

W. B. ...

NAVAL AVIATION
NEWS



Jacksonville • Pix Quiz
Signaling With Mirrors
Strategic Guam • Letters

Sept. 15, 1944

RESTRICTED





No. 8 of a series

The wheels struck the water!

"Mission successful," muttered Ensign D as he dodged heavy ack-ack and swung his SBD around for a homeward flight. He and Aircrewman Lawrence Flanagan had destroyed anti-aircraft batteries, fuel dumps and radio stations.

The attack had been made at extreme range, and their fuel supply was dangerously low. As soon as U. S. task force carriers were spotted, four SBD's immediately landed to refuel before returning to Carrier X.

Ensign D stayed on course, for he anticipated no trouble and he knew his

meager supply would just last. However, the unexpected happened. As he approached the carrier for a night landing, he was quickly waved off by the signal officer. The deck was full, and another circle was a real challenge to his gas tank. As he brought his plane in for a second approach, the engine suddenly sputtered—then conked out.

Forced to make a water landing, Ensign D put his plane down in the heavy sea and turbulence of the big ship's wake. The wheels hit first and flipped the bomber over on its back. Ensign D

struggled to get out of his plane cockpit.

Inhaling and swallowing a great deal of water, he fought his way up only to be caught in the bomb rack. Meanwhile Flanagan had extricated himself from the capsized plane, and was swimming on the surface when he noticed the pilot's dilemma. He made a dive for Ensign D, freed him, and hauled the pilot to the surface. Ensign D owes his life to Aircrewman Flanagan's heroism.

**Aircrewmen
have
what it takes!**



STRATEGIC GUAM

THIS MARINE stands triumphant over the rising sun on the wing of a Japanese plane shattered in the battle for the Marianas. Saipan and Tinian have been captured. The Marines are back again on Guam and the American flag flies once more over the island. The Marianas were hit for the first time on February 22 and 23, 1944, when an American task force struck at Saipan and Tinian. On the morning of June 15 the first U.S. landing boats and amphibious tractors grounded on the shores of Saipan and after 25 days of hard fighting the island was declared officially conquered. On July 20 American amphibious forces landed on Guam and three days later Tinian was invaded. Until the invasion of these islands the American bases nearest Japan were those in the Marshalls, almost 3,000

miles away. That distance had now been halved. The strategic location of the Marianas made it possible to set up a naval and air barricade across direct Japanese communication to the south and offered a springboard for new blows against the heart of the Jap empire.

THE JAPS had heavily fortified these islands so important in their defense system. Well-entrenched troops were supported by a considerable air force from nearby islands. In this crucial battle the Japs did not dare risk their fleet except in a limited way on one occasion. Jap carriers sent in planes they hoped might get back by refueling on other islands in the vicinity. This action cost the Japs 373 planes in two days, as well as considerable damage to their fleet which withdrew.



THIS PRE-WAR AIR VIEW OF OROTE PENINSULA, GUAM, SHOWS THE TOWN OF SUMAY, PAN AMERICAN AIRWAYS FACILITIES AND MARINE RESERVATION

MAGELLAN DISCOVERED MARIANAS ON HIS GLOBE-CIRCLING VOYAGE

A BOW-SHAPED CURVE of tiny green islands, the Marianas are the southernmost volcanic peaks of a gigantic mountain range rising almost six miles from the ocean bed in one of the deepest known parts of the Pacific. This range discovered by Magellan on his epoch-making first voyage around the world in 1521, extends north and south over 1300 miles, forming a series of island stepping stones from Japan through the Marianas to Guam. The largest and

southernmost of the island group, Guam was destined to become an important stopping place on the long voyage between America and the Philippines because of its good harbor and abundant resources.

The island has an area of about 225 square miles, almost as large as the 14 other Marianas together. It is the largest island in the North Pacific between the Philippines and Hawaii and between Japan and New Guinea. Port Apra on the west coast of Guam is the best natural harbor in this entire area of the Pacific. It was here, adjacent to the town of Sumay, that the U.S. Naval Government set up a Marine Reservation and built the Pan American Airways base shown above. During the bombardment this area was almost entirely destroyed, and great damage was done to the airfield.



U. S. Marines wading ashore on Agat Beach on Guam pass an upside down Jap Val dive bomber destroyed by Navy planes in pre-invasion missions over the island. Guam was invaded by Marines and Army troops on July 20, 1944. Island was retaken in August

U.S. PLANES BLASTED TOWN OF SUMAY, SEAPLANE BASE, AIRFIELD

NAVY PHOTO INTERPRETERS have annotated this vertical view showing the ruins of the town of Sumay, PAA seaplane base, Marine reservation and the beginning of the airfield built by the Japs. Most of the structures in the seaplane area have been shattered completely and planes have been blasted here and on airfield taxiways above. This base was formerly an important stopover for planes bound from the United States to the Orient.

Guam is the crossroads of two lines of stepping stones across the Pacific—the Japanese line, south from Japan through the Bonins, Marianas and Carolines to the Equator; and the American line from San Francisco to China via Hawaii, Midway, Wake, Guam and the Philippines.

The island is important chiefly because of large land areas suitable for major air bases, and its location in direct line of communications between the Japanese Empire in the north and the mandated islands. It is approximately the same distance from the Marshalls, Philippines and Tokyo.

In 1940 the population of Guam was 23,067 including 21,502 natives, 787 non-native residents and families, 778 naval personnel. Only 39 Japs were recorded on the island, and Japanese influence was not strong, though Rota, under Jap mandate, is only 45 miles away. The population was concentrated around the harbor of Apra, on Orote Peninsula.

THE CAPITAL CITY of Agana was an attractive town of 12,000 with many comfortable-looking lime and coral rock houses, prosperous stores and clean streets, a modern sewage system and electric plant. This town was the social, economic and religious center of Guam, with administrative and judiciary buildings, a cathedral, high school and the main office of the Development Bureau. The town of Sumay is next in size and importance, and is also located on Apra harbor, on Orote Peninsula. Here also is one of the major airfields of the island, as well as the seaplane base. Another important airfield is located nearer the center of the island, in the vicinity of the town of Agana. Both these airfields were constructed entirely by the Japs.

The southern half of Guam is volcanic and hilly, rising to a height of 1,334 feet, but the northern half is a broad reef-limestone plateau which offers many additional sites suitable for airfields which can be used against the Jap mainland.



Aerial reconnaissance and photo interpretation show evidence of damage done by U.S. blasting of former seaplane base on Guam. The Japs were using this area in combination with the airfield they had built nearby. Sumay is the second largest town on Guam.



Photo reconnaissance by a Navy plane before the assault on Guam island revealed this important airfield on Orote Peninsula near Sumay. Runway is 320' x 5,400'. Of this area, 140' x 2,240' is paved, the rest has crushed coral surface. Strip bristles with Jap planes

JAPS EXPENDED GREAT EFFORT TO FIT ISLANDS INTO DEFENSE SCHEME

BEFORE 1922 Apra Harbor Area was defended by six 6" guns, which were removed in accordance with the Washington Naval Treaty. When the Japs invaded Guam on December 10, 1941 there were no fixed defenses and their task force of three cruisers, three destroyers and a convoy of eight merchant ships was able to take possession of the island on the same day. Air coverage was supplied from nearby Saipan and Tinian.

The Japs then proceeded to fit Guam into their scheme of island defenses, and built two major airfields—one in the vicinity of the main town Agana, and the other on Orote Peninsula near Sumay. In the reconnaissance photo of this field shown at the top of the page it can be seen how they related the airfield to the town at "A" and the former U.S. Marine reservation at "B". Note that in spite of plane revetments in the wooded areas adjacent to the field, most of the planes on hand are lined up along the edges of the strip and apron. Most of these planes were destroyed later in the attack on the island.

The capital town of Agana also took a heavy blasting from artillery barrage and pre-invasion sea and air bom-

bardment. The two pictures below show the town as it appeared before the Jap invasion and after the Japs had been conquered. It has been reduced to destruction. Guam came under the control of the United States in 1898. After the Spanish-American War, the U.S. took the Philippines and Guam and returned all the other Spanish islands to Spain. In 1899 Spain sold these other islands to Germany, and Germany lost them to the Japanese in World War I.

AFTER GUAM became a dependent of the U.S.A., President McKinley issued an executive order placing the island under the control of the Navy Department headed by a naval officer appointed by the President. When the island was declared a naval station, American health and public school systems were introduced and more than a hundred miles of highway were built over the island. Autos and jitneys became common, in addition to the native two-wheeled carts drawn by cattle or carabao. The naval government administration was handled by departments headed by naval officers holding office during a two-year tour of duty and assisted by trained native clerks with permanent positions in the naval government.

Some of the Pacific's bloodiest fighting took place in the conquest of the Marianas, especially on the island of Saipan, the first of the group to be invaded by American troops. But the capture of these islands marks a great advance and brings U.S. bombers within range of the heart of Japan.



This is the main square in the town of Agana, capital of Guam; federal offices on left, church at right. CO Hdqrs. were here.



U. S. Marines walk the streets of Agana again after the invasion. A heavy toll was taken of city's structures by U.S. bombardment



Japanese and U.S. aircraft stand together on the Aslito airstrip at Saipan. Much of the enemy air force scheduled to defend the Marianas was destroyed on the ground before it could rise to battle attacking U.S. planes. Many other Jap aircraft were captured intact when the invading forces took possession of the airstrip. Captured enemy planes are reconstructed if possible and flown to study their character-

istics, materials used and construction. Technical air officers examine the aircraft to see whether the enemy is improving on its planes or whether he is using substitute materials and sacrificing plane performance. This photo, taken by a crewman on the first Navy *Liberator* to land on the captured field, shows the wreckage of hangars and other buildings, debris of shattered equipment, captured planes on apron.

GRAMPAW PETTIBONE

Parachutes in Combat Flying

An Army B-26 pilot, recently returned from the combat area, gave the following advice which is quoted from the May issue of *Air Force*:

"In a combat theater, a pilot should make certain that his crew wear, or have right at hand, chutes at all times. Returning from a mission, my gunners formed the habit of leaving their chutes behind when they went forward to the navigator's compartment to keep warm. I stopped it with these words, 'As last man out, I don't want to have to wait around while you're scrambling around hunting chutes.'"

Make Haste But Do Not Hurry

Before taking off in an SBD for a field carrier qualification training hop, a pilot (350 hours) noticed that his gas gauge for the left tank registered "low." He "assumed," as he explained later, that the gauge was out of order. He was already late for his hop, owing to radio trouble, so he did not have the mechanic on the line check the gasoline.



About 20 minutes after he shifted to the left tank, his engine sputtered and stopped. He made an emergency, wheels-up landing in a plowed field, materially damaging the aircraft.

The Trouble Board assigned half of the error to the pilot's carelessness and the rest to the line crew for failure to gas the left tank after a previous flight.

Grampaw Pettibone says:

You can't do this in aviation—a bum guess may cost your life!

There are plenty of hazards without guessing or assuming anything on such easily checked items as this one was.

Attention Wildcat Pilots

Recent reports of accidental retraction of F4F and FM landing gear indicate there is need for further instruction as to correct pilot procedure for locking landing gear in down position.

The landing gear extension mechanism in the F4F and FM is not designed to withstand loads imposed by



landing. These loads must be borne by the down-lock. In an effort to acquaint pilots with characteristics of the gear extension mechanism, the contractor has issued the following instructions:

"In lowering the landing gear, the pilot reaches a point at which it becomes harder to move the crank handle and he may tend to stop right there and attempt to engage the lock. However, it takes *two more revolutions*, which are relatively easy, to bring the gear over dead center, and *it does happen* that new pilots do not realize this."

As Good As Shot Down

During a gunnery training hop, a section leader entered into an overhead run while his wingman began a steep roundhouse, high side run from starboard. The section leader fired a burst, broke sharply down to the left, on the port side and on a course parallel to the sleeve. This put him directly in the wingman's line of fire. A bullet entered the fuselage of his plane about a foot behind his head and cut the hydraulic lines controlling the flap and landing gear mechanisms. Consequently, all

hydraulic pressure in system was lost.

Arriving back at the field, the pilot could not lower his wheels by the normal method and upon deciding to use the emergency system, failed to slow up sufficiently to permit the air pressure of the system to lower and lock the wheels. They just dangled from the wheel wells.

The severed hydraulic lines by this time had filled the bottom of the cockpit with hydraulic fluid. The pilot thought this was gasoline. Fearing fire if he made a belly landing, he landed in the bay, resulting in loss of the airplane.

Your Friend, the Yellow Sheet

While taxiing out to the take-off position, an SBD swerved right toward a parked plane. The left brake failed to hold despite pumping by the pilot. A collision with the parked plane could not then be avoided.

During the subsequent investigation it was discovered that the hydraulic line to the left brake was loose at the connection, allowing the hydraulic fluid to leak out.

The following is quoted from the Aircraft Trouble Report: "In view of the fact that the service personnel responsible for the maintenance of the subject aircraft did conform strictly to the instructions appearing on the Daily Flight Inspection Form, this squadron cannot make any recommendations to correct the recurrence of similar trouble."



Grampaw Pettibone says:

Now ain't that something! Well, I can make a recommendation—inspect the damn thing.

The "Yellow Sheet" is universally applicable to all planes and was designed to help squadrons insure that their planes were ready for flight. It covers complete inspection of each major assembly, without listing part numbers for every nut and bolt. Actually, hydraulic brakes are covered on the form by item 3 under Landing Gear—"Inspect Brake Linkage Gear." (Brake linkage would include everything between the brake pedals and the brake shoes.) If that isn't enough to get such inspection, paragraph one of the instructions reads, "Additional sheets may be attached hereto as required by individual units."

Mark my word—any unit which finds certain equipment is giving them trouble and then doesn't do anything about it, simply because it isn't specifically mentioned on the inspection form, that unit has a screw loose some place. And I certainly don't mean on their airplanes, either!



Chockman frees an F6F preparatory to its rush down flight deck to join other *Hellcats* already aloft. In operations, teamwork and split-second timing are vital to the success of every mission



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. Why is an engine potentially dangerous when it has an excessively rich idle mixture?
2. When flying on instruments, what is the proper method of recovering from a power-on diving spiral?
3. If the normal stalling speed of your airplane is 90 knots in the clean condition, at what air speed (in the clean condition) will you stall: (a) in a 75° bank, and (b) in a 4 "g" dive pull out?
4. What Bureau of Aeronautics publications contain the maneuvering restrictions for naval aircraft?
5. Is an over-the-top flight governed by instrument flight rules?

ANSWERS ON PAGE 40

Better Be Careful Than Sorry

People who are careless about following safety instructions around airplanes sooner or later end up in trouble—sometimes just *end up*.

Certain safety instructions may appear "picayune" because you have seen them violated time and again without anyone's getting hurt. But that isn't the point. The point is that some people have been hurt when these instructions were not observed. *The following accident will illustrate this:*

An SBD-5 remained overnight at an auxiliary field manned by a skeleton staff. Two Aviation Ordnancemen helped to start the plane in the morning; one at the starter crank and the other standing by the fire extinguishers.

The engine did not fire on the first try nor on the second, so the pilot instructed the men to pull the prop through. In accordance with instructions, they called "Switch off." Up to this point, everything had been done according to Hoyle, but note carefully the following combination of errors and circumstances causing this accident:

1. The pilot turned the ignition switch off and answered "Switch off." He neglected, however, to turn the battery switch

off. This all-too-common practice seldom causes trouble, but . . .

2. In this case, the starter engage toggle was binding a bit, so the spring did not retract it completely. Thus, although the starter was disengaged, the booster ignition coil, activated by the same toggle, was not disengaged.

3. Even this need not have caused an accident, if the propeller had been pulled through properly. But this time the ordnancemen foolishly elected to put their shoulders against it and push. This, too, has been done before without messy results, but not this time. . . .

As the prop was pulled through, the engine fired and continued running on the booster coil.

Here was a perfect combination for a fatal accident, but these men were lucky. One of them got away with a broken arm while the other received only a bad bruise.

But why take these unnecessary chances! They can be eliminated by strict observance of all flight regulations and safety precautions.

Attention Corsair Pilots

About half way down the strip on take-off, the left wing of an F4U-1 folded, causing the aircraft to swerve and cartwheel down the right side of the runway. The pilot was killed.

Immediate examination of the wreckage showed that the hinge pin in the left wing had not been locked. Further investigation revealed that the pilot had completed two flights on the previous day in this plane with the wing hinge pin warning device showing the danger signal. The morning of the crash, he asked the line chief to check the wing fairing, but took off before this work could be completed.

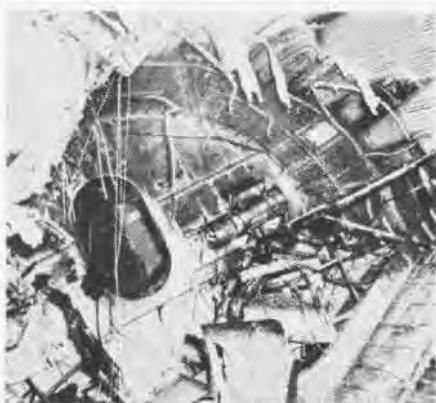
To explain why the wing remained spread during the two flights the previous day, the reporting officer expressed the opinion that a great deal of hydraulic pressure had been placed on the hinge pin, holding it in place. He believed that during the night the temperature decreased until there was insufficient pressure to hold the hinge pin in place for the attempted take-off. The pilot probably was firmly convinced after two successful flights that the air-



plane was perfectly safe to fly and that the warning device was not registering.

COMMENT—Why the pilot took off in the first place with the warning system indicating the wing locking pin not in place, cannot be explained. Many man-hours were expended on the design and construction of this warning device, all of which were nullified through failure to heed the glaring signal. The pilot in this case paid dearly for his carelessness.

Flight Safety Bulletin No. 27-44 states that F4U, F3A, and FG airplanes SHALL be flown with the hydraulic wingfold selector control in the "SPREAD" position at all times. Corsair pilots should know this.



THESE MEN SURVIVED this crash because:
1. They were at assigned landing stations
2. They wore Mae West life jackets
3. They knew approved life raft procedure

Such a Little Thing!

An SNB was completely wrecked simply because an instructor neglected to lock the tail wheel before take-off.

