
JRB-2	14	8-5-44	14	3-2-44
JRC-1	5	2-4-44	5	7-19-44
NH-1	1	7-31-44	12	6-16-44
N2S-3	23	6-13-44	31	7-7-44
N2S-4	14	6-13-44	12	7-7-44
N2S-5	6	6-13-44	11	8-14-44
OS2N-1	32	6-24-44	33	3-3-44
OS2U-3	57	6-24-44	63	3-3-44
PV-1	60	7-24-44	152	8-10-44
PBJ-1	24	8-21-44	50	8-12-44
PBM-3D	18	8-15-44	49	8-14-44
PBM-3R	48	8-15-44	132	8-10-44
PBM-3S	27	7-31-44	82	8-10-44
PBN-1	5	7-24-44	50	7-19-44
PBY-5	55	7-6-44	169	8-10-44
PBY-5A	67	7-6-44	161	8-10-44
PBY-5B	12	6-6-44	36	3-13-44
PB2Y-3	40	7-22-44	147	8-11-44
PB2Y-3R	42	7-22-44	128	8-11-44
PB4Y-1	71	8-15-44	114	8-7-44
PB2B-1	5	7-6-44	3	6-22-44
R4D-1	26	8-18-44	33	8-2-44
R4D-2	11	6-14-44	3	1-6-44
R4D-3	17	6-14-44	18	8-2-44
R4D-4	12	6-14-44	5	8-2-44
R4D-5	19	8-18-44	22	8-2-44
R5C-1	15	7-28-44	79	8-11-44
R5D-1	20	7-21-44	81	7-31-44
R50-5	11	3-31-44	12	6-9-44
RY-1	27	8-15-44	18	8-7-44
RY-2	11	8-10-44	6	7-20-44
SBD-3	85	6-12-44	155	6-23-44
SBD-4	40	6-12-44	67	6-23-44
SBD-5	55	8-12-44	74	8-12-44
SBD-6	16	8-12-44	14	8-12-44
SB2C-1	63	8-24-44	95	8-4-44
SB2C-1C	54	8-24-44	101	8-4-44
SB2C-1A	13	8-24-44	18	7-31-44
SB2C-3	42	8-24-44	60	8-16-44
SB2C-4	12	8-24-44	5	8-16-44
SBF-1	31	8-24-44	29	7-19-44
SBF-3	20	8-24-44	8	8-12-44
SBW-1	31	8-24-44	52	8-12-44
SBW-3	27	8-24-44	38	8-12-44
SNB-1	19	8-8-44	21	7-14-44
SNB-2	17	7-21-44	14	6-5-44
SNB-2C	8	8-8-44	6	6-5-44
SNJ-4	23	5-18-44	27	8-8-44
SNJ-5	7	3-1-44	10	8-8-44
SNV-1	21	7-5-44	51	5-22-44
SNV-2	5	7-5-44	5	5-22-44
TBF-TBM	117	8-19-44	203	8-17-44

87th & ANTHONY

R-1830 Engine Hydraulic Tools Designed

Hydraulic tools for installation and removal of the thrust bearing on the R-1830 engine have been devised by the Advanced Engine Maintenance School at this activity. A seven-ton Black Hawk Jack incorporated with puller PWA 1534-3 was found to eliminate trouble in the form of

87TH & ANTHONY DEVELOPS TIME-SAVING TOOLS

stripped threads on the jack screw and in the plate which had previously been encountered with the use of puller 1534-3 alone.

Possible damage to the engine propeller shaft and thrust bearing is eliminated and over-all job-time definitely is shortened with the device.

In order to allow the necessary space for pulling, the rod length on the puller has increased the height of the hydraulic jack. Normally the thrust bearing was installed by driving in place with a mallet and sleeve. A hydraulic installing tool also was designed, utilizing a jack of the same type. Quick disconnect fittings on the puller and installing tools allow a single pump to operate both.

The new device has been incorporated into shop procedure for the 800 trainees currently enrolled in Advanced Engine Maintenance School and has met with approval of both instructors and students.

Safetying Pin Adapted for Wright Stand

A safetying pin for Wright engine stands—a device used frequently throughout the Navy in other capacities—has been adapted here by A. H. Haug, AMM2c. Made from a ½" bolt, the swiveled, weighted end of the pin locks it after installation in the engine stand. Before removing the pin, it is necessary to turn the weighted end in line with the body of the pin. The device has eliminated the possibility of omitting the cotter pin.