The instructor failed to lock the tail wheel when he turned the airplane over to his student to permit him to attempt his first take-off. When the airplane commenced to swerve, the student, not having rudder control, attempted to check the swerve with throttle. He over-corrected, however, and started turning the opposite way. Again he added opposite throttle and started swinging back the other way.

Not until they were headed for a ditch at approximately 65 knots, did the instructor take over. He staggered the plane across the ditch, but scraped a wing. This caused the plane to cartwheel to a stop, where it caught on fire. No one was seriously injured.

Grampaw Pettibone says:

With SNB's costing approximately \$70,000 a throw, you can readily see that teaching instructors the rudiments of flying in this manner is quite prohibitive.

DID YOU KNOW?

Supply Ship Given Praise Carries Aviation Parts to Fleet

The part aviation supply ships are playing in helping Task Force 58 chalk up victories in the Pacific has been brought into the spotlight by the recent commendation of the U.S.S. *Fortune*.

The ship, together with three others, has been bringing aircraft replacement parts and supplies directly to the task force as it cruises around the Pacific looking for trouble. The *Fortune* was praised for its "expeditious and efficient handling" of aircraft parts to support fleet aviation.

The rest of the supply "fleet" comprises the U.S.S. *Supply* and two large-sea-going barges, the U.S.S. *Can Do* and U.S.S. *Have Got*.

Avengers Depth Bomb Ship Anything to Sink a Jap at Saipan

Three Navy *Avengers* flying anti-submarine patrol around Saipan used depth charges to sink a 1,900-ton Japanese cargo ship recently instead of the usual bombs. The three planes took turns strafing and depth-bombing the ship until finally one charge blew the bow completely off the merchantman. It rolled over on its side and was sinking when destroyers arrived and shelled it. They picked up 112 survivors.

BuMed Recommends Sweets Carbohydrate Meal is Beneficial

Recent unpublished work reveals that the flight food intake should be composed chiefly of carbohydrates, inasmuch as it increases altitude tolerance and efficiency, according to the *BuMed News Letter, Aviation Supplement*.

Protein intake not only is without benefit, but actually lowers a man's altitude tolerance and efficiency. Furthermore, it was shown that an impairment of those factors began at the end of four to five hours after a carbohydrate meal. For maximum performance of men in planes they should have a balanced preflight carbohydrate and protein meal about two to two and a half hours before takeoff, and carbohydrate food approximately every four hours thereafter. Sweets are a common form of carbohydrates.

There are many carbohydrate foods that may be taken during the flight.

One that is easy to prepare in any bake-shop is a cookie sandwich. This is made by taking two rather thin cookies and interposing a paste filling of powdered sugar and milk flavored with any flavoring desired, usually vanilla. The milk may be replaced by any fruit juice. This makes a palatable, fresh carbohydrate ration to be eaten during flight.

British Train on U.S. Carrier 24,000 Landings Made on Charger

One of the Navy's early escort carriers, the U.S.S. *Charger*, operating in Chesapeake Bay the past two years, has had more than 24,000 British and



BRITISH 'BATTING OFFICER' SIGNALS FOR CUT

American pilots land on her decks in practice.

For that is the mission on the ship—to give pilots practice in bringing their carrier-type planes down on a ship's deck. The *Charger* originally was built for the British, but the United States kept it when the Japs attacked Pearl Harbor. Since then her program has been dedicated to training both British and American pilots at Hampton Roads. One of the veteran British signal officers, familiarly known as "batting officers" (*see cut*), has brought in 2,000 landings with only two accidents.



Knowing How Saves Pilot Sub Lends Hand in Sea Rescue

NAAF GROTON—In recent three-day joint Army-Navy maneuvers centering about an Army field on Long Island, in which a cvl Air Group in training participated, the experience of one *Hellcat* pilot far exceeded fondest expectations. Affected by vertigo while flying a wing position on the low approach to the training field, Ensign J. flew into the water. His plane bounced and, before it struck again, he opened his cockpit cover. The second impact sheared off the starboard wing and caused explosion of the right main fuel cell.

His escape from the plane can be attributed only to proper abandon-ship methods and proper use of survival equipment, along with more-than-average fighter-pilot's share of luck.

Two pilots saw the crash and reported it. The search after daylight by both *ETA* and *LTA* craft was fruitless, owing to conditions of poor visibility.

After five hours in his raft of watching search planes drone by, Ensign J. was startled by the appearance of a periscope. The skipper of a submarine had seen what he supposed to be a fisherman and, surfacing, accosted the pilot with, "Aren't you quite a ways from shore?" The answer is assumed to have been "Too Far!", as the offer of a ride back to the submarine base was accepted with alacrity.

Ensign J. is now almost recovered from the minor bruises sustained and is firmly convinced that the "survival sub" idea used at Truk also is very good here.

NATS Flies Weighty Cargo Panama Flight Aids Pacific Attack

The Chief of Naval Operations has commended Naval Air Transport Service for flying heavy equipment from this country to the Canal Zone to repair a damaged fleet tanker. NATS flew an 8,500-lb. main generator rotor from New York to Panama and a few days later flew a 10,000-lb. main turbine rotor to the same place. The load in the latter flight was the heaviest single piece of cargo ever carried by air. It went in a four-engined (R5D) transport.

Fast handling of the parts saved 14 days in delivery of the tanker's cargo to Task Force 58 in the western Pacific.

BEST ANSWERS

Panama

Pick the best choice to complete the statement below, then check your answers on page 40.

1. By going through the Panama Canal instead of around the tip of South America, ships plying between the Atlantic and Pacific coasts of the United States save a distance of—

- a—6,000 miles
- b—3,000 miles
- c—8,000 miles
- d—5,000 miles

2. The Republic of Panama—

- a—has never declared war on the Axis powers
- b—declared war on the Axis powers in December 1941
- c—declared war on the Axis in 1944
- d—has never declared war on Japan

3. The Republic of Panama—

- a—connects Central America with South America
- b—is famous for the Canal which runs east and west
- c—is where Panama hats are made
- d—is where Columbus set up a colony on his third voyage

4. The chief factor in getting the United States to build the Panama Canal was the—

- a—time lost in getting the battleship *Oregon* around South America for the battle of Santiago de Cuba
- b—success of the railroad built across the isthmus in the 1850's
- c—challenge to our engineers resulting from de Lesseps' failure to complete it
- d—malaria-control which Dr. Guerrero instituted in 1890

5. The President of the Republic of Panama is elected for—

- a—4 years
- b—8 years
- c—6 years
- d—10 years

6. Panama is situated between—

- a—Salvador and Costa Rica
- b—Ecuador and Honduras
- c—Costa Rica and Colombia
- d—Guatemala and Honduras

7. To go from Balboa to Panama City, one—

- a—goes across the street
- b—takes a train across the isthmus
- c—must travel 200 miles through the jungle
- d—must go 20 miles by boat



MOST NAVY AND Marine Corps squadrons and ships have mascots of one sort or another, as illustrated above, to help relieve the monotony of life at advanced bases or aboard ship. The cat being enticed with a bow on the end of a string above is mascot of pilots in the ready room of an aircraft carrier on the Atlantic milk run. The dog, "Tiki," a wire-haired terrier, is mascot of Marine "Eight Ball" squadron and has many hours in the air.

Parachute Serves as Raft Quick Thinking Saves a Gunner

VT-16—Use of a parachute as a life raft aided in saving the life of a machinist's mate turret gunner of a TBF.

An emergency occurred at low altitude, necessitating an immediate jump. The one-man life raft broke loose when the man's chute opened and, owing to the low altitude, he had no time to disengage himself from his harness. He found himself in the water still attached to his chute and with no life raft.

Realizing he might be in the water some time, he let a large portion of the

chute billow full of air, then closed the sides together, producing a satisfactory improvised raft. He tied the mouth of the air sack and had no difficulty in remaining out of the water by lying on the air-filled portion of the chute.

Although his life jacket would have provided plenty of buoyancy for the short time he was in the water, he found the home-made "raft" much more comfortable, proving that a satisfactory emergency raft can be made with a parachute and a little ingenuity.

► **BuAER COMMENT**—Flight personnel should insure that their life raft is properly secured to the parachute pack and harness.



WEARING AN ASBESTOS SUIT, member of crash crew extricates dummy pilot from burning mock-up plane as hosemen turn on foamite. This practice under simulated conditions is part of crash crew training at NATC Corpus Christi. Training officers in the NAS yard department recently instituted a 12-day course, which includes classroom work and field drills. Students are drawn from NAS and the center's six auxiliary air stations nearby.

PUBLICATIONS

BuAer Checks, Revises E & M Manuals

When the first airplane of a new model is delivered to the Navy, BuAer immediately distributes *Erection & Maintenance Manuals* to the field. In this way personnel may become familiar with maintenance procedures before new airplanes arrive at their activity. As the manuals necessarily must be printed before all maintenance information is available and before BuAer can make a thorough check of technical content, the publication bears the title *Preliminary Erection & Maintenance Manual*. Within 90 days, BuAer will distribute revision pages with all additional information since initial printing.

These manuals, together with revision pages, have not undergone a thorough check and examination by technical experts of BuAer. However, experience has proved that the manuals as written by the aircraft manufacturers are accurate to a high degree. It is felt, therefore, that the best interests of the Navy are served by distributing the books to the field as preliminary manuals before subjecting them to an exhaustive review by BuAer.

After BuAer has completed its review of technical content of the publication, it will be reprinted and distributed as an approved manual with the word "preliminary" deleted from the title. It is important, therefore, that personnel using *E & M manuals* make every effort to see that their publication contains latest revision pages, and that they begin to use the approved manual as soon as it is available.

Handbook Aids Use of Army Equipment

When the Navy acquires airplanes or equipment originally manufactured for the Army, BuAer distributes only AAF handbooks and manuals for use by naval personnel in operating and servicing these planes and equipment. In some cases, Army handbooks and manuals will list AAF material specifications without listing the equivalent approved BuAer specification. BuAer therefore has published *Navy Equivalents for Army Aeronautical Specifications, Bulletins, and Technical Orders* (NAVAER 00-25Q-23).

This publication has been distributed widely and additional copies may be obtained by writing to the Chief, Bureau of Aeronautics, Navy Department, Washington, D. C. The publications should be used according to the following example:

An AAF handbook states that AAF Specification 14057, Water-Dry Paint, should be used on a piece of equipment. To determine what paint BuAer requires should be used on such equipment, the reader will consult NAVAE 00-25Q-23. Under Section II, Paints and Related Materials, he will find AAF Specification 14057 listed. In the fourth column he will find that the equivalent Bureau Specification is Navy Aero N-521, Paint, Water, Camouflage, Removable. Thus, job is simple.



FLEET AIR WING 15 sends in this photograph of a beach party to show that all phases of war are not grim. This hill-billy orchestra, complete with washboard player on the left, is turning out some plain and fancy corn for the edification of towel-clad men of the wing, in the background. The music may not be good but it looks plenty loud

THE WHITE HOUSE WASHINGTON

July 26, 1944.

I have noted with pleasure the splendid results of the Navy Bond Program in achieving its end in selling War bonds to all of those serving the Navy, both service and civilian. The opportunity of assisting in winning the war in this two-fold manner is one which should prove most gratifying. I think this is particularly so in the case of the Naval personnel who are saving a part of their pay through the bond allotment method. I hope that every officer and all enlisted personnel who can possibly afford it will continue to save in this quiet, steady and very effective manner.

Franklin D. Roosevelt

Navy's Final SBD Is Built Type to be Supplanted by SB2C's

The last SBD has been built for the Navy. When the 5,936th plane rolled off the assembly lines at Douglas Aircraft Company's El Segundo plant on July 21 it marked the final *Dauntless* dive bomber which the Navy will buy. Now, emphasis will be put on the heavier, faster and longer-range SB2C.

The story of the SBD is the story of naval aviation from Pearl Harbor on. Every major naval battle of the war saw

them in the thick of the fight. At Midway four Jap carriers were sunk by dive bomber squadrons off the *Enterprise*, *Hornet* and *Yorktown*. Its latest triumphs were with Task Force 58 now scourging the Central Pacific.

From Pearl Harbor until April, 1944, SBD's had flown 1,189,473 operational



SBD'S WITH TASK FORCE 58 START ON MISSION

hours, with 25 percent of all operational hours flown off aircraft carriers being in *Dauntless* planes. Its battle record shows that besides the four Jap carriers, 14 enemy cruisers have been sunk, 6 destroyers, 15 transports or cargo ships and scores of various lesser craft.

25 YEARS AGO THIS MONTH

NAVAL AVIATION SEPTEMBER 1919

September—The first flight of a free balloon over New York City was successfully accomplished by aviators from the Rockaway Naval Air Station. Forced to land after a six-hour flight because of rain at Arcola, N. J., the balloon made the trip for the purpose of scattering enlistment circulars. It was the largest type of free balloon used in the Navy and carried 35,000 cubic feet of gas. The balloon kept a constant altitude of 1,500 feet over the city and flew directly over the U.S.S. *Recruit* in Union Square. During the war, this type of balloon was used to train lighter-than-air pilots and teach them how to handle a dirigible unaided by engines.

September—During the maiden trip of the new Zeppelin airship, *Bodensee*, from Friedrichshafen to Berlin, a maximum speed of 75 miles per hour was attained. A streamlined hull shape was adopted in place of the familiar cigar shape of the old Zeppelins. The *Bodensee* was 120 meters long and accommodated 35 passengers. Expected to be put into daily service, it was equipped with wireless telegraphy and had a spacious passenger cabin. The passengers were able to obtain hot and cold running water.

September—The Curtiss Aeroplane and Motor Corporation announced plans for three air routes for passenger service. They were from Rochester, Syracuse, Utica and Albany to Erie and Pittsburgh, and across the Canadian border to Hamilton and Toronto. The state routes opened during the fall of 1919, but the other two were not in operation until the spring of 1920.

September—What was believed to be a world's record for gliding with a dead engine was accomplished at Ithaca, N.Y., in a Thomas-Morse two-seater bi-plane. The

plane flew to the head of Cayuga Lake, a distance of 35 miles, and having attained a height of 17,500 feet, the pilot switched off his engine and glided to Ithaca, where he still had 5,000 feet altitude. If this glide had been continued, it is estimated that an additional 15 miles could have been covered, making a total of 50 miles without use of an engine.



plane flew to the head of Cayuga Lake, a distance of 35 miles, and having attained a height of 17,500 feet, the pilot switched off his engine and glided to Ithaca, where he still had 5,000 feet altitude. If this glide had been continued, it is estimated that an additional 15 miles could have been covered, making a total of 50 miles without use of an engine.

September—The following inquiry was addressed to the Secretary of the Navy: "Can you put me in touch with some one who can give me some information in regard to the balloons formerly used by the government? I am planning to preach the Gospel from one by use of a megaphone."

September—The Navy aviator device was changed, according to an announcement of the Navy Department, reading as follows: "Provision has been made in a new regulation which designates student naval aviators and flying mechanics. The student wears a pin similar to that of the graduate aviator, with the exception that one wing is removed, leaving a device similar to that worn by observers abroad. "Regular member of seaplane flight crews among enlisted men will wear a pin similar to that of the student aviator, except that it shall be of silver. This change is made in the belief that there should be a distinctive insignia for graduate and student naval aviators, and further that flying mechanics should also be entitled to wear some mark of distinction."

September—The construction of an engine dynamometer was authorized at a meeting of the National Advisory Com-

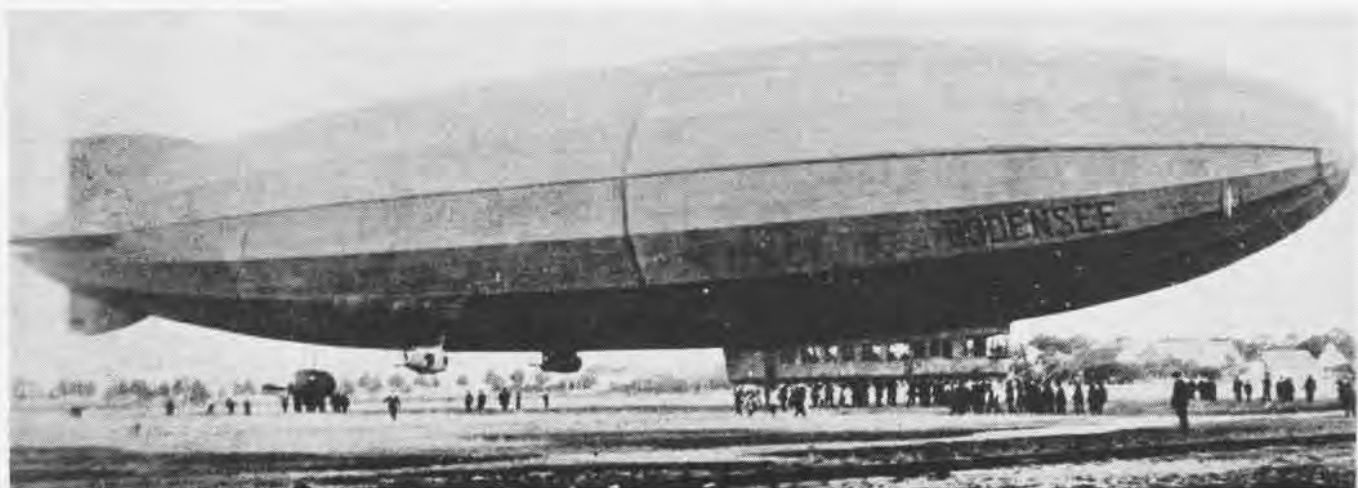
mittee for Aeronautics. Costing approximately \$5,000, the laboratory was to be erected on the Committee's plot at Langley Field.

September 6—Acting Secretary Roosevelt announced that he had accepted the Missouri aeronautical societies' invitation for naval crews to compete in the free balloon race September 26. The Navy was to be represented by three entries. With Army, Navy and civilian crews competing, the race was to start from St. Louis. The balloons were to be of 40,000 cubic feet capacity and filled with refined coal gas.

September 13—The *Aircraft Journal* reports that naval speed records for pontoon seaplanes were broken by an U.S. fighter flown by Lt. Comdr. N. H. White, Jr., USN., commanding officer of the Naval Air Station, Hampton Roads, in a trip from Hampton Roads to the Naval Aircraft Factory at Philadelphia. The plane covered the 270 mile course in 135 minutes, averaging two miles per minute.

The *Aircraft Journal* further informed its readers that the U.S. fighter was a recent design in connection with the work of the Bureau of Construction and Repairs, and it was believed then to be the fastest pontoon seaplane in existence. It was equipped with a Liberty 12-cylinder 335 hp engine, and, under favorable conditions, would make 120 to 130 mph.

September 29—Caleb Bragg, formerly a captain in the U. S. Army Air Service, acted as test pilot for the Loening seaplane at its preliminary trial. The flight was made with a passenger. According to Bragg's report, a maximum speed of about 130 miles was made at sea level, and an altitude of 20,000 feet was attained. If verified, this altitude would constitute a world record for seaplanes up to this date.



MEMBERS OF THE GERMAN GROUND CREW GRIP THE RAILING, GUIDING THE GONDOLA OF THE GIANT RIGID BODENSEE AS IT SETTLES GENTLY

SQUADRON NOTES

Night Landings on CVE. VC-75 proudly announces it . . . recently completed night carrier landing qualifications aboard a CVE. Twenty-eight successive landings were made in FM-2's and twenty-four in TBM's without slightest damage to planes or injury to personnel.

VB-106 Makes The Rounds. Boasting a record of bases that reads like the Pacific invasion timetable, Bombing Squadron 106 has returned to the continent after a seven-month tour of duty which saw it stationed at Midway, Canton, Baker, Funafuti, Guadalcanal, Munda, Nadzab, the Admiralty Islands and Wakde, in that order.

Its search planes covered 125,000 square miles a day and during its time in the Pacific VB-106 flew 1,262 sorties totaling 16,000 hours of flight. It bombed and sank 43 ships, damaged 54. Victims included 33 cargo vessels and three submarines. Fifteen Jap planes were shot down and 22 were listed as probables.

VB-106 also flew photographic and escort missions and even spotted targets for task forces which shelled Rabaul and Kavieng. It escorted the fleet to Wake in October 1943, and Palau in March 1944, on carrier strikes.

Pilots Hit Carrier. Six months of combat in practically every major Pacific engagement enabled Air Group 10 to amass an impressive battle record of 98 planes shot down, 193 destroyed on the ground and 16 ships sunk.

The record was revealed when the group returned to the continent for rest and reforming. Fliers of the group listed 10 probables in aerial combat and 23 damaged. Included in the ships sunk were two destroyers. Sixty-two ships were damaged, including two aircraft carriers, two destroyers and a cruiser. Only 12 pilots and seven aircrewmembers were lost in the six months of the hottest kind of fighting, hitting the Japs everywhere from Truk to the devastating battle of the Eastern Philippines.

In the latter action, VF-10 shot down 19 of the 369 enemy planes blasted out of the air by Task Force 58's *Hellcats*, the largest one-day bag in combat aviation history. Dive bombers from the group scored three direct hits with 1,000-lb. bombs on a large carrier in the Philippines action and got hits on a small carrier, while five planes of Torpedo 10 crippled the same carrier with eight 500-lb. bomb hits.

From January to July, Air Group 10 took part in practically every major fleet air attack in the Pacific-Marshalls, first and second Truk strikes, Palau, Yap, Woleai, support of landings at Hollandia, Emirau and the Marianas. Night Fighting 10 made history as one of the first night-

fighting squadrons to be carrier based. In its sorties against enemy intruders it shot down five, with two probables and two damaged. The original Air Group 10 supported occupation of Guadalcanal and participated in earlier actions in the South Pacific.

Japs Bail Out. During the "Mariana Turkey Shoot" at the great air battle for Saipan, Jap pilots became so panicky with fright they bailed out before U. S. fliers opened fire on them, according to leaders of Air Group 16 who returned to the continent after 11 months of action in the Pacific.

The fighter squadron shot down 41 Japs during the "turkey shoot" while losing none of its own pilots. The score would have been higher, they complained, if the Japs hadn't become so afraid of the *Hellcats* that they bailed out before they could be shot down.

On the second day of the action, the group's bombers located the Japanese fleet near the Philippines and blasted two aircraft carriers. Dive and glide bombing by the group's planes scored 16 direct hits on a 28,000-ton Jap carrier and dropped two more bombs on another carrier of similar size. During the attack three planes were lost and four Japs shot down.

Pilots of the group downed 135 Japanese aircraft during their operations near Saipan, Tinian, Guam, Tarawa, Wake, Mille, Kwajalein, Palau, Woleai, Hollandia and Truk.

Hellcats Bomb Japs. "Bypassed but not forgotten" might be the epitaph on the tombstone of Japanese marooned on islands over which American forces leap-frogged in their westward drive in the Pacific. Fighting Squadron 39, based on Majuro in the Marshalls, kept these Japanese occupied.

At first VF-39, now in this country for reforming, was stationed at Majuro to protect the island from expected Jap air raids. But, except for two "snoopers" which escaped at high altitude, no Japs showed up.

So the pilots attached bombs to their *Hellcats* and went after the Japs on Wotje, Jaluit, Madoelap and Mille. The squadron claims to have carried more bombs than any other fighting squadron in the Pacific, glide bombing and strafing the enemy. They also flew cover for *Dumbos* and protected sn's on bombing strikes.

Rescue Airmen. Seventy-nine Navy, Marine and Army aviation personnel owe their lives to rescue operations of two patrol squadrons in the South and Central Pacific.

Both squadrons, VP-14 and VP-53, have returned to the U. S. for rest and reassignment. Squadron 14 flew from eight

different island bases and five seaplane tenders in the South Pacific. The other spent nine months in the Pacific on patrol after flying Atlantic sea lanes for a year.

Most spectacular of their many rescues was that of 13 Marine *Corsair* pilots who were picked up after making water landings en masse in bad weather. They lashed their life rafts together and floated for three days. A *Dumbo* plane finally found them, but after laboring three hours to take them aboard found it could not take off in the swells. Radio summoned a destroyer to their aid and the *Catalina* was sunk to prevent its falling into enemy hands.

One patrol pilot was decorated for attempting to rescue an Army pilot less than a mile offshore from Jap shore guns off Rabaul. A dozen Marine fighter planes tried to give him protection, but Jap shells cut all rudder cables and most of the elevator and tab controls. Using his engines for steering, the pilot circled the Army flier three times. Concussions from enemy fire blew out both blisters and knocked holes in the fuselage. After throwing all possible gear overboard, the crew bailed water until the plane was airborne. Another *Catalina* rescued the Army pilot.

Group 25 Sets Record. Navy Air Group 25, home from the Pacific, set what probably is a record for sustained combat flying by carrier-based planes. The pilots and aircrewmembers flew against the Japanese an average of nearly four hours a day, every day, for 23 continuous days in the Marianas operations.

During its 10 months in the Pacific areas the group, operating from a light aircraft carrier of the *Independence* class, saw action at the Gilberts, Marshall, Wake, Truk, Bonins, Hollandia and the Marianas. One hundred and twenty Jap planes were destroyed and 30 damaged. The first total includes 37 shot out of the air and 83 destroyed on the ground. One Jap light cruiser and a 4,000-ton cargo ship were bombed and sunk. Enemy vessels damaged included two destroyers and 15 cargo ships.

One pilot, commander of the air group, was shot down by anti-aircraft in the Marianas and spent 11 days in the water, with Jap convoys steaming past him. Having no life raft, he kept afloat with his life jacket and an empty auxiliary belly tank sheared from his plane. Pilots of his squadron found him five hours after he was shot down and dropped him a small can of water.

He could not be located when search planes went to pick him up the next day and he floated for 11 days until a destroyer rescued him. He lost 30 pounds, as he had had only part of a seagull, two small perch and eight ounces of water.

JACKSONVILLE



OPERATIONAL TRAINING GROOMS PILOTS AND CREWMEN FOR COMBAT DUTY

Navy men throughout the world call Jacksonville the Graduate School of Naval Aviation. Here at headquarters of NAOTC, and at other activities of the command, naval aviators and air and ground crewmen get their final instruction before assignment to squadrons in which they will fly and fight

against the enemy. When they take their places with the Fleet and at advanced bases, they will do so with the knowledge that they have received the finest training possible. The task of instructing them during operational training is in the hands of men who have dealt first-hand with the enemy

POSTGRADUATE SCHOOL OF NAVAL AVIATION

NAS JACKSONVILLE encompasses one of the largest, busiest and most important activities in naval aviation. The main station covers approximately 3,200 acres, and outlying activities take in more than three times as much additional territory.

NAS Jacksonville sits on the west bank of the two-and-half-mile-wide St. John's River, which from the air resembles a giant boa constrictor stretching to the sea. The station lies 10 miles south of the city of Jacksonville and about 20 air miles from the Atlantic Ocean.

The Naval Air Operational Training Command maintains headquarters at the air station, which is but one of the Command's many activities. NAOTC has more than a score of other stations and facilities in Florida, Georgia, Kansas, Illinois, North Carolina, South Carolina and Oklahoma.

Major units under jurisdiction of the air station include Aircraft Delivery Unit, A&R Shop, Supply Depot, all on "main side"; boat facility and auxiliary air station at Mayport; Naval Air Gunners' School at Yellow Water; NAAS Cecil Field; NAAS Green Cove Springs; NAAS Jacksonville Municipal Airport No. 1, and a number of auxiliary air facilities and landing areas within a 50-mile radius.

Auxiliary air stations at Cecil Field, Green Cove Springs and Jacksonville Municipal Airport No. 1 are

linked to NAS and are subordinate to it in certain administrative matters, but they account directly to NAOTC in the operational training of pilots.

Within the gates of the air station stands one of the nation's largest Naval Air Technical Training Centers, which comes under the CNATechTra, Chicago. Another activity at the air station is the U.S. Naval Hospital, under the Commandant, Sixth Naval District.

IT WAS ONLY five years ago that Navy construction crews carved NAS Jacksonville out of a semi-tropical wilderness of pine, oak and palm trees on the long-abandoned site of the Army's World War I Camp Johnston. Workmen began building in 1939, and the Navy commissioned the station October 15, 1940. Pilot training commenced in January of the next year. The station instructed naval aviation cadets in intermediate training until the establishment of the Naval Air Operational Training Command in April 1942. The last class of cadets finished their intermediate course in January 1943.

NAS Jacksonville now comprises the largest single unit of NAOTC. Here battle-seasoned instructors conduct the serious business of training student officers in the techniques of combat flying and fighting, and of grooming air and ground crewmen for their billets.

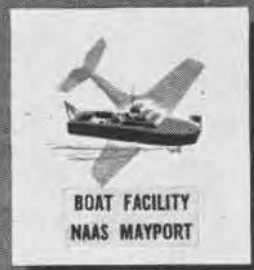


During daylight hours, the busy Jacksonville operations tower handles on an average of one landing or take-off every 30 seconds



Enlisted men and naval aviators, too, get operational training at NAS Jacksonville before going to the Fleet or to advanced bases

MAJOR ACTIVITIES IN JACKSONVILLE AREA



NA News Chart

JACKSONVILLE WELDS PILOTS, CREWS INTO HARD-HITTING COMBAT TEAMS

OPERATIONAL

HERE USED to be a cafe in Paris where, it was said, if a visitor stayed long enough he'd meet all his friends. NAS Jacksonville has something in common with this Parisian rendezvous, for if one put in enough time at the busy training station, he would probably see just about all the "greats" of naval aviation.

NAOTC, with headquarters at Jacksonville, has brought back from combat many of these outstanding airmen to give Navy and Marine pilots and aircrewmembers their final training for the Fleet. The list is not restricted to officers, for naval aircrewmembers who have shot down *Zeros* over Kiska, *Haps* over Guadalcanal, and *Messerschmitts* over the Mediterranean serve as instructors at gunnery schools, technical training centers and operational training units, where crews of dive bombers, torpedo bombers, scouts, patrol planes and heavy bombers are welded into combat teams.

The final seasoning students get in operational training is, in effect, a subtle process of conversion—conversion of pilots into combat pilots, individuals into crews, crews into teams.

THROUGH NAOTC the main supply of pilots is funneled to the Fleet. The Command must turn out naval aviators and aircrewmembers in the quantity and of the quality the Fleet requires—schooled in the tactics and combat maneuvers demanded by carrier warfare. These requirements are determined by first-hand liaison with the Fleet and through Fleet-experienced aviators in the Command.

Training at Jacksonville and at the other stations of NAOTC embraces all phases of carrier and shore-based aircraft operations. Fighter pilots undergo instruction at Jacksonville, Green Cove Springs, Daytona Beach, Melbourne and Sanford; night fighters train at Vero Beach; dive bomber pilots at Cecil Field, Miami and DeLand; and torpedo bombers at Fort Lauderdale and Miami.

Most pilots tabbed for carrier service take carrier-qualification tests at Glenview after completing operational syllabus and just before departing for the Fleet. Multi-engined, multi-place aircraft pilots and crews train at Jacksonville (PBY's), Beaufort (PV's), Jacksonville Municipal Airport No. 1 (PB4Y's), Lake City (PV's), Edenton (PBJ's), Hutchinson (PB4Y's) and Banana River (PBM's).

Other activities include free gunnery schools for aircrewmembers at Yellow Water, Purcell and Hollywood; air bombers' school at Banana River; air navigators' school at Shawnee, and fighter-director school at St. Simon's Island, Georgia.

OPERATIONAL TRAINING receives prospective aircrewmembers from Naval Air Technical Training Centers, where they have earned ratings as aviation radiomen, ordnancemen and machinist's mates. For five weeks they go to gunnery school, first, on the ground—shooting shotguns at fixed targets, then advancing to skeet shooting, then to shooting shotguns on mounts, then machine guns on mounts at fixed targets, next machine guns on mounts at moving targets, and finally machine guns on moving mounts at moving targets.

In the next stage, prospective aircrewmembers train in the type plane to which they will be assigned, under the pilots they will fly with in combat. They practice gunnery on aerial targets through such maneuvers as torpedo runs, dive bombing, glide bombing and other tactics of aerial warfare.



Many of the "greats" of naval aviation received their operational training at NAS Jacksonville. To them, tower is old friend



Operational training units at NAS Jacksonville include fighter and bomber squadrons. The student officers fly F4U's in VF units



DAUNTLESS PILOTS FROM CECIL FIELD FLY OVER THE ATLANTIC OCEAN TO PRACTICE DIVE BOMBING ON TARGET SHIP WHICH RUNS ZIG-ZAG COURSE

OPERATIONAL TRAINING TEACHES PILOTS TO FIGHT WITH THE FLEET

STUDENT OFFICERS fresh from intermediate training arrive at Jacksonville and other operational training activities for the final instruction that prepares them for the Fleet. They train in service type aircraft and are schooled to meet actual combat situations. All pilots drill intensively in the use of primary weapons on the ground and in the air. There is no simulation here, except that they aim at dummy targets instead of Japs and Nazis. The .50 caliber fixed guns fired are the same as those that strafed Saipan, Tarawa, and Roi. SBD's and PV's drop bombs on moving water targets. TBF's and TBM's make torpedo drops on target vessels.

But combat pilots must know more than how to shoot and drop torpedoes and bombs. They must understand tactics of combat. Navigation ranks high on the "must" list, as does communications, teaching how to report enemy positions and to respond to orders from fighter-directors; weather—how to avoid its perils and use it to tactical advantage; as well as night flying. They must learn to fly instinctively, to do the right thing at the right time without conscious thought or effort. This is the transition stage during which student officers become combat pilots.

NAOTC employs all latest devices and training aids to quicken students' grasp of combat techniques in gunnery,

navigation, communications. Fighter pilots practice single-plane combat with the Gun Airinstructor which drills in maneuvering correctly, aiming accurately. The Link Celestial Navigation Trainer enables learners to navigate by the stars without leaving the ground—whether the heavens are clear or obscured by overcast; Link Instrument Trainer continues the instrument training that cadets underwent in intermediate; and the 3-A-2 Trainer teaches free gunners to cope with problems of relative motion in air-to-air gunnery.

GROUND school is anything but academic in operational training. Student officers must absorb only those subjects that will have a direct bearing on their operations with the Fleet. They continue the study of navigation so they can locate a target, regardless of weather conditions, and those mobile airports they'll call home when they shove off for duty in the combat zones. They dig deeper into recognition training, fully conscious that if they drop a bomb on the *Pennsylvania* under the mistaken impression that they are sending the *Haruna* down for the third time, somebody is going to be harsh with them. They know also that, several months hence, if they can't distinguish a *Tony* from a P-40, they'll hear from the Army.

Student officers take a keen interest in communications. They practice with secret equipment employed in the Fleet and simulate its use in combat. Communications practice deals with correct procedure in sending, for example, a contact report, as the student officers more than likely will be sending them in the near future. They use fighter director's code in reports, and for practice use it in conversation.



STUDENT OFFICERS TABBED FOR CV SERVICE MAKE FIELD CARRIER LANDINGS AT OUTLYING AREA NEAR THE GREEN COVE SPRINGS AUXILIARY AIR STATION

PILOTS, CREWS DEVELOP PRECISION, USE TEAMWORK AS SUPERWEAPON

THE BIG PRINCIPLE that operational training drives home in students is the vital importance of teamwork. Jacksonville turns out combat teams. The principle, boiled down to simplest terms, is that the Navy does not expect its aviators to take on the enemy in individual combat. It has been done, of course, but only when circumstances demanded that the lone pilot slug it out. The better plan, naval aviators soon learn, is to gang up on Germans and Japs.

cers begin their intensive study of service type planes, to the last simulated combat mission (which may be an over-water flight to an advanced base), operational training is rigorous, thoroughgoing and complete in every respect.

THE RECENTLY INSTITUTED PB4Y advanced training at NAAS Jacksonville Municipal Airport No. 1 furnishes an excellent example of the type of teamwork required in the Navy's multi-engine, multi-place aircraft.

This advanced training supplements the basic course given at NAS Hutchinson. Three air gunners per plane join the crews which have completed basic training for the advanced work at Jacksonville. The course of instruction covers day and night navigational flights over water, air-to-



PBY'S DOMINATE THE SEAPLANE RAMP AREA AT NAS JACKSONVILLE WHERE BROAD RIVER PROVIDES AMPLE SPACE FOR LANDINGS AND TAKE-OFFS

Combat teams work together in practice so they will fight together in combat. This development is one of the most important acquisitions made by the student of operational training. Fighting in teams with split-second precision made possible the Navy's success in the South Pacific where naval aviators and aircrewmembers chalked up a ratio of 10 enemy planes destroyed for every one of ours.