A & R Shops
LET NANEWS HEAR FROM YOU!

Portable Propeller Dolly

Should Be Requisitioned From ASO

BuAer is expecting early delivery of a quantity of portable, knock-down type dollies for handling all current naval aircraft propellers in and around hangars and in the field.

This dolly is mounted on four 5" x 4" airplane type pneumatic-tired casters, giving a minimum propeller blade tip to deck clearance of 12". It has a manual tow bar connected to an automotive type steering system, a rear hand brake to prevent movement of the dolly when parked, and will support simultaneously two propellers up to a combined weight of 3,000 lbs.

The propeller support shafts are provided with various adapters for accommodating SAE Nos. 20, 30, 40, 50 and 60 splined propeller hubs. The lower blade clamps are adjustable in order to fit 9' to 18' diameter, 2-, 3- or 4-blade

DOLLY WILL HANDLE ALL CURRENT NAVY PROPS

propellers. The approximate over-all dimensions of the dolly are 60" tread, 95" wheel base, and 114" maximum height (without propellers).

These dollies can be obtained by requisition to ASO Philadelphia, bearing nomenclature "Airplane Propeller Dolly." They are manufactured by Weaver Mfg. Co., contract N2888-23645. A stock number will be assigned by the Aviation Supply Office at a future date.

Pilot Should Lock Wheels

Belly Landings Are Risky on Land

That landing gear on the PB4Y-1 airplane should be down and locked for emergency landings on land, but retracted for water landings, is the gist of Flight Safety bulletin No. 29-44 recently released. This new bulletin points out that an earlier safety bulletin, No. 14-44, is not considered fully applicable to PB4Y-type craft because the hull on such craft might be seriously damaged by a belly landing on normal terrain.

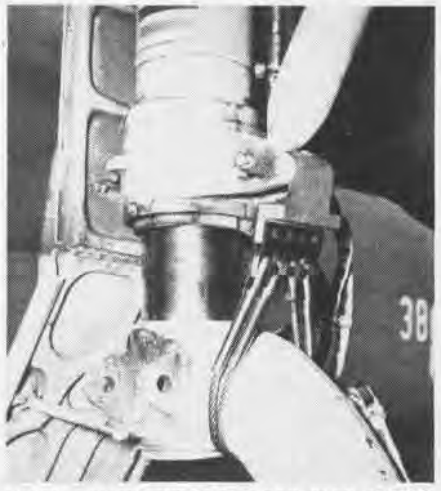
The new safety bulletin is borne out by a thorough analysis of accident reports. These showed that emergency landings on land are less dangerous to craft personnel and less liable to severe damage when the wheels are down and locked. Bulletin No. 20-44 is a must, to be read by all pilots.

Snubber Stops The Wobble

Liberator Is Jacked Up With Ease

FAW-14—A snubber for the main landing gear of a PB4Y-1 and PB4Y-2 which eliminates both wheel jack and blocking has been developed by this activity. It prevents extension of oleo struts and has proved to be a saver of both labor and time. The snubber was developed by a member of Headquarters Squadron Detachment, NAS Camp Kearney, and manufactured in the NAS A&R department.

[DESIGNED BY ENS. F. R. ROBINSON]



BUAER PRAISES INVENTION FOR OLEO STRUTS

▶ *BuAER COMMENT* — **This snubber seems to be a very satisfactory arrangement for holding the strut from extending while jacking the airplane. This also should prevent wobbling of PB4Y-1 airplane jacks which occurs when jack is extended high enough to raise wheel and tire off the ground if a snubber of some type is not used. It is suggested that all activities manufacture and use as soon as possible.**

New Tools Speed Up Work

A&R Submits Time-Saving Methods

MCAS MOJAVE—After experimenting with ways to improve speed and efficiency, men in the A&R shops have devised the following tools.

Figure 1 is a compressor for piston return spring. Its purpose is to facilitate removal of lock rings from sleeve assembly of the Navy Type 3 cartridge starter by forcing the end of the piston through the circular opening in the bottom plate by turning handle at "A."

Figure 2 is a wrench for removing

[Adapted from poster by Ens. T. B. Howell, A-V(N), USNR]

the number one plug in the rear bank of cylinders. This eliminates necessity for removal of the cowl flap cables.