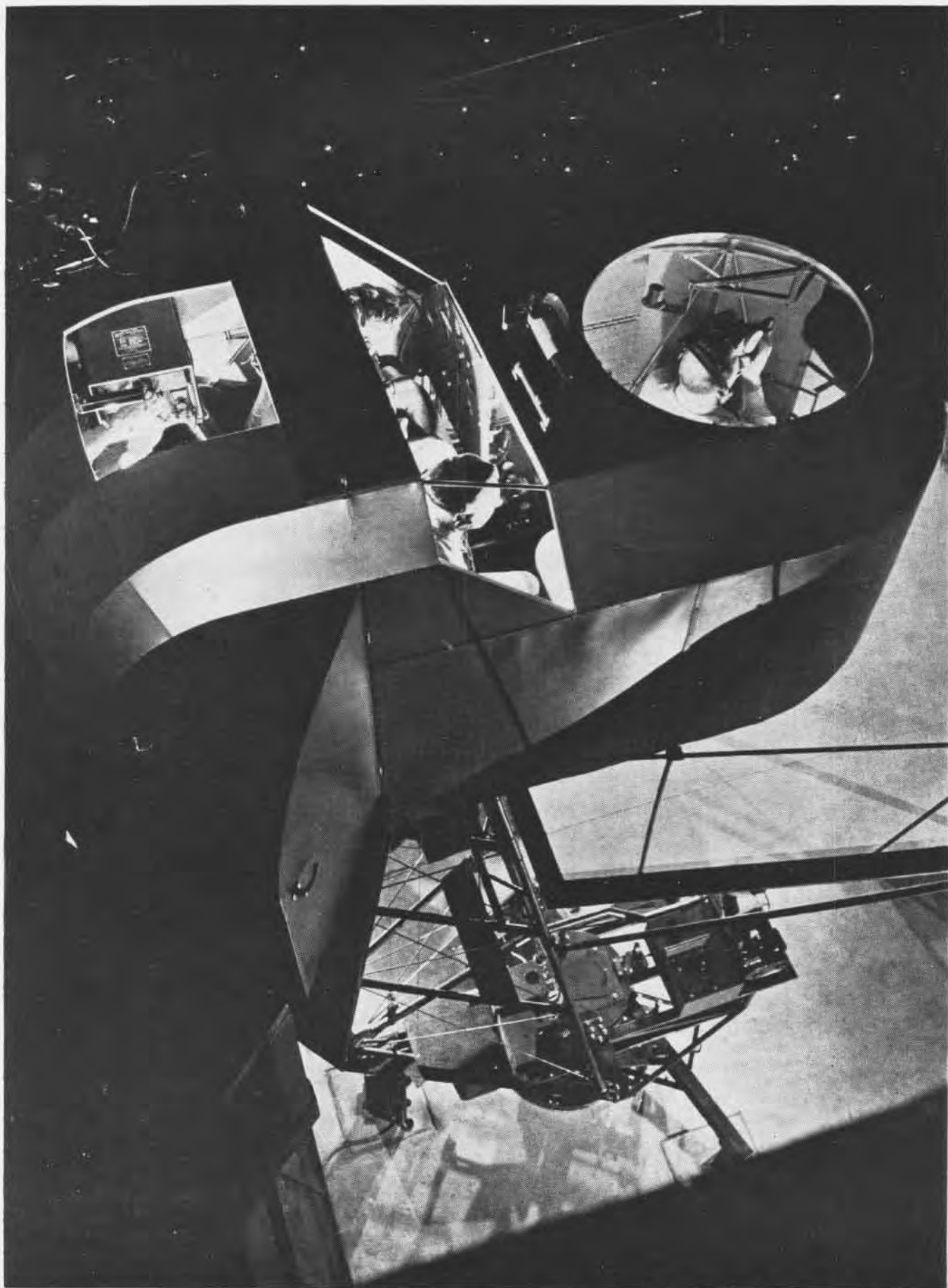
Teamwork is made to apply equally to fighters in formation, patrol planes and attack bombers whose pilots and aircrewmembers go through operational training together. Giving each of these teams the benefit of veteran experience increases its power. Therefore, in every case possible, experienced veterans form the backbone of practice crews.

From the first familiarization lecture, when student offi-

air firing, low- and high-level bombing and airborne electronics, including communications.

Organization of combat crews for basic training does not follow any set formula and is subject to some variation. However, in general it calls for three men from the Fleet: A patrol plane commander or first pilot, one AMM as a prospective plane captain and one ARM as a prospective radioman. On their showing in basic training depends whether they are placed in these responsible positions.

Two additional pilots and three enlisted men, one each with AMM, ARM and AOM ratings, report from operational training units. These eight men compose the nucleus combat crews as they report for advanced training. Addition of the three gunners brings the crew up to its full strength.



In Jacksonville's Link Celestial Navigation Trainers, student officers learn to navigate by the stars without leaving the ground. Crew of three with instructor practice simple and complex problems of long-range or patrol flight that will be encountered on combat duty

FUTURE AIR & GROUND CREWS STUDY TECHNICAL OPERATION, MAINTENANCE

TECHNICAL

THE NAVAL Air Technical Training Center at Jacksonville trains thousands of bluejackets and Marines to fill billets as air and ground crewmen in combat squadrons.

From the Fleet and from recruit centers throughout the country, Navy men pour into NATTC Jacksonville to attend such schools as Aviation Electrician's Mate (Class A and B); Aviation Radiomen (Class A); Aviation Fire Control (formerly Bombsight and SBAE, Class B) including courses in Computing Gunsight MK 18 and MK 21, Automatic Pilot (Minneapolis-Honeywell equipment and Sperry Adapter equipment); Advanced Aviation Ordnance (Class B); Aviation Gunnery Officers'; Aviation Radar Operators'; Aviation Storekeepers', and Aircraft Turrets.

Courses at NATTC Jacksonville run from the comparatively simple to the complex, and the men who attend them vary in experience from "boots" just out of recruit centers to rated men with years of experience with the Fleet.

Training in the elementary or Class A schools is intended primarily for men with no previous aviation training or experience. Personnel for this training usually are assigned from boot camps. The purpose of Class A schools under CNA TechTra is to provide basic training in the various aviation ratings.

Enlisted men who have completed elementary training or who have become fully qualified through previous experience may enter Class B schools for advanced training

in the selected aviation field. The function of this training is to familiarize the men in procedures applicable to higher petty officer ratings. To encourage activities to send deserving and outstanding men for advanced instruction, the Navy follows a policy of returning the men to the same activity after training—providing the activity so desires. It is felt that better placement of trained men, in duties for which they are fitted, will result from this established policy.

ALL ELEMENTARY schools at NATTC Jacksonville aim to assist the forces afloat by preparing recruit personnel for immediate usefulness in pertinent ratings. Objectives of the other schools vary as much as the courses themselves. As an example, the Aviation Gunnery Officers' School endeavors:

"To train air ordnance officers for duties with the Fleet, carrier and shore-based squadrons, advanced bases, naval air stations, administrative and operating staffs, and Navy Department Bureaus in the handling of aviation ordnance equipment. These officers are trained in procurement, installation in the aircraft, operational use, and maintenance of ordnance and related material whether under the cognizance of the Bureau of Ordnance or the Bureau of Aeronautics. The association of the weapon with service aircraft is constantly emphasized . . ."

The Turret School gives instruction to enlisted and officer personnel in maintenance and operation of all types of service electric and hydraulic turrets. In the Aviation Fire Control School the objective is to qualify selected candidates in care, maintenance and operation of fire control equipment including computing sights, bombsights and SBAE. Curricula in NATTC schools range from 2 to 20 weeks.



ON SPACIOUS GROUNDS OF THE NAVAL AIR TECHNICAL TRAINING CENTER STUDENTS IN AVIATION ELECTRICIAN'S MATE SCHOOL WORK ON "LIVE" PBM

NATTC PRODUCES TECHNICIANS FOR FLEET, ADVANCED BASES

Personnel flow in and out of NATTC Jacksonville in a seemingly never-ending stream to meet the demands of the Fleet and advanced bases for trained air and ground crewmen. As the schools of the Technical Training Center run continually at full blast and with curricula varying in length from two to 20 weeks, new groups of officer and enlisted personnel are coming in constantly to replace

those that have been graduated. The serious-faced students shown on these pages typify Navy personnel under instruction at centers throughout the Naval Air Technical Training Command. Because of the extreme importance of the assignments that lie ahead for these men, instructors are careful to leave nothing unexplained, and little to the students' imagination. Guesswork is outlawed



In Aviation Storekeepers' School, men study identification problems of all aeronautical parts, correlating manufacturers' part numbers with *ASO Catalog*, manufacturers' catalogs, blue prints, to lay foundation for deeper familiarization with all aviation items



In another stage of curriculum, aviation storekeepers test their own handiwork by putting crate they have packed through "toughening up" process. Men must be graduates of Class A Storekeepers' School. At end of the six-week course, they get rating of SK(V)



Aviation Fire Control School (Class B) enrolls aviation ordnance-men from third class to chief petty officer. The school concentrates on care, maintenance and operation of computing sights, bomb-sights, SBAE and related equipment and other duties of AOMB



Trainer used for study by bombardiers in operational also is employed in Aviation Fire Control School to teach care and maintenance of fire control equipment. Students at the Technical Training Center thus get to know actual mechanisms they will service



As part of laboratory work, student in Aviation Gunnery Officers' School disassembles tail fuse. In this and other courses it is the policy to stipulate two hours of practical instruction in ordnance equipment for every hour of lecture work given in classrooms



In the AGO School, in addition to the student handling of service equipment and weapons, full use is made of training devices such as inert and sectionalized munitions, cutaway guns, mobile handling units, mockups of gun firing and bomb release systems



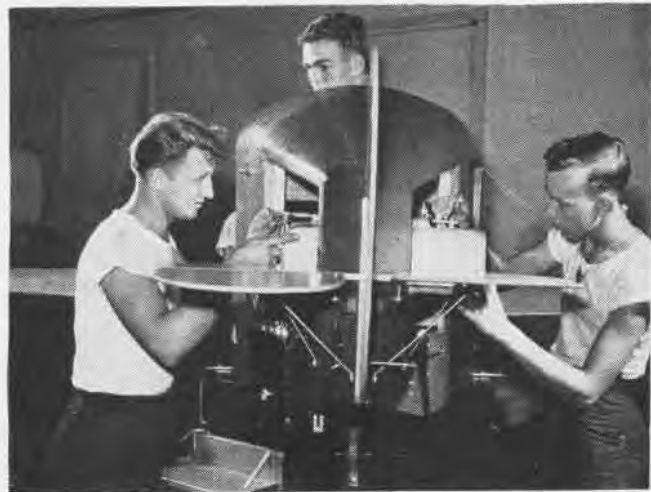
Turret School qualifies selected enlisted men and officer candidates in maintenance and operation of service electric and hydraulic turrets. All prospective students must possess fundamental understanding of electricity. Enlisted graduates get AOMT rate



Naval aircrewmembers get early training in Aviation Radiomen's School (Class A). Course runs 18 weeks and includes instruction in ordnance, code sending and receiving, semaphore, signal flags, blinker and aircraft recognition. Two weeks of radar instruction follows



Instructor in Aviation Electrician's Mate School explains operation of portable generator test panel. Class A AEM School gives 20-week course, which includes study of such equipment as lighting circuits, power, warning and heater circuits, instrument, generators



Students who have completed Aviation Fire Control School may be assigned to five-week course in study of automatic pilot. Half of curriculum is devoted to Minneapolis-Honeywell equipment, while remainder of the time is spent on Sperry Adapter equipment



Indoctrination course provides newly commissioned officers with general knowledge of naval aviation and the uses of naval aircraft



Course strengthens ties of understanding and mutual cooperation which must exist between flying and non-flying naval officers

AT JACKSONVILLE, ANNAPOLIS GRADUATES SEE NAVAL USES OF AIRCRAFT

INDOCTRINAL

NAS JACKSONVILLE serves as a postgraduate school not only for naval aviators but also for newly commissioned ensigns of the United States Naval Academy. Immediately after graduation from Annapolis, half of the class reports to the air station for four weeks of indoctrination in naval aviation. The remainder arrive a month later for the same schedule.

The Navy set up the indoctrination course to provide Naval Academy graduates with a general knowledge of aviation and fleet aircraft so that they will have a foundation upon which to base a wider knowledge of the uses of naval aircraft.

Results desired from this indoctrination course are to familiarize the officers with the problems of flight, to encourage them to look upon aircraft as naval weapons and as instruments in the schemes of defense and offense, and to strengthen the ties of understanding and mutual co-

operation which must always exist between non-flying and flying officers of the naval service.

Officers undergo an intensive program of instruction in both flight and ground subjects. As part of the course, each Annapolis graduate flies as a passenger in different types of service aircraft. The syllabus also includes visits to the Naval Air Gunners' School at Yellow Water and to the naval auxiliary air stations at Cecil Field and Green Cove Springs. At Yellow Water the Annapolis men fire .50 cal. and .30 cal. machine guns on the ranges with the student aircrewmembers. At Cecil Field they fly in swo's and study dive bombing techniques. They observe fighter tactics at Green Cove Springs, and fly in PBY's and OS2U's at the main station.

Ground school courses follow closely the general outlines of those given student officers in operational training, and cover such subjects as navigation, communications, recognition, Link trainer operation and air combat information. Naval Academy graduates "fly" in the Link Celestial Navigation Trainer, learning to navigate by the stars without leaving the ground. They also give careful consideration to all other training devices and aids.

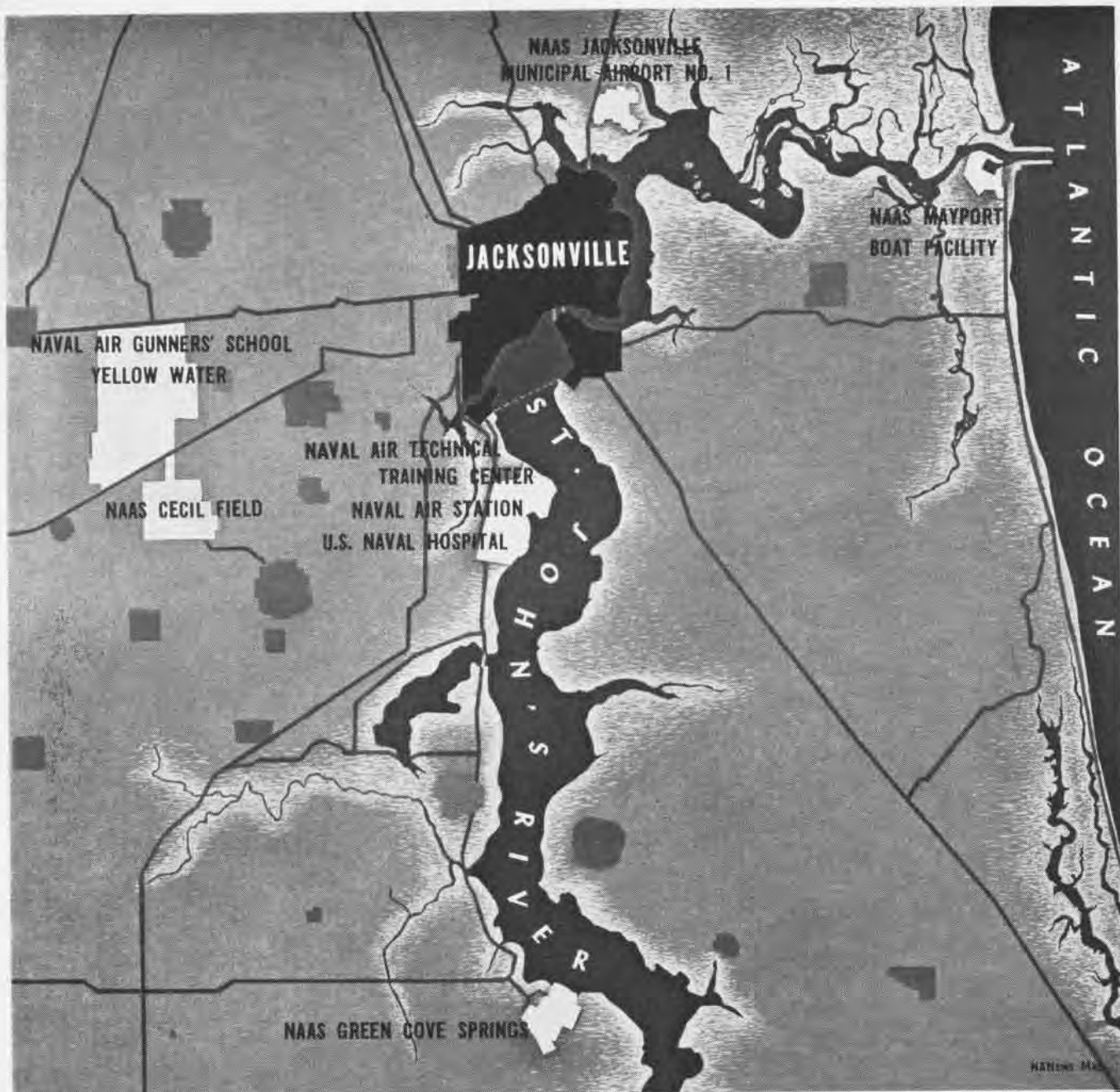
Annapolis men live in student officers' area of the station.



There's never a dull moment for Annapolis men in their one-month stay at NAS Jacksonville. Here they get life raft demonstration



Graduates of the Naval Academy spend part of busy one-month indoctrination period firing on gunnery range at Yellow Water



AREA INCLUDES MANY OF NAVAL AVIATION'S MAJOR ACTIVITIES

Geographically as well as strategically, the Naval Air Station is the center of activity within the greater Jacksonville area. The Naval Air Technical Training Center and U.S. Naval Hospital share the air station's site. NAAS Jacksonville Municipal Airport No. 1 lies just north of the city. The Naval Air Gunners' School is 15 miles west of the air station; NAAS Cecil Field, about the same distance from NAS and just south of Yellow Water; NAAS Green Cove Springs, 20 miles south of the air station, and an auxiliary air station and boat facility are located at Mayport, about 30 miles northeast of the main station.

NEW FILMS

Mum's the word Given a 4-star rating by Air Information Branch and Marine Aviation Intelligence, the AAF motion picture *Resisting Enemy Interrogation* (Ma-4588) is convincing, entertaining.

Says *Time*: "The only thing dull about the film is its title. This latest product of the Army Air Forces' First Motion Picture Unit is as much a success in its own spy-thriller class as the FMPU's famed Technicolor documentary *Memphis Belle*."

The film is about as far away from a hush-hush lecture as you can get. Edgy with suspense, the story's interest comes from the cunning with which the enemy wangles jigsaw bits of data from members of a medium-bomber crew, finally pieces them together to reveal a major raid.

Briefs for the briefer Briefing officers up to their ears in maps, and gasping for breath as more charts pile in, can look for survival to three Army slide films on Pacific theaters of war.

Each film has a master index map with a key to the 50 to 75 detailed section maps. Any standard strip film projector will toss the maps on a wall or bulkhead.

SA-4281b *Maps, SoWestPac Area*

SA-4281c *Maps, NorWestPac Area*

SA-4281d *Maps, India, China and Japan*

Tips for pilots Special Navy film footage has been added to the AAF training film *Don't Drop Those Tanks Too Soon* (Navy No. MN4112h). All pilots concerned will want to see this.

Robinson Crusoe was a piker That's the impression given in the motion picture:

MN-2306a *Custaway*—58 min.

Theme: A Navy pilot, shot down in the south Pacific, brings himself back alive by a combination of common horse sense and skillful use of emergency equipment. He navigates, fishes, signals, survives a vicious squall, makes land, makes camp, hunts, cooks and finally gets himself rescued by a PBM via native messenger and "government man" on Wango Island.

Best recommendation: it may one day save your life.

More light on pilot black-out A lot of "G" sense has gone into aviation since Newton watched that apple fall. *G and You* (MN-2361) (40 minutes of full color) explains medical aspects of black-out and tells what the Navy has done to combat it. Pilots will pull out of this film with some practical "G" facts aboard for future use.

Where to get 'em: THE ABOVE FILMS 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, HEDRON #3, #4, #11, #12, FAW #10, #15, #16, #17, NATC PENSACOLA, CORPUS CHRISTI, NAOTC JACKSONVILLE, NATEC LAKEHURST, MCAS CHERRY POINT, MCAS NAVY #61, MARFAIR WEST COAST, FOURTH MARBDW.

PARACHUTE FAILS; MARINE LIVES

THE STORY of *Captain P.*, Marine pilot who survived a 2,000-foot plunge into the ocean without benefit of parachute, adds another miraculous escape to annals of war.

OUTNUMBERED five to one in a flight over the Russell Islands, Capt. P. pulled out with his right wingtip and aileron gone; gas, oil and hydraulic lines cut; plane smoking; goggles smashed; flying suit covered with oil and full of shrapnel holes. Unable to slow his *Corsair* below 250 knots for a landing, he bailed out at 2,000 feet, making 300 knots. The chute opened, fluttered, and failed to fill.

"There was no sensation of falling," the captain said. "I floated a long time,

back. My rubber boat was torn to shreds, so I let it sink.

"There was land all around, but when I started to swim I could feel the bones in my right hip scrape. I got rid of the chute harness, took off my shoes, lay on my back and started swimming with just my arms. Going with the current, I got to a coral reef, rode a wave in and tumbled end over end. That really fixed my leg—spread the break badly."

After lying unconscious on the reef all night, the captain pulled himself to the other side and swam across a lagoon to shore. He hitched himself up the beach, and spent the rest of the morning trying unsuccessfully to break a coconut. In the afternoon, three natives



it seemed. The chute kept me from tumbling, and I hung there, working on the shrouds. I kept wondering why the thing wouldn't open, and I remember it was kind of nice to be floating like that. Then in the last few hundred feet I saw the water coming up fast, and I knew I wasn't floating.

"What a heck of a way to get knocked off, I thought, and I pictured the boys out looking for me. I had time to pull my hands in, put my feet together as we'd been taught in combat conditioning, and brace myself. Then there was a terrific splash, and that's all I remember.

"I came to under water, green all around me, wondering where I was. Then I pulled the life jacket valve and shot up. I was groggy and gasping, and floated for a while getting my breath

in a canoe paddled along the outside reef and spotted him just before they passed out of sight.

While two went for help, Capt. P. kept the third busy running up and down trees getting coconuts, from which he whacked off the tops with a two-foot machete. In half an hour, doctors whom the natives had found fishing on the other side of the island had rigged a stretcher and started him on the way to the hospital at Efate. The captain had a broken pelvis and two badly sprained ankles and was a solid mass of dark blue bruises head to foot.

He was hospitalized immediately and six months later walked on crutches for the first time. He is now on active duty with a West Coast air station and is flying again, restricted only from taking up hot *Corsairs* or other fighter planes.

SHORE STATIONS

▶ **NAS MIAMI**—The most delayed Christmas present of all arrived here a short time ago after seven months of travel through the South Pacific, Alaska and a good portion of the U.S. The shaving cream and homemade fudge were practically indistinguishable. The only thing in proper order was the string which held the package together!

▶ **NAS CORPUS CHRISTI**—An ex-Lakehurst parachute riggers' school trainee, WAVE PR1c, became the Navy's first WAVE parachute jumper at NAS Corpus Christi. She made a successful free-fall jump from a Navy transport at 2,000 feet, after packing her own chute. She came to Texas as a S2c from Hunter College, and was graduated in the first WAVE class in mid-1943 at PRS.

▶ **NAS NEW YORK**—An athletic specialist was putting the Aircraft "Conditioning" Unit through its 0800 calisthenics. He wasn't satisfied with the early morning response to one of his particular modes of torture, so he called a halt. "Now watch me," he said, "and do it the same way." Whereupon he took a violent step to port and disappeared off the six-foot platform.



▶ **NAS JACKSONVILLE**—A TM3c, of Portland, Maine, said that a whale helped his submarine elude attacking Japanese airmen in the Pacific. He said the whale surfaced just as his sub dived. "From a distance the Japs couldn't tell the difference," he explained. "They worked the whale over instead of us. When the whale dived they went after him and we slipped away."

▶ **NAS OTTUMWA**—A resident of Cicero, Ill., had almost given up hope of anyone in his family inheriting his second class petty officer badge when his son became an Army bombardier. His daughter, however, saved the day by enlisting in the WAVES and eventually getting that AMM2c after her name. She now wears the badge which is over twenty-five years old.

▶ **MCAS EL TORO**—Hollywood has moved to this station to make a feature short on women reserves. Tentative title for the movie is "Proudly We Serve," and all parts are played by wa's with the exception of two professionals. Upon completion, the movie will be distributed through regular commercial channels and El Tero wa's will be feted from coast to coast.

▶ **MCAS EL CENTRO**—The officers and men of a fighter squadron based at this station are amazed at the odd and monstrous sizes and shapes of insects living in this valley.

Crickets are predominant and are seen most everywhere, pitot tubes included. Quite a bit of trouble has been experienced in this respect. It is rather annoying to have a continuous indicated air speed of 162 knots throughout a gunnery hop with an inaccurate and eccentric altimeter. Even after obtaining a correct altimeter reading one finds an indicated 1,000 feet after landing.

The question at this station is: In what form of life will gremlins appear next?

▶ **NAS MINNEAPOLIS**—A drive has been launched to have all men, tabbed for sea duty, qualify as swimmers. Departments are cooperating by sending five percent of their men to a morning instruction period of one hour and five percent to an afternoon period. Men soon to go out are given priority. Classes convene five days a week. It is the aim of the course to get men through "B" stage, including swimming 200 yards using four strokes, abandoning ship and swimming a short distance under water.

▶ **MCAD MIRAMAR**—A Marine private at this depot recently played Pied Piper to a flock of mosquitos. The night was dark and dank. Occupants of Barracks 63 were playing cops and robbers with a squadron of long beaked insects. Suddenly the Leatherneck had a brilliant idea and produced his C.I. flashlight. He spotted the flock and slowly moved towards the door. He lured them right out into the great outdoors and peace reigned.

▶ **NPFS IOWA CITY**—Latest in non-regulation greetings is the one proffered an officer by a cadet here recently. Approaching the officer, the cadet saluted smartly and snapped, "Good fifteen minutes before evening, sir."

▶ **NATTC MEMPHIS**—An army lives on its stomach, but the Navy evidently lives on its shoes, if the cobbler shop here can be any judge of the matter. During the month of July, 1,736 pairs of shoes were repaired at the base to keep sailors walking on leather. The biggest shoe job was reconstruction work on a size 15. The smallest male shoe was a size 6. Concerning shoes feminine, the largest repaired was a size 8, the smallest a size 3.

▶ **NAS PENSACOLA**—Reducing a 50-page flight jacket so that it can be placed in a container about the size of a thimble is one of the roles the Photographic Laboratory here is playing in the naval aviation training program. The Lab has trained WAVE personnel to operate the specialized photostat camera, the Recordak. Each flight jacket has approximately 50 pages which are photographed consecutively. The image of a 9 x 11-inch page is about

three-fourths of an inch long and a half-inch wide. After the record is filmed, it is less than 40 inches long, and when rolled tightly, it can be placed in a container with a diameter about the size of an ordinary thimble.

▶ **NAS BUNKER HILL**—A former parachute rigger, who is now taking aviation cadet training at NAS Bunker Hill, found the Japanese a trifle irksome on Guadalcanal. "Washing Machine Charlie irritated us a lot," he said. "We were told that we would be shown the film, 'Pride of the Yankees.' We saw it all right—a reel a night for seven nights. Charlie would wait, it seemed, until we were all seated on the ground watching the picture, then he would swoop over. The Army boys learned the trick of spotting the Jap airplanes with searchlights. Then our Navy flyers would go up after them, and things would quiet down."

▶ **NAS OTTUMWA**—One AMM3c tried to bring a three-foot alligator back to the station from his home in the South. The train conductor, however, didn't share his enthusiasm for the wilder aspects of life. After a few miles the alligator was left behind.



▶ **NAS SAN DIEGO**—After waiting in line two hours, a bluejacket finally was admitted to a local theatre. Taken in tow by an usher, he was led skyward, ramp after ramp, until they reached the floor level of the top balcony. Pointing up the passageway, the usher explained: "You'll find a seat up there somewhere. This is as far as I go. Above this my nose bleeds."

▶ **NAAS GREEN COVE SPRINGS**—An ACMM here has a sure cure for cat fever—but doesn't recommend it. He was in sick bay on the *Wasp* about 1430, 15 September, 1942, when the first torpedo hit the ship. It ripped into the carrier on the starboard side, toward the bow. The explosion knocked him onto the deck. Before he could realize what had happened, the second torpedo hit about 30 feet away from sick bay on the starboard side. The cat fever was completely forgotten in the chief's rush to climb into his dungarees, grab the last life jacket in sick bay and hurry up to the top deck. He spent the next 25 minutes helping to push burning planes off the deck of the carrier before the order came to abandon ship.

▶ **NATC CORPUS CHRISTI**—Four Link Celestial Navigation Trainers have been erected at the main station and six at Rodd Field. Each octagonal cell houses a \$50,000 device designed to train navigators, air bombers, pilots and radio men.

► **MCAD MIRAMAR**—Never again will one Marine private complain about the lack of letters. He recently received a 30-foot communique written on 18-inch-wide shelf paper. The handwriting is extremely small but legible. Thanks to his 14-year-old cousin!

► **NAS JACKSONVILLE**—An alert aircraft recognition instructor has taken advantage of the universal urge to "put things together" by devising a simple display—"Scrambled Wings."

Old model planes are selected such as twin-engine bombers (A-20, B-25, B-26). Wings are cut off and the fuselage is mounted on a display board. Holes are bored in the sawed-off wing ends to fit pegs placed in the sides of the fuselage. Trainees find it hard to resist the challenge "You Can Match Wings with Fuselages in Sixty Seconds."

Variations of the idea include movable tails, engines or parts. The student must know what goes where with the same speed and accuracy that will be required in combat recognition.

► **NAS SHAWNEE**—The *Shawnee Sunline* has been selected from among many contributions suggesting names for the proposed station paper. The Commanding Officer has applied to the SecNav, requesting permission to publish a newspaper on the base. A multilith press has been ordered.

► **NAS FT. LAUDERDALE**—Three goggle-fishing officers unwillingly have had to include a fourth member in their party lately. Homer, a large, ill-mannered shark, waits until they have cornered a fat Florida lobster, and then shoves them out of the way. The proverbial brick house has fallen on Homer, but he refuses to see that he is not wanted. One officer shot him squarely between the eyes, but Homer only sulked for a few minutes and then came back to start pushing again.

► **NATC CORPUS CHRISTI**—Placed in operation over a year ago, educational services reports that over 3,000 NATC men and women are now enrolled in study courses. The majority of courses studied are of high school level, credit for which may be applied toward a high school diploma.

► **NAS NEW YORK**—There is a pigeon reported at the Aerology Division who is striking for weathercock.

► **NAS BUNKER HILL**—Recently a cadet made an emergency forced landing, and after skinning his neck, finally brought his plane to safety in a farmer's wheat field. The farmer's son was driving the tractor at the time. The cadet, still nervous and shaken, asked the farmer's son for a cigarette.

"Heck no, you servicemen can get 'em at a big reduction in your canteen!"

► **NATC CORPUS CHRISTI**—The only lady barber here is a *WAVE SIE*. She is a barber college graduate and plans to set up a barber shop of her own after the war. Meanwhile Navy hair and whiskers continue to fall before her expert onslaught.

TOKYO TALKS

—TO JAPAN

According to a Tokyo broadcast to Japanese overseas, Japan's new premier, General Kuniki Koiso, is also known by the nicknames "Tiger of Chosen (Korea)" and "Singing Frog." These nicknames "show perfectly the two characteristics of General Koiso. He is strong as the tiger and as reassuring as the tiger. He likes sake (Japanese rice wine) and sings with a beautiful voice, like a singing frog, the Orvokko tune, his specialty."

—TO JAPAN

In a recent radio broadcast it was learned tonight that students in 550 national schools throughout Japan now are engaged in breeding rabbits to provide military clothing. The number of school-bred rabbits would be increased by 24 percent to make more coats and stockings

"for the soldiers who are fighting in the cold front lines." The good children of a national school in Sosa County have decided to raise more than 95,000 rabbits together with their big brothers of the middle schools and big sisters of the girls' schools.

The announcement also added that students of a Wakayama City national school were having a little trouble raising rabbits because the school is situated in the middle of the town. These difficulties, however, are being overcome by assigning students to gather grass for the rabbits on their way to school.

—TO JAPANESE AREAS

The Japanese "Association of Military Carrier Pigeons" has been asked to speed the training of carrier pigeons to fly into the breach in case of a communications breakdown during air raids. Recently 30 selected carrier pigeons were released on "the esplanade in front of the Imperial Palace" in Tokyo with "important data." They were to fly to Osaka via Shimizu and Nagoya. In the meantime another carrier-pigeon formation took off with "confidential data" for Tokyo.

—TO THE UNITED STATES

Berlin's radio recently reported Japan's "peace terms" to the United States as follows:

1. Confiscation of the entire United States Navy.
2. All large merchant ships to be placed at Japan's disposal.
3. All expenses to be paid by the United States.

—TO JAPAN

A 20-day series of morning exercise drills accenting fitness for coping with Allied air raids was held recently throughout Japan under the joint auspices of the Dai Nippon Athletic Association and the Imperial Rule Assistance Association, Japan's mass totalitarian party. The exercises were held each morning at 0600 on the accompaniment of radio instructions "at the grounds of the Buddhist temples and shrines, beaches, schools, factories and mines." Judo (wrestling) and kendo (fencing), "the carrying of buckets," "ladder-climbing" and "the supplying of water" were among the exercises included.

—TO JAPAN

The Japanese people have been given a new national battle cry to go with the new cabinet headed by Premier General Kuniaki Koiso. All strata of society in Japan have adopted the cry: "Take up where our heroes of Saipan left off."

—TO JAPAN

The Japanese government, restricted in its contact with the southern occupied areas because of air and sea attacks against its vital shipping lanes, has decided to re-route traffic between China and Japan via the Korean peninsula. "In view of the maritime transportation condition of today," shipping facilities in southern Korea would be "strengthened" to accommodate the large shipment of "resources" from the Chinese mainland to factories in Japan.

SHOW ME THE WAY TO GO HOME



Radius of Action

You depart at flight altitude of 10,000 ft. from over Danger Point, Lat. 28° 09' S, Long. 153° 33' E, at 1030 to scout out on a course of 110° to a maximum distance, returning to Double Island Point, Lat. 25° 56' S, Long. 153° 12' E, at 1430. You have a CAS of 104 k, T (-)10°, Mean Variation 10° E, and visibility 25 miles.

At 1226 you sight an enemy submarine at limit of visibility. When you head directly for the sub, your compass reads 125°.

Fill in the following blanks:

a—Fictitious ship

Cus

Speed

b—MH out

.....

c—Time to turn

.....

d—Position of turn

Lat.

Long.

e—MH in

.....

f—1226 enemy position

Lat.

Long.

(Answers on page 40)

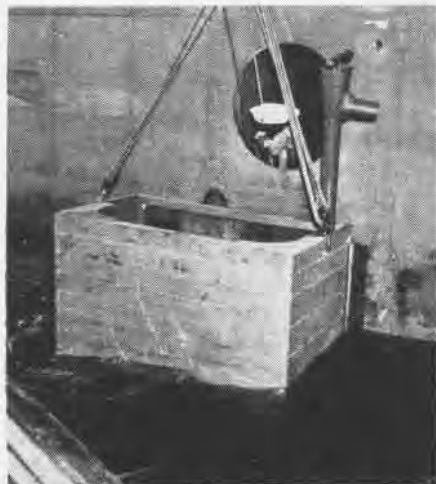
TECHNICALLY SPEAKING

Tank Helps Fix Big Boats Pan American Services Chine Locks

NATS ATLANTIC—A "portable dry-dock" for servicing the chine lock on flying boats has been developed by Pan American Airways to solve a maintenance problem.

PAA had been experiencing difficulty in disengaging the beaching gear from the aircraft because of corrosion and scoring of the chine lock pin. Previous servicing of the chine lock had been impossible because it was two feet under water when the plane was waterborne, or was inaccessible because the beaching gear was installed and locked whenever the aircraft was beached.