Figure 3. This is a clamp with extension, *Figure* 4, regularly supplied by the F4U manufacturers for removal of the tapered pins in the stabilizer assembly. It is made from salvaged material.

Figure 5 is a bullet pin for sling used to pick up plane. This is much easier to use and saves time usually required to fit nuts on bolts.

▸ *BuAER COMMENT*—**These tools are time-savers. Although similar items are in use, many stations and squadrons do not know about them and are not using them.**

COMPRESSOR, WRENCH AND CLAMP ARE DESIGNED

CASU Develops an Adapter

Oil Waste and Time Loss Overcome

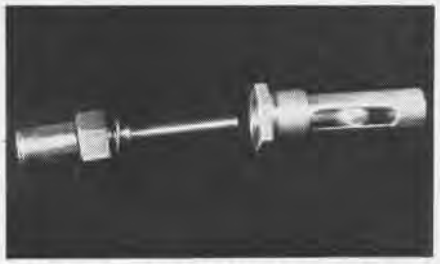
CASU-22—An adapter for the oil temperature bulb, designed to eliminate both waste of oil and loss of time, has been designed in this service unit. It first is screwed into the oil tank after the temperature bulb has been removed and the bulb then is screwed into the adapter. When the bulb is removed the ball in the adapter drops down, closing the opening.

There are two principal disadvantages in the standard installation of an oil temperature bulb. First, it is impossible to remove the bulb without wasting oil. Secondly, a defective bulb cannot be changed immediately after a flight because of oil temperature.

It is felt the adapter overcomes both difficulties. It is easy to manufacture and the weight is negligible.

▸ *BuAER COMMENT*—**In evaluating the proposed adapter it is pointed out that there is no reason to assume that the temperature at a point in a tank installation, as shown in the photograph, would be representative of the actual oil inlet temperature to an engine. The extent of variation from the temperature would undoubtedly vary for each tank and for each installation, necessitating extensive tests to establish a correlation.**

Moreover, from a mechanical point of view, the tip of the resistance bulb is made of tissue thin material which would be damaged should the ball of the adapter undergo vibration. It is considered that should it be necessary to change the bulb immediately after flight the oil could, when necessary, be removed before removing the bulb and replaced when installation is made. Adapters use is not contemplated.



BALL CHECK DEVICE IS EASY TO MANUFACTURE

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PHOTOGRAPHY

Photo Instruction Manuals Get Binders

Binders for NavAer, AN and A.T.O. photographic publications have been recently mailed to all major photographic units. No further automatic mailing will be made; additional binders required may be ordered from BuAer. The binders are listed in the NavAer Publications Index as No. 00-25-509.

Photographic Exposure Meters Scarce

The supply of photographic exposure meters has become very critical, and indications are that when present stocks are depleted no more will be available. It is therefore suggested that whenever a Naval, Marine Corps or Coast Guard activity has in its possession an exposure meter that is damaged, arrangements be made to return it to the manufacturer for a complete overhaul.

Focusing Model of K-20 Developed

A carrier has submitted drawings and photographs to BuAer on a design worked out by a photographer's mate by which a K-20 camera was converted to a focusing model. Tests on this design have proven satisfactory and material will be purchased in order that a percentage of the K-20's may be converted. More information on this will be sent later.

Seabee Stores Film in Tropical 'Hot Box'

A Seabee photographer on Espiritu Santo Island had difficulty storing boxes of film and paper with the seals broken due to excessive moisture in his darkroom. He constructed a small hot box for this purpose and had no further trouble so long as the material was used in a reasonable length of time.

Intervalometer Requires Frequent Checks

Photographic units using the B-3B Intervalometer should frequently check the time interval of these instruments. Time checking is easily accomplished without shop facilities, only a small screwdriver and a stopwatch are required. Complete instructions for correcting timing errors are included in the Handbook of Instruction for Intervalometer Type B-3B, AN 10-1-71. For detailed instructions see Paragraph 4(a) of Section 6, Page 11. Copies may be obtained from BuAer.

▶ A booklet covering the entire story on processing 16mm gun camera film is being printed. The publication is NavAer 10-1-513 and will be distributed to all major units. Additional copies may be had upon request to BuAer Publications Section. Packaged chemicals for the reversal process are in the procurement stage.

▶ Perhaps the best guide as to what type of news and historical photographs are in demand is a study of current service publications and civilian magazines. Good photographs of our country at war are not only wanted for immediate press release, but are invaluable as a permanent record.

LETTERS

SIRS:

In the June 15 issue, page 38, NAVAER NEWS wisely counsels Navy and Marine pilots to take cognizance of the Army's ban on referring to aircraft as "ships." This irksome usage has long persisted particularly among Marine pilots.

It came as a distinct shock upon re-reading page 8 of the same issue to find a PB4Y referred to as a "ship" by the NEWS under the heading "Blinded Signalman."

"Ships or no ships," keep up the good work. For some of us NAVAER NEWS is one of the few contacts we have with late developments.

Very truly yours,

COMMANDER, USN

U.S.S. *Chincoteague*

¶ It came as a distinct shock to NANEWS, too, upon re-reading it.

SIRS:

It is requested that this squadron be informed of the source of Caterpillar Club pins and certificates.

LT. COMDR., U.S.N.

VOF-2

¶ Application forms may be had by writing the Caterpillar Club, P. O. Box 1328, Trenton, N. J. All who are eligible to membership are presented with properly engrossed membership certificate, pocket credentials and insignia pin.

The Caterpillar Club was a nebulous organization from some time in 1922 until the spring of 1943, when it was formally incorporated. It was maintained through the interests of the Army, Navy and old-line parachute manufacturers who gave out insignia pins. Anyone who made an emergency parachute jump automatically became a member. Early in 1943 a number of the club members decided that the club should be organized to insure a more active and permanent body. Headquarters were established at Trenton, Richard Switlik serving as secretary. Applications have been coming in from all parts of the world.

SIRS:

Each airship squadron of the Atlantic Fleet maintains an Air Combat Intelligence library, the purpose of which is to stimulate pilot reading of classified and professional

literature, interest in recognition training and knowledge of current developments in the lighter-than-air service. Blimp Squadron 21's A.C.I. library, pictured here, is a model airship squadron library.

"Must" reading for pilots and publications pertinent to LTA operations are segregated on individual tables. Regularly received official publications such as the *Naval Aviation News* are placed in binders. Officers, who have custody of the library, supplement the library's reading matter and displays with frequent lectures on current events and intelligence matters.

LIEUT. (J.G.) USNR
A.C.I. Officer
Blimp Squadron 21

THE HELLCAT

Snarling in secrecy, the *Hellcat* spits,
And discontentment fills the hangar eave.
Nothing in warfare so annoys the brave
As waiting, waiting. So the *Hellcat* sits

And grumbles for the time to take the air.
But mystery is the word within the lair.

Soon as the long-sought signal comes to "go"
The cat will claw at startled sunred dots:
And *Zeros*, once the *Hellcat* shows its spots,
Must crash to conquered isles that lie below.

—VICK LINDLEY, ARTIC, CASU 22

SIRS:

Grampaw Pettibone is one of the outstanding factors in the current reduction in accidents in Air Ferry Squadron One. While many of the mistakes emphasized by Grampaw are not mistakes normally found in aircraft delivery, nevertheless many of them are, and the ones that do not apply may apply later on in the pilot's career.

Each month Grampaw Pettibone's words of wisdom are posted on our Crash Board. Doing this in other activities might aid in reducing accidents.

To avoid mutilating two copies of NAVAL AVIATION NEWS, when clipping out Grampaw Pettibone for posting, it is suggested that this section be arranged in NAVAL AVIATION NEWS so that it can be detached (perforated edge if possible) from a single copy and posted.

FLIGHT SAFETY OFFICER, VRF-1
Brooklyn, N. Y.

¶ It is not practical to arrange for perforation of Grampaw Pettibone pages in NANEWS, but where possible, as in the past couple of issues, pages are being arranged so that both may be detached for posting as suggested.