A conventional cradle, permitting removal of the beaching gear and access to the chine lock, would have been costly to construct since the entire weight of the plane would have to be concentrated on two points along the



DRY DOCK PERMITS CHINE LOCK REPAIR WORK

chine angle directly below the beaching gear attaching points owing to the light construction of hull bottom frames elsewhere. Jacking the aircraft would have been difficult and hazardous with beaching gear removed.

Work tank developed by PAA requires a half hour to attach and pump out.

► **BuAER COMMENT**—This looks like a good idea. It will work on PBM's, PBY's, as well as PB2Y's.

Tool Flanges Sheet Metal Fuel Tanks Prepared for Fittings

NAS MOFFETT FIELD—A sheet metal hole flanging tool has been developed

through the beneficial suggestion program to flange fuel tanks to receive necessary fittings. This operation can be performed from outside the tank.

The tool is composed of: 1. a threaded shaft; 2. a die; 3. rubber pressure pad; and 4. pressure plate which produces the flange by forcing the flanged material against the die.

In preparation for the flanging operation, the tool is prepared for inser-



TOOL FORCES SHEET METAL AGAINST THE DIE

tion in the hole. Die and pressure pad are pushed well up on shaft and after the movable half of the pressure plate is aligned with the other half, it presents a half circle to the hole in the tank and gains easy entrance. After the pressure plate is inside the hole, it is restored to its normal diameter and the operation started. The rubber pressure pad then is slid through the hole. The die is placed in a position concentric with hole in tank. Final step is to raise the shaft, by mechanical means or otherwise, thus forcing the pressure plate to form the desired flange by pushing the metal of the tank against the die, the

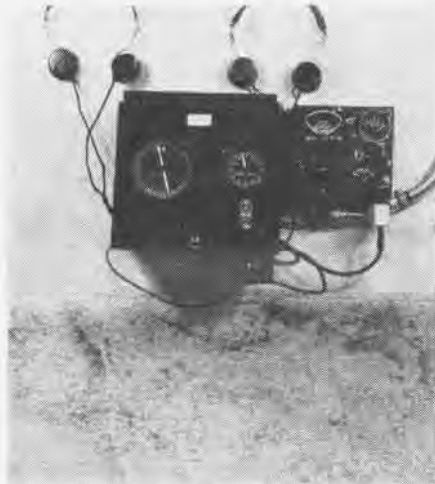
rubber plate serving as a buffer cushion. The tool is released and removed, leaving a perfectly formed flange.

[DESIGNED BY JAMES M. GLADDEN, AMTC]

ADF Mock-up Trainer Used Learn to Operate Radio Compass

FAW 14—More easily to acquaint pilots with correct operation of the automatic direction-finding radio compass, this unit has installed a set and it is used to augment the Link training offered by the headquarters squadron.

Pilots are instructed in the art of station tuning and identification, plotting, etc. The magnetic heading of the mock-up is indicated on a small card and placed directly above the two azimuth indicators. The azimuth on the left is rotatable, has single degree graduations and is set to the magnetic heading of the plane. The magnetic direction of the radio station is read and the



STATION TUNING, IDENTIFICATION LEARNED

line of bearing is plotted from that station on the radio direction-finding chart provided. This is in comparison to the smaller azimuth indicator on the right, which requires calculation of the relative bearing plus the magnetic heading.

This installation clears the atmosphere for the many pilots who are being introduced to ADF equipment.

Power for the ADF is supplied by a standard Eclipse generator and inverter, driven by a one-horse electric motor. A motor generator indicator light is provided below the azimuths to indicate that the power unit is not left on when ADF instruction is completed.



Corpus Jig Boosts Salvage Saves Fittings Frozen to Tubing

NAS CORPUS CHRISTI—Fully 75 percent of the AN fittings which previously were discarded at this station because they were frozen to tubing now are being salvaged by a device developed under the beneficial suggestion program. The jig consists of two parts: a plate with an elliptical opening and a punch rod having graduated diameters to accommodate the various sizes of tubing.

In use, the notched plate is placed in a vise and the tubing dropped down into the notch as far as it will go. Shoulder of fitting is brought to bear against face of plate. The graduated punch rod is inserted inside tube and tapped with

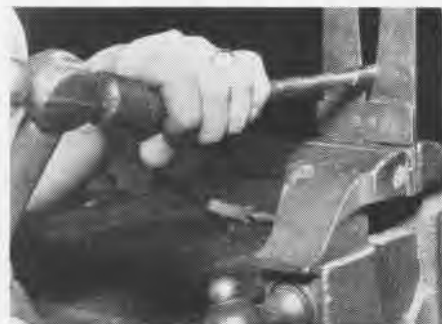


PLATE AND PUNCH ROD COMPRISE THIS JIG

a hammer until tube separates from fitting.

This device not only reduces damage from salvage operations to a minimum, but also speeds up entire operation by 50 percent.

[DESIGNED BY GEORGE T. HUBBARD]

Your RUDM May Save Lives Reports On Failure Get Attention

Three minutes of time spent in filling out a simple form on a defective aircraft part may save the lives of more than one Navy pilot out in the war theater and may also bring about a permanent improvement in engineering. This is why the Engineering Division of BuAer is anxious to receive RUDM's when a resistor burns out for the ninth time in a month or a receiver goes dead for no particular reason.

The responsibility for calling possible defects to attention before it is too late, rests squarely with officers and men of squadron or station who are working with these airplanes daily. If the Engineering Division does not receive a "Report of Unsatisfactory or Defective Material," one failure may be repeated in a hundred other squadrons and one of these may ultimately list a plane as "missing in action."

Filling out such a report is a simple matter. Consider these four points:

1. Identify the part. Always give

complete name-plate data—name of the equipment, manufacturer, Navy type number, serial number and commercial designation. Also give the size or capacity and the circuit symbols if they are involved.

2. Statement of trouble. Make it simple and concise. Did something blow



up and kill ten people or did a little condenser stop working before its time?

3. History. Tell the approximate number of hours of operation and describe any previous experience with the same part or equipment.

4. Recommendations. Did you figure out a way to fix the trouble yourself, and can you suggest a permanent solution?

One more point—enclose a close-up photograph of the defective part if possible. It will speak more loudly than words.

Nothing receives more immediate action in the Engineering Division than an RUDM. By this simple method, the AMM who is having undue trouble with some particular part of his plane can call in all the resources of Navy engineers, manufacturers and the research laboratories. And his report may be responsible for a complete change in design which will save the Fleet scores of planes and bring victory that much closer.

New Test Panel Developed CASU Simplifies Trouble Shooting

CASU 17—A test panel has been designed and built by the personnel of the instrument shop to assist in trouble shooting, calibration and synchronization of electrical instruments.

A brief outline of what can be accomplished by use of this test panel is listed for information of shop men:

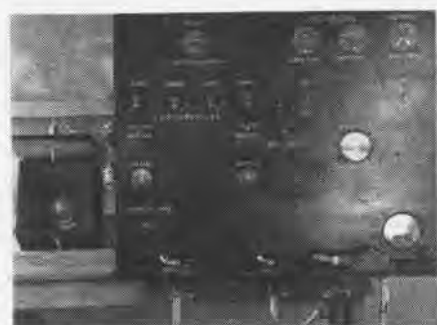
1. *Autosyn*—Fuel flow indicator or any other autosyn indicator.

2. *Liquidometer*—Fuel quantity indicator and transmitter trouble shooting and operation; calibration of transmitter to indicator; installation of transmitter and indicator in aircraft.

3. *DC Selsyn Position Indicator*—Complete check of transmitters, indicators and up and down limit switches, individually or as a complete system.

4. *Magnesyn Remote Indicating Compass*—Trouble shooting throughout system including inverter, transmitter and indicator; proper calibration of transmitter to indicator as one unit and for the particular locality in which the aircraft is operating.

5. *Oil and Free Air Temperature Gauges*—Trouble shooting and calibra-



BATTERY SUPPLIES CURRENT FOR TEST PANEL

tion from resistance-bulb through indicator.

Use of the test stand definitely isolated any discrepancies by checking the transmitters, indicators and limit switches against one another individually or as a unit.

► **BuAER COMMENT**—Aircraft instrument maintenance test equipment now available or being procured is listed below. This equipment includes facilities which enable the necessary testing for inspection, installation and line maintenance of aircraft instruments. Requisitions should be made through regular supply channels.

Autosyn tester	88-T-828
Magnesyn Compass tester	88-T-829-500 (avail. Nov. '44)
Airspeed Indicator tester	88-T-838
Selsyn Instrument tester	88-E-873 (avail. Nov. '44)
Resistance Thermometer tester	88-T-885-100
Thermocouple Thermometer tester	88-T-880-100
Field test set	88-T-901 or 88-T-903-20

Messages Drop Accurately Standard Uses Wing As Bomb Sight

A standard procedure for message dropping which utilizes the trailing edge of the lower wing as a "bomb-sight" has been worked out successfully under fleet operational conditions. Essential factors in this procedure are a long, slow approach, selection of a



SIGNALING WITH MIRRORS

A NEW TYPE of survival signaling mirror for use on life rafts has been developed after many tests and is being procured by BuAer for distribution to the Fleet. Early production of the reflex-button type mirror will go to Com-AirPac; general distribution to follow.

The new mirror has a red reflector button set at approximately 30° angle behind a clear glass square in the middle. By sighting through this square at the proper angle to the sun, a person sees a red dot which is aimed at the plane or other object being signaled. Tests showed the device superior to the old rear-sight mirror now supplied with rafts, or to a plain mirror aimed by the sighting-surface method. Future survival equipment will carry the reflex-button type.

▶ Those who have not seen the proof find it hard to believe, but flashes of sunlight from a tiny mirror not more than 3" x 4" in size can be seen at distances three to five times those at which a much larger life raft or lifeboat can be recognized at sea.

A mirror for signaling with the aid of sunlight thus is an extremely valuable device for downed aviators or shipwrecked sailors to use in attracting attention of possible rescuers. Since mirrors for signaling are effective emergency equipment items, they now are included in all life rafts and emergency back pad kit units in naval aircraft.

Although signaling mirrors may be small, they must be shiny and reasonably flat to be effective. They owe

REFLEX-BUTTON TYPE OF MIRROR ADOPTED FOR NAVY SURVIVAL

their effectiveness to the fact that they direct practically all the sunlight which falls on them in a narrow cone of directions. When a mirror is not flat, the flashes of sunlight reflected from it are spread out and weakened, the amount of spreading depending on how bent the mirror is. This spreading of the directions of reflection is what weakens the strength of the rays.

Silver and aluminum deposited on glass and chromium-plated sheet steel have been used in manufacture of mirrors specifically designed for signaling. However, almost anything that is reasonably flat and shiny enough to reflect images will serve as a signaling device.

A metal toilet mirror can be used without change. A shiny tin can may be cut open and flattened by hand. Pieces of flat glass and flat plastic windshields and windows make good signaling mirrors. Flat metal mirrors need to be only 3" x 4" in size to produce signals which will be visible at any distance from which rescue craft can be seen. Mirrors which are not of glass or metal, or which are not flat, need to be larger. The distance they are visible depends on how brilliant the reflecting surface is,

its size, and also atmospheric conditions and sun intensity.

The difficult part of signaling with a mirror is always in aiming the reflected sunlight toward the intended target. It is impossible to determine by guess the proper angle at which to hold a mirror so that it faces exactly half way between the sun and target. Many schemes to aid in finding this angle have been suggested. Methods which are suggested in instructions applicable to signaling mirrors furnished as emergency equipment carried in naval aircraft are described here. Diagrams showing essential elements of each of these methods are on page 33.

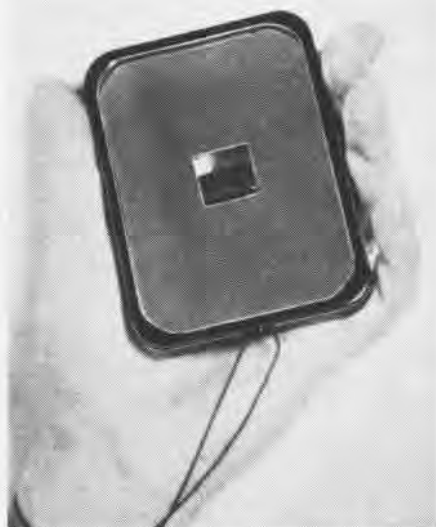
Tests have been conducted recently to compare effectiveness of the methods described in the illustration. In these tests, subjects trained briefly, then made repeated attempts to direct flashes of sunlight from a life raft on water to a circling patrol plane two to five miles away. Only one subject worked at a time and he alternately used one and then another of the aiming methods. The average frequencies with which flashes were received by the plane from the different mirrors are as follows:

Average number flashes observed per minute	
Mirror aimed by sighting surface method (figure 1)	0.2
Tempered glass (4" x 5") rear-sight mirror (figure 3)	14
Reflex-button (3" x 4") mirror (figure 4)	35

It is concluded from these results that the reflex-button method of mirror signaling is superior to those that have been proposed and used heretofore.

OF THE different methods of signaling, the rear-sight (figure 3) method is the most worth memorizing. According to the above results, it is the second most effective method, and it is a method which readily can be improvised for signaling with different mirror materials.

A flattened piece of tin can may be used after a hole is punched in it. A flat piece of glass or clear plastic can be aimed by the rear-sight method if a piece of opaque sheet material with a hole near the center is held in front of a small part of the whole transparent mirror. That part of the glass behind the opaque sheet material becomes the part of mirror used for rear-sight aiming.



The Reflex-Button type of signaling mirror has a red reflector behind the window



Rear view of the signaling mirror shows reflector buttons intended for night use

FOUR METHODS OF USE SHOW REFLEX IS BEST

DETAILED explanation of the three principal types of mirror signaling systems is given below to accompany the drawing (right). The No. 2 method illustrated is the foresight or British mirror type and is somewhat similar in principle to No. 1, or sighting-surface method.

1. SIGHTING-SURFACE METHOD OF AIMING—The simplest method of aiming a plain mirror or unprepared reflecting surface requires a nearby object adjacent to signaler's line of sight to the signaling target. To aim the beam of mirror-reflected sunlight, the signal first is directed onto this sighting object where the resultant bright spot can be seen. The mirror then is twisted to bring this bright spot on the target. It is slowly oscillated so that the beam of reflected sunlight alternates between the object and the target, which are almost exactly in line with each other.

2. REARSIGHT SIGNALING METHOD—A rearsight signaling mirror must be shiny on both sides, with a sighting aperture. The small pencil of sunlight which passes through this hole is intercepted, as shown in figure 3 of the drawing, by either signaler's hand or some part of his face. The small bright spot formed on signaler's person is seen by him in the rear of the mirror at the same time he sights the target through the viewing hole. To aim signals, the man adjusts the mirror angle until this spot of light in the rear of the mirror disappears into the sighting hole.

3. REFLEX-BUTTON AIMING METHOD—To make this signaling mirror, a red reflector button is used in conjunction with a glass mirror. Near the center of the mirrorized surface is a $\frac{3}{8}$ " square clear glass window. As shown in figure 4, the reflector button is attached behind the mirror at about 30° angle. When the mirror is aimed in the direction of the sun, the observer, peering through the back, sees a red disc. By placing this disc on the plane or other object being signaled to, the sun's rays are reflected as a signal to the craft.

THIS METHOD has four advantages over the others: 1. Signaler has a large clear window rather than a small peep hole through which to observe his target. 2. He does not need to look for reflected light on a nearby surface at the same time he is observing the distant target. 3. The red dot shows the direction of reflection. 4. There is no difficult problem of focusing the eye, as in methods involving shifting of his gaze.

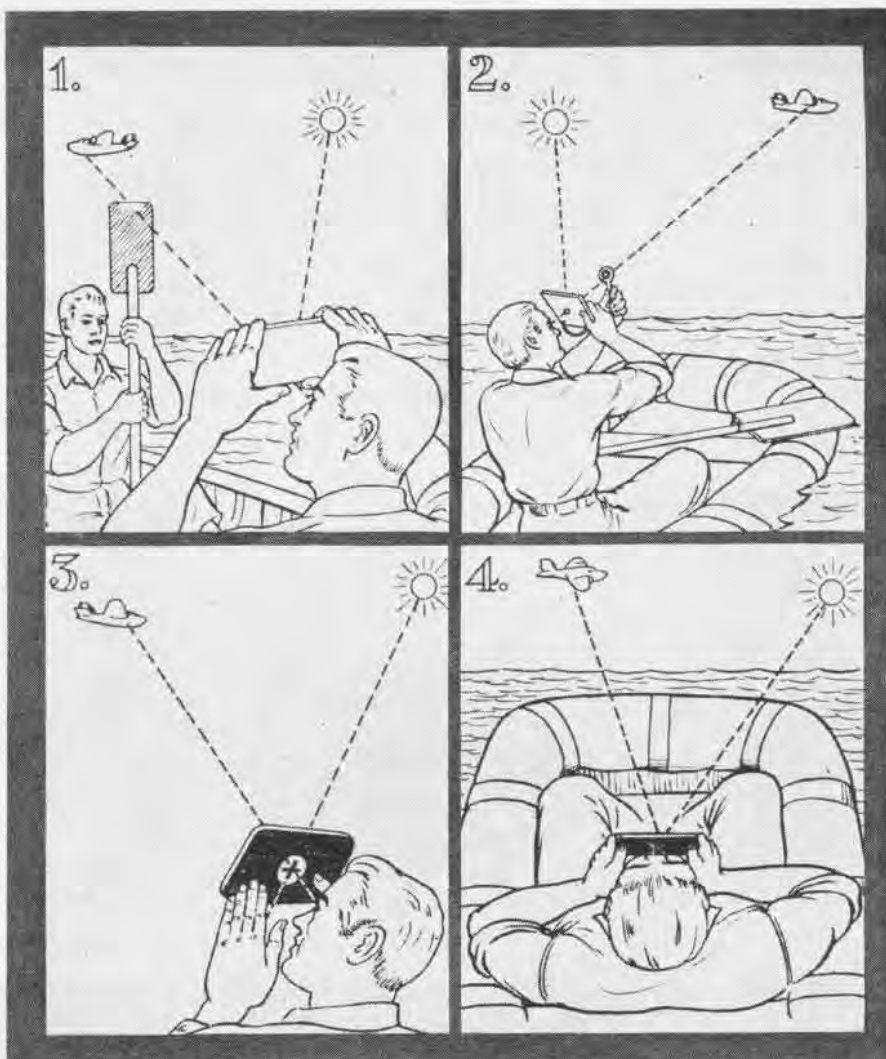


Diagram illustrates four methods of aiming mirror flashes: 1. Sighting-surface, 2. Foresight (British), 3. Rearsight, and 4. Reflex-button, now being distributed to Navy units



MAN IN LIFE RAFT DEMONSTRATES THE CORRECT METHOD OF USING REFLEX-BUTTON TYPE OF MIRROR

GETTING to land after being forced down at sea is a major operation in itself, but the survivor's troubles are not over by any means when he does set foot on terra firma. If the island happens to be Manhattan, his worries are few—but it's a good bet it won't be! It's far better to know the answers in advance than to try to figure them out after you're already in a tight spot. Check your knowledge, then see answers on p. 40.

[QUESTIONS FROM BUÄER SPECIAL DEVICES VISUAL QUIZZER FILM NO. 58, SURVIVOR AT SEA]

Write Your Answers Here

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



Question 1
When you get to shore—

1. Start hiking immediately.
2. Start inland.
3. Rest and plan next move.
4. Make a signal fire.

Question 2
Your life raft should be:

1. Kept for future use.
2. Discarded.
3. Used to mark landing site.
4. Set adrift to attract rescuers.

Question 3
Best procedure on unknown shore is:

1. Follow stream into interior.
2. Continue to remain near shore.
3. Rest, then travel by raft.
4. Walk toward highest land.

Question 4
In traveling shore-line, hike—

1. In jungle behind beach.
2. At high tide.
3. As fast as you can go.
4. At low tide.

Question 5
Most serious beach hazard is:

1. Wild animals.
2. Water snakes.
3. Coral and shell cuts.
4. Poisonous fish.

Question 6
Best footgear is NOT made from—

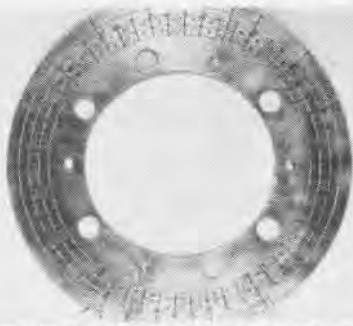
1. Coconut husks.
2. Fibers and bark.
3. Raft material.
4. Clothing.

Valves Adjusted With Plate

Disc Helps Find Top DC Position

MCAS QUANTICO—As a result of the Navy's beneficial suggestion program, a timing and valve adjusting plate has been developed at this station, for use on Pratt & Whitney R-2800, 2:1 gear reduction engines. Its purpose is to check valve clearance, magneto and valve timing operations on this engine.

After installation of the disc, the top dead center exhaust stroke on any given cylinder is found. A pointer is fastened on the propeller or shaft to coincide with the TDC line of the given cylinder



POINTER INDICATES VALVES TO BE ADJUSTED

on the dial. For example, when the TDC exhaust stroke is found on No. 10 cylinder, the pointer is made to point at the TDC line No. 10 on the dial. With the pointer set on No. 10 on the third dial, the mechanic next looks at the second dial. On each side of the division line is the number of the cylinder which is to be depressed, in this case No. 6 and 14. These valves are then depressed. Next mechanic reads on fourth or "adjust" dial and finds that valves 2 and 18 are to be adjusted.

This completes the operations in connection with No. 10 cylinder, and the next step is to turn the propeller or shaft so the pointer will fall on the next TDC line. As before, the numbers on each side of the line are observed and operations of depressing and adjusting are completed. This is continued until the complete engine has been serviced. It is well to note that while pointer shows which cylinder is on TDC, it may not be pointing at that cylinder.

The disc contributes accuracy to this phase of engine overhaul.

(DESIGNED BY WILLIAM E. GALLAHAN AND
FREDERICK W. FIRTH)

† Members of the bombing squadron of a CV in the Pacific tell this one to a gunner in the squadron, which uses SBD's. The plane came under heavy AA fire while strafing after the pullout from a dive. The rear seat man, who stood up to adjust his guns, felt a searing pain in the rear when he sat down. "Mr. B . . . I'm hit," he called over the interplane communication system. "How badly are you hurt?" asked the sympathetic voice of the pilot. A long pause, then: "Never mind, Mr. B, I just sat down on a couple of hot cartridge cases out of my own machine gun.

AVIATION ORDNANCE

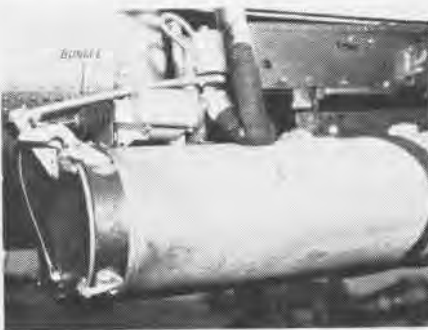
INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Electric Release for Tow Target Latch

Employing the obsolescent Bomb Rack Releasing Solenoid Mark 17 Mod 1 and a mounting bracket, Gunner Edward Popovitch of CASU 6 has designed an electrically operated hatch latch releasing mechanism for the Tow Target Container Mark 1 Mod. 1. The design requires only the removal of the original release cable and clamp, and the drilling of four 3/16" holes in the top of the container for mounting the solenoid.

Two of the four holes are drilled on each side of and 1 1/4" from the centerline of the container top. The holes are further located as follows: the rearmost two holes are 2" and the forward two holes 8" from the after end of the container.

In operation, the latch is actuated by the cable solenoid system when the solenoid is energized. The bungee cord stretched between the hatch and the after sway brace of the bomb rack pulls the hatch into the fully opened position. Since the Mark 17 Mod 1 solenoid may not be



PULLEY, CABLE AND BUNGEE SOLVES PROBLEM

available at activities interested in making the above change, the Bomb Rack Releasing Solenoid Mark 26 Mod 1 is suggested as a substitute.

BuOrd Answers Old Ballistics Problem

A familiar old ballistics problem recently appeared in a letter written to BuOrd by an ARM:

"Say we have two .50 caliber guns, one stationary on the ground and the other in the wing of a plane. Now the plane is traveling at a speed of 400 mph, and when the plane gets directly above the gun on the ground, both guns are rigged up to fire at exactly the same time at two different targets, both on a level with the guns, exactly the same distances from the guns. Which target will be hit first?"

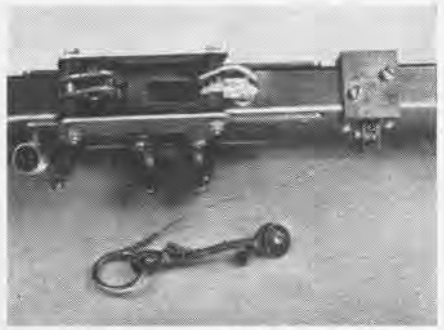
"I cannot see how the bullet fired from the plane's gun can possibly hit the target first, but a chief ordnanceman says the bullet's speed plus the plane's speed will make it reach first. I don't believe it even if I am an ARM. Is the chief right?"

▶ The Chief is right—and BuOrd can add the following explanation to his answer:

The bullet travels through space because of the velocity imparted to it before it was released from the gun or device imparting the velocity. The method of building up this velocity is immaterial. In this case the movement of the plane imparts a velocity to the bullet equal to the speed of the plane in addition to the speed furnished by the gun. Consequently, in the above problem, the bullet fired from the airplane gun will hit its target first.

Devise Latching Attachment for SBD's

Considerable trouble is sometimes experienced in latching the center station bomb rack (Mark 51 type) on SBD's after a bomb has been hoisted into place. When a heavy bomb (500 pounds or more) is hoisted to latching position, its greater circumference so crowds the space under the rack that the bomb rack latching pin becomes almost inaccessible. In such cases, it is common practice to push these pins up with a screw driver or latching tool. While this procedure has been effective,



MARINES USE LATCHING ATTACHMENT FOR SBD'S

it requires working in a cramped position and sometimes results in bending or breaking the latching pin.

Marine Air Group 33 has devised a latching attachment which appears to be capable of smoothing out this operation. An essential part of the attachment is a small pulley which is fastened to the top of the bomb rack directly above the pawl latching pin. A hole is drilled laterally through the latching pin to accommodate a thin flexible cable. One end of the cable is then fixed to the pawl latching pin, after which the cable is threaded up over the pulley and fastened at the other end to a ring. Securing the ring with a piece of bungee to any convenient rigid part of airplane prevents fouling of the cable.

With this attachment a bomb is quickly locked in the rack, after being hoisted into place, by simply pulling sharply on the ring, thus latching the bomb rack.

Because of the limited application of this latching attachment it has not been adopted by BuOrd as an official modification and the above information is passed along to other activities as a helpful hint.

PHOTOGRAPHY

Photographic Development Keeps Pace

The following items are now in the development stage:

Gun Camera—A 16mm camera using a 12½' roll of film to photograph through the Mark 18 and Mark 21 gunsight. Developed film can be used for immediate self-assessment of gunner's accuracy.

40" Lens for K-17 Camera—Ten 24" lens cones for the K-17 camera are to be converted to use a 40" lens. An adapter will be constructed which will use present 24" cone equipped with 40" telephoto lens.

Gun Camera Mounts—Two designs of shock proof gun camera mounts are under test at NAS Patuxent River. One is a design by Robinson Aviation Corp., who manufactures the NR-1 and NR-2 aircraft camera mounts. Another is a design worked out by the Armament Section of BuAer.

Cartographic Camera—A 9½" x 9½" camera with 6" metrogon lens is being designed primarily for photographic mapping. The camera is to be free of excess gadgets and one which can be accurately calibrated according to the Bureau of Standards specifications.

Calibrated K-17 6" Camera—100 K-17 cameras with 6" cone and one magazine each will be procured. Each camera unit will be identified as one calibrated set; calibration will be done by Bureau of Standards and exact focal length marked on camera, cone and magazine. The calibrated camera sets will be supplied to photographic squadrons, first available sets going to squadrons operating in forward areas.

Anso Color Film—Preliminary tests are being conducted on Anso aerial color film and Anso 16mm color film, both of which are intended to be processed in the field. Anso also has been requested to submit a sample 16mm color duplicating film for test.

Note: Do not write BuAer concerning above items. Additional information will be published when available.

► For training in recognition, photographs of ships and planes, both of our own forces and of the enemy, should be made from various altitudes and distances where possible. For this purpose the conventional views are not always best; therefore, shots from all angles are desirable.

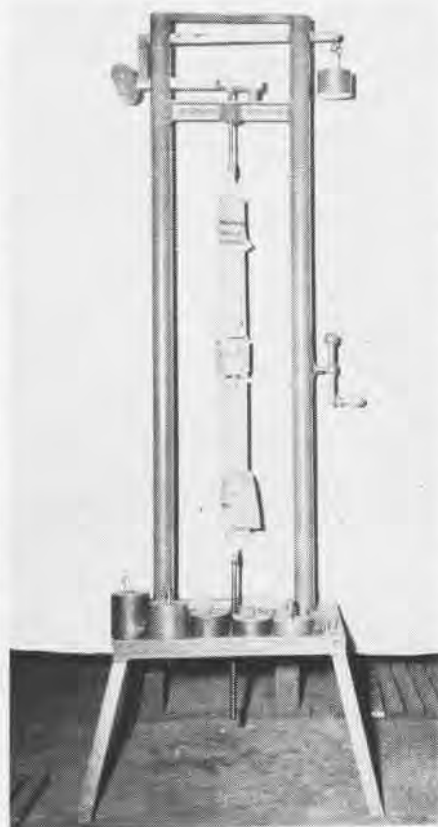
► The supply of photographic exposure meters has become very critical, and indications are that when present stocks are depleted, no more will be available. It is therefore suggested that whenever a naval, Marine Corps or Coast Guard activity has in its possession a meter that is damaged, arrangements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

► The attention of all photographers is invited to the July 3, 1944 issue of *Life* magazine which contains an excellent article on color photography. One copy of this article will be mailed to all the photographic units.

Machine Tests Safety Belt Device Speeds Time of Operation

NATC PENSACOLA—A locally designed and constructed safety belt proof loading machine which does an effective job of expediting this operation has been put in use here.

By use of this simple machine, five belts can be tested in the time formerly required to test one on a standard horizontal materials testing machine of



MACHINE SPEEDS JOB OF TESTING SAFETY BELT

commercial design. Detailed drawings may be procured on request to the Plant Division, Pensacola A&R Shop.

► **BuAER COMMENT** — Provided the strength determinations are comparable in accuracy to those provided by the standard method of test, the increase in testing speed is highly desirable. The new design should be calibrated to insure that weak or deteriorated belts are not retained in service.

Jax Improves Preservation Uses Vacuum to Pump Engine Bag

NAS JACKSONVILLE—By adopting the use of a vacuum cleaner to deflate pliofilm envelopes which protect stored aircraft engines from moisture, the supply department of this station is saving 135 man-hours of labor daily and is more effectively protecting such engines from corrosion. The flat nozzle of the cleaner is inserted in the envelope after partial sealing and excess air is evacuated in

1/40th of the time previously required for this operation. A working detail which could previously process only five engines a day, can now handle 22.

Relatively high humidity prevails here and moist air enclosed in the envelopes contacts the bags of activated silica-gel during the process of installation. General Engine Bulletin 38-7F indicates the moisture absorbing function of the dehydrating agent will not be impaired under such circumstances but it has been found here that partial saturation can limit the effective period of preservation as much as 50 percent by advancing the saturation point.

Although more aircraft engines are being carried in stock here and personnel is limited, the vacuum cleaner method is easing the situation.

► **BuAER COMMENT**—Excess air removal by a vacuum cleaner is considered a convenient procedure and is in quite general use by manufacturers. However, the bag should not be evacuated to such a degree that the material is drawn tightly over the engine profile. Such a tight bag results in undue strain on the material which may cause punctures. It is considered more important to handle the bags of dehydrating agent to allow minimum of exposure time between sealed can and sealed engine bag. Partial saturation which may proceed fairly rapidly in free air will result in reducing the effective life of the dehydrating agent.

However, any air in the bag itself is responsible for only a small reduction in the life of the preservation. For example, for an assumed volume in the bag of 35 cu. ft. of air 100° F. and 100 percent relative humidity, only one-tenth of a pound of the dehydrating agent is used up in reducing such a volume of air to 20 percent relative humidity.

Hazards in Tire Changing BuAer Gives Safety Precautions

A recent accident at NAS San Diego in which a Marine sergeant was injured while applying air pressure to an aircraft tire emphasizes the hazards involved in this operation.

Air pressure in tires can cause severe damage if released accidentally. With removable flange type wheels, personnel should be sure the locking ring that holds the flange in place is put on right side up and seated properly. The tire and wheel should be laid on the deck with this ring on under side of wheel.

If the ring is on top and comes loose, ring and flange will fly off, with possible serious injury to personnel resulting. If ring is on bottom of tire, there will be less damage as the ring cannot fly off. However, even with the ring down, there have been injury cases resulting from large tires jumping into the air when the ring became loosened.

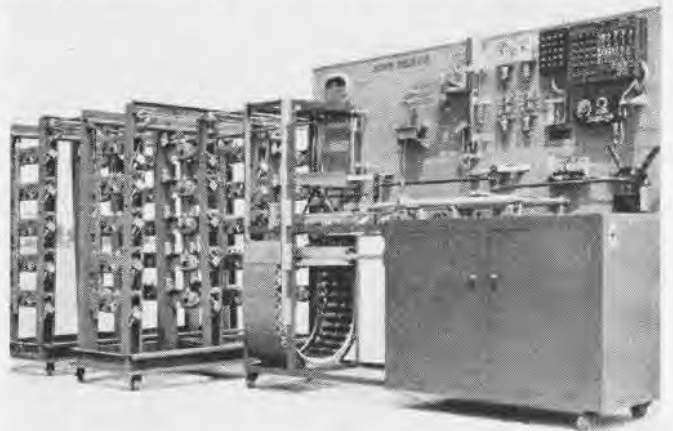
SPECIAL DEVICES

Training Aids Announced Recently
by BuAer Division Cover Wide Range
of Activities in Naval Aviation

MAINTENANCE

Trainers Familiarize Flight, Ground Crews in All Phases of Operation, Maintenance of Aircraft Systems

Maintenance trainers are designed to instruct flight and ground crews in all phases of the operation and maintenance of aircraft systems. Panels or mockups show the systems exactly as they operate in the plane. They are all mobile to facilitate transportation to Navy activities via ABATU trailers. The unit shown here is a complete bomb release system of the PB4Y-1. It includes complete electrical and mechanical controls, simulated bomb door operated hydraulically, and bomb racks. Every condition of bomb release operation, including emergencies, can be demonstrated. This unit is one of more than a dozen system panels or mockups of the PB4Y-1 trainer. (DEVICE 12-BC-1). More than 80 trainers have been built or are under construction for 20 different types of naval aircraft. BuAer's Special Devices Division procures and supervises design and construction of the trainers. A crew consisting of about 14 men, with each member a specialist in one or more systems, is assigned to each trainer by ABATU, Norfolk. This crew, under an ABATU officer, accompanies the trainer to activities scheduled by ABATU and instructs flight and ground personnel.