CONTENTS

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ANSWERS TO QUIZZES

• BEST ANSWERS (on page 18)

1.b 2.c 3.c 4.c 5.a 6.b

• NAVIGATION PROBLEM (on page 14)

a—22° 28′ d—48° 41′

b—19 mi A e—27 mi A

c—133° f—214°

g—Lat. 27° 20′ N
Long. 120° 40′ W

(Tolerances of 2 or 3 miles or 2 or 3 degrees from the answers are considered correct)

• PIX QUIZ (on page 15)

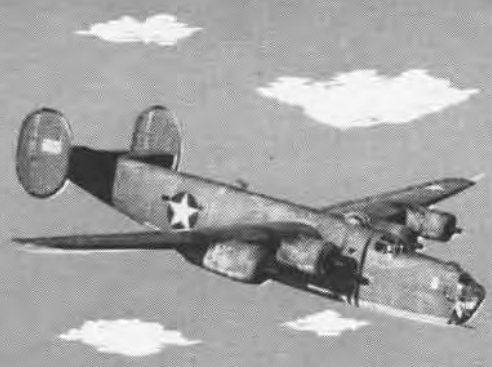
1.1 2.1 3.4 4.2 5.4 6.4

Films available from BuAer, Special Devices, for showing in Visual Quizzer, Device 5-X. Standard slide film versions may be obtained from Training Films, Bureau of Aeronautics

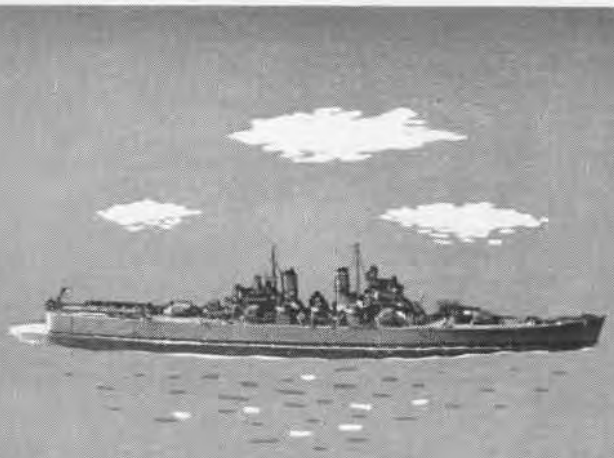
Answers to Quiz on Page 8

1. Each shall alter his course to the right so as to pass at a distance of at least 500 feet. Reference: Civil Air Regulations, Art. 60. 3402.
2. Yes. Reference BuAer Manual, Art. 15-204.
3. Ten hours. Reference: Aviation Circular Letter 19-44, par. 9(E).
4. Probably due to lack of oxygen. Descend to 10,000 feet immediately, using emergency oxygen supply. Make sure your oxygen equipment is operating properly before again ascending. Reference: T.O. 54-44.
5. Make certain that you are clear of the aircraft before pulling the rip cord. Reference: *Parachute Sense*, page 12.

Don't Be a Sucker! Look It Up!



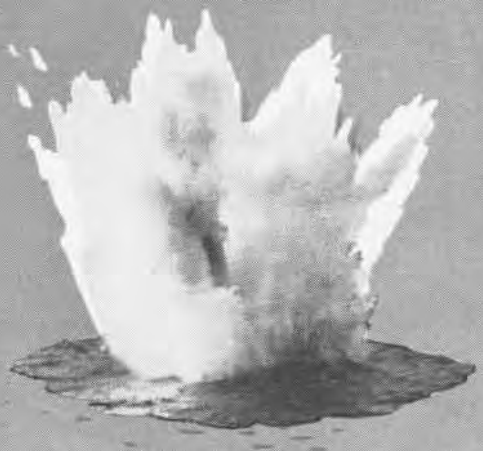
1 This is a U.S. Navy search plane.



2 This is a U.S. cruiser, sighted by the search plane.

3 This is an AA gun on the U.S. cruiser.

4 This is a U.S. shell used in the AA gun.



5 This is what the U.S. shell can do to the U.S. plane.

Identify

WHEN APPROACHING ALLIED SHIPS!

JAP IS HIT IN TRUK ATTACK

END OF the glory trail for one pilot of the Mikado is shown in remarkable detail by these pictures. Task forces of the Pacific fleet blasted Truk in late April. During the attack Jap was hit by accurate anti-aircraft screen rising from the deck of one carrier in the task force.

NIP TORPEDO PLANE ROARS LOW OVER WATER TOWARD AMERICAN CARRIER THROUCH A CURTAIN OF SHELLS WHICH THROW UP GEYSERS CLOSE BEHIND IT

SHELL STRIKES HOME AND THE JAP PLANE ABRUPTLY SPIRALS SKYWARD

REELING DOWN IN FLAMES THE ENEMY SINKS STILL CARRYING HIS TORPEDO