NIGHT VISION

Device developed for BuMed tests night vision for lookout duty. Report of tests to go with medical record

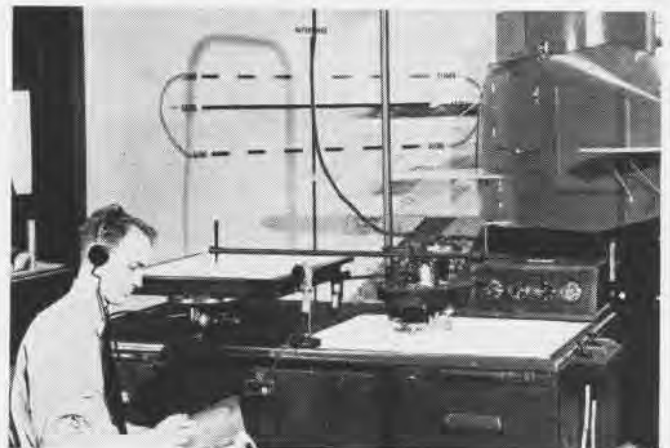
Radium plaque adaptometer, developed for BuMed, tests night vision efficiency for lookout duty. The report of tests made with the device will become part of the medical record of certain lookout and watch personnel. The adaptometer consists of five major parts: a fixation object, a luminous plaque with superimposed "T," calibrated neutral filter, shutter, and a control panel for the regulation of all adjustable parts. The fixation object is in the form of a lighted red cross located at the top of the front panel. A flashlight lamp, connected in series to two No. 6 dry cells, illuminates the cross and also furnishes light for the control panel through a red filter. Located directly behind the shutter and filter, the luminous plaque is turned by a knob in the center of the control panel. Eyes of the subject must become adapted to darkness before test, and must be sheltered from glare during test. Subject must be seated at a predetermined distance from the target of the adaptometer. He considers the "T" as it appears on adaptometer and announces which way it is pointed. Operator may change position of plane by position indicator. (DEVICE 9-B-4)



NAVIGATION

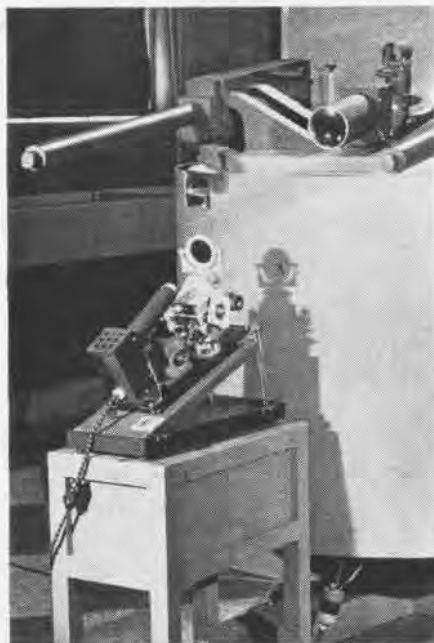
Intercept Navigation Board Proves Definite Aid in the Instruction and Practice of Dead Reckoning Navigation

Intercept Navigation Board is designed for use with the Link Instrument Trainer to assist in the instruction and practice of dead reckoning navigation. Instructors believe that much of the student pilot's difficulty with problems of the type involved in carrier operations, interception and escort missions is due to the lack of clear understanding of the relation between actual operational movement and the diagrams used in solution of such problems. The board is designed to clarify this relationship. It simulates the course and speed of the carrier. It may be set to move in any direction through 360°, and at any of three set speeds—10, 20 or 30 knots. The "crab" traces the flight path simulated by the Link trainer. Attached to the top of it is an inking arm which transfers the "airplane flight path" to the intercept board. Since the board is simulating the carrier's movement, the track left by the inking arm is a direct combination of the two motions, and thus shows the desired relative track and relative speed. As the student progresses, instructor can make problems more interesting by radioing changes in wind, carrier course or speed. (DEVICE I-AA-6)

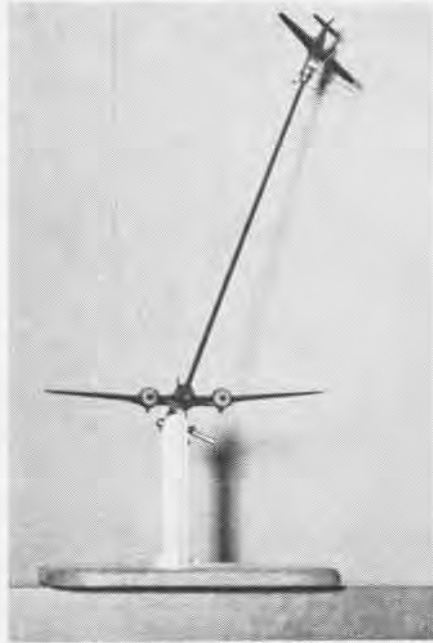


GUNNERY

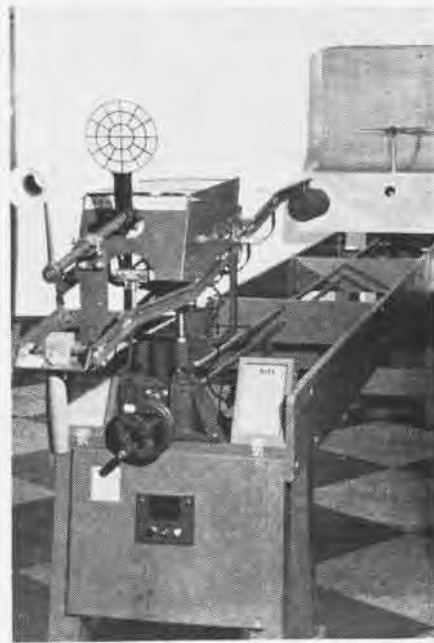
Spotlight Animator & Scoring Device, Position Sighting Method Demonstrator, and Antiaircraft Trainer are Developed



Spotlight Animator is designed to give student gunners training in tracking spot of light that has a completely random and unpredictable motion. Scoring Device provides an accurate numerical score that can be used to compare the ability of different gunners and to measure the gunner's progress in turret manipulation. The Spotlight Animator and Scoring Device may be used either with combat or training turrets. Smooth tracking is absolutely essential in turret gunnery. (DEVICE 3-C-14-c and e)



Position Sighting Method Demonstrator is a device for demonstrating the basic theory of position firing. This system of aerial free gunnery sighting is taught in all Navy gunnery schools. As opposed to the "two-thirds second" and "apparent speed" methods, position firing does not require timing the target across a stationary ringsight; it requires only that the gunner recognize the position of an *attacking* fighter with respect to his own bomber and apply a lead determined by this position. (DEVICE 3-C-36)



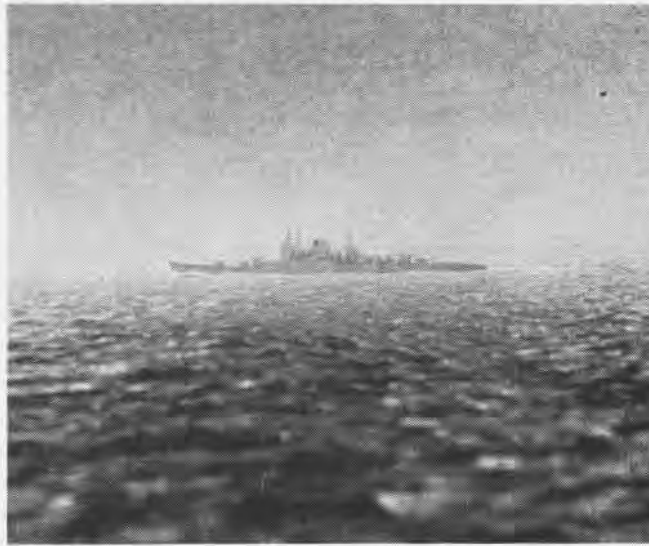
Antiaircraft Deflection Trainer provides instruction in the two fundamental elements of lead in antiaircraft firing: 1. estimation of approach angle and derivation of effective knots lead; 2. positioning of the antiaircraft sight over the target plane in accordance with the lead derived. The Fixed Gunnery Deflection Trainer (Device 3-B-6) has been modified for antiaircraft instruction in use of the 20mm sight Mk 4. Combination of Devices 3-B-6 and 3-D-11 is BuOrd Gunnery Trainer Mk 6. (DEVICE 3-D-11)

RECOGNITION

New Stereoscopic Device Facilitates Training in Ship Recognition, Range & Target Angle Estimation



Stereoscopic "Ship-to-Ship" Range Estimator and Recognition Training Device has been developed as a training aid for ship-board lookouts in recognition, range and target angle estimation. The device is similar to Device 5-H, which uses Kodachrome views of aircraft with superimposed ring sight. Film discs containing 14 black and white transparencies which present seven stereoscopic views of ships are inserted in the viewing device known as the Sawyer Viewmaster. By means of a lever or trig-



ger, the student is able to revolve the disc and change the seven views at will. Having determined the type ship, the student may estimate the range and target angle. Correct data for each view are indicated on the discs. Device contains 2 stereoscopic viewers and 28 film discs covering 21 ships—21 "study" discs covering 1 ship each at 7 different ranges and target angles; 4 "test" discs showing 7 different ships each, and 3 "night vision" discs showing a single view of each of the 21 vessels. (DEVICE 5-H-1)

BOMBING

Recordings Increase Value of Bomber Trainer. Flight Control Trainers Aid Instruction in Automatic Pilot Equipment



PB4Y Bombing Panel Recordings. The value of PB4Y-1 Bombing Panels and the Navigation and Bombing Trainer (*shown below*) can be increased by use of Bombing Panel Recordings. Records familiarize students with a bombardier's panel and then checks them out in its operation. Nine records are divided into three series: 1. Familiarization; 2. Operation, and 3. Bombing runs with sound of a multi-engine plane to add realism. (DEVICE 7-ER-6)

Automatic Flight Control Trainers have been developed for use with the several types of automatic pilot equipment currently installed in naval aircraft. Each trainer consists of a visual V-2 Link, modified for the installation of each type of automatic pilot equipment. With these devices, pilots and cadets can be taught proper operation of automatic pilot equipment, and machinists' mates can be trained in maintenance and repair work. (DEVICE 7-1)



Bombing and DR Trainer simulates conditions of an actual bombing mission by visual training methods. Motor noise, vibration, freezing temperatures and moving landscape and seascape add realism to the "flight." The student bomber controls the plane's

direction with the Norden bombsight through an electrical simulation of automatic pilot operation. Accuracy may be evaluated by a hit projector. Actual conditions of warfare can be set up. Instruments help check student's operations. (DEVICE 7-A-3)

LETTERS

SIRS:

At the top of page 2 in the August 15 issue of NAVAL AVIATION NEWS there is a picture of Japs inspecting an airplane. In regard to it you state that the Japs go to extremes in protecting their planes with revetments.

I believe that the plane in the shelter is a Grumman Wildcat F4F-3. Obviously it was captured from VMF-221 when Wake Island fell on December 23, 1941.

If the above paragraph is true, the reason the plane is so well protected is that it would be of great value in research and study of American aircraft.

Am I right?

Congratulations on a fine colorful magazine. Being an ordnanceman naturally I would like to see your ordnance column enlarged upon.

AOMIC

NAAS Kingsville

¶ 4.0 in recognition to the writer. The picture illustrates typical use of revetments for any plane.

SIRS: The following classified advertising copy was submitted to the ship's paper. I thought it may be of interest to your readers also.

Acting Pay Clerk, U.S.S. Essex

FOR RENT

TWENTY-FIVE AUTOMATIC FLOATING ELECTRIC LANTERNS. Have valuable application in rescue of aviation personnel forced down at sea. Primarily intended for ship's lifeboat equipment but tests have shown that unit may be dropped to survivors from an airplane without parachute gear from an altitude of at least 250 ft. with no damage. A lantern weighs 2 lbs., 5 oz., less mounting bracket; carries 4 dry cell Navy type "C" batteries, 1 lamp, 2.5 volt, 13 amp., endurance at least 22 hours; is water-proof, rust-resistant and buoyant.

When thrown overboard it assumes upright position which throws on a switch automatically

and lights lamp. It also is packed mounted in a support bracket for storage and must be kept in an inverted position with light lens down when not in use. Lanterns are in the Aviation Ready Issue Room, but may be distributed to various other parts of the ship for immediate use.

TWO LIFE RAFT TRANSMITTERS. For use in locating and rescuing personnel forced down at sea. Full information about operation and procedure in deliveries is not available owing to censorship rules. Interested parties may inspect equipment in Aviation Ready Issue Room.

FIVE AIRCRAFT SHIPWRECK KITS. Intended to be dropped from airplane to shipwrecked or aircraft survivors in water. Container and packing have been designed to preclude damage to contents on impact. Kits can be dropped from an altitude of 100 to 150 ft. by a plane traveling 100 knots, without damage. It is recommended that air speed be maintained at a minimum consistent with safe operation and altitude be held below 75 feet, if practicable. V-rings are provided so that kit may be attached to bomb rack. Kit is approximately 36" x 14" x 8", weighs 45 lbs. and contains the following items: woolen blankets, first aid kit, sunburn ointment, chicken broth, tomato juice, water, safety pins, adhesive-tape, flashlight, graduated drinking cup, sea markers, Very's projector and shells, compass, matches, cotton line, whistle, reflector, knife, fishing kit, chewing gum, malted milk tablets and citric acid tablets.

SIRS:

I have just had the pleasure of reading my first copies of NAVAL AVIATION NEWS and certainly want to compliment the staff for an excellent publication.

As our section handles the allocating and other problems concerning aviation gasoline for naval activities, NANews is of special interest to everyone. Particular highlights are the stories on naval air stations, as they give us the opportunity of becoming better acquainted with the activities with which we deal daily.

LIEUT. (jg), sc-v(s)

Aviation Gasoline Subsection
Fuel Division
BuSanda

Washington, D.C.

SIRS:

In the May 1 issue of NAVAL AVIATION NEWS in the photography column, you

listed a number of circular letters that might be of interest to photographers. Upon looking up the two letters on aircrew insignia I am still not certain as to whether I rate wearing it or not.

For the past year and a half I have been a member of one of the Navy's combat photographic units. During that time I have photographed all types of photographic operations including bombing and reconnaissance missions from the air. Some of these missions have been performed with the Army Air Force and the rest with the Navy. Although I have never been permanently assigned to one plane, I have over 100 combat hours in the air, have encountered the enemy a number of times, and was crew member of a Navy plane that sunk an enemy ship. Can you tell me whether or not I rate the insignia?

CHIEF PHOTOGRAPHER'S MATE

Combat Photo Unit No. 3

¶ Since the May 1 issue of NANews, BuPers has issued Circular Letter No. 174-44 dated 16 June 1944 relative to aircrew insignia which supersedes the circular letters referred to above. It is believed that the information contained in that circular letter will clarify the questions raised.

SIRS:

I read your article on the Navy Aircrewman and enjoyed it a lot. Unfortunately, I was unable to save the magazine as it belongs to the station. I am an Aircrewman, so I naturally wanted to save it. We have our own squadron and are in our operational phase of training now. What I want is a copy of that magazine, also the rest of our squadron want one each. If it is at all possible that you have some of the issues left or can get some, I would appreciate it very much. Please send them cod.

NAS De Land

AVIATION RADIOMAN

¶ Complete copies of the April 15 edition of NANews are no longer available but reprints of the Aircrewman article are available without charge.

CONTENTS

Strategic Guam	1
Grampaw Pettibone	6
Did You Know?	9
Twenty-five Years Ago	12
Jacksonville	14
Marine Corps Report	26
Technically Speaking	29
Signaling with Mirrors	32
Special Devices	37
Letters	40

PUBLISHED TWICE MONTHLY BY AVIATION TRAINING DIVISION, OFFICE OF CHIEF OF NAVAL OPERATIONS AND BUREAU OF AERONAUTICS, NAVY DEPARTMENT—NUMBER 225

ANSWERS TO QUIZZES

• BEST ANSWERS (on page 30)

1.c 2.b 3.a 4.a 5.c 6.c 7.a

• PIX QUIZ (on page 34)

1.3 2.1 3.2 4.4 5.3 6.4

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

• NAVIGATION PROBLEM (on page 28)

a—Cus 252.5° d—Lat. 29° 14.5' S
Speed 33.5 k Long. 157° 00' E
e—306°
b—104.5° f—Lat. 29° 26.5' S
c—1235.5 Long. 157° 05' E

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

• Answers to Grampaw's Safety Quiz on Page 8.

1. Danger from loss of power during take-off, due to spark plugs fouling and shorting out. Ref.: Tech. Ord. 80-44.
2. Reduce throttle, stop and turn and then pull out at a rate to preclude a high speed stall or structural failure. Reference: Flight Safety Bulletin 8-44.
3. 180 knots in both cases. References: Tech. Ord. 133-43, Flight Safety Bulletin 21-44.
4. Technical Orders.
5. Yes. Reference: Aviation Circular Letter 19-44, par. 7(A) (2), and Civil Air Regulations, Section 60-56 in Air Traffic Rules.

Don't Be a Sucker! Look It Up!

Want to be a Pilot till 2000 A.D.?

(IF SO, TAKE THESE TIPS)



1 If you want to be a pilot for very long, always *identify*. Otherwise, your own ships will give you the business.



2 It's not bright to take needless chances—so *never* fly over friendly ships or shore batteries unless you have to.



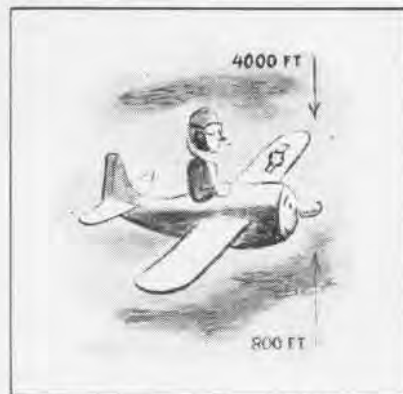
3 If you must fly over friendly ships, don't wait to be challenged. It's always up to *you* to identify first.



4 Also, be sure to give the lads behind the guns a beam view of your plane. And approach from down sun.



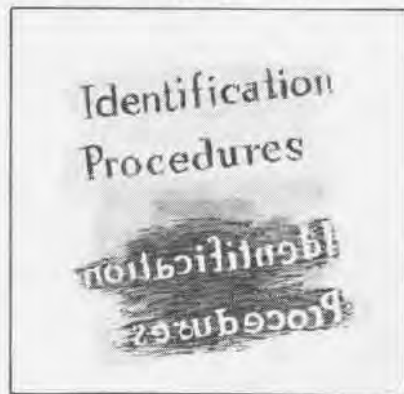
5 It makes gunners nervous when you come in straight. In fact, they may pot you. Close slowly, by circling.



6 Fly above 800 feet and below 4000. And stay away until they slip your identification signals the O.K.



7 If you're piloting a patrol plane, and a U.S. fighter comes up to look you over, *identify*. You'll live longer.



8 You ought to know identification rules absolutely cold—especially those for *your* area. Write 'em down.



Identify

**WHEN APPROACHING
ALLIED SHIPS!**

FIRE SEARS SAIPAN

A HEAD of the Saipan invasion Navy guns and bombers gave Nip shipping a terrific pounding that crippled lines of supply and sent badly needed oil to the bottom. Caught by an Avenger was small tanker below. Marine guns scored.



↑ MERCILESS MARINE GUNS POUND JAP SHIPS HARD NORTH OF CARAPAN BEFORE SAIPAN INVASION, NIP OIL SUPPLY TOOK BEATING FROM AIR ↓

