

NAVAL AVIATION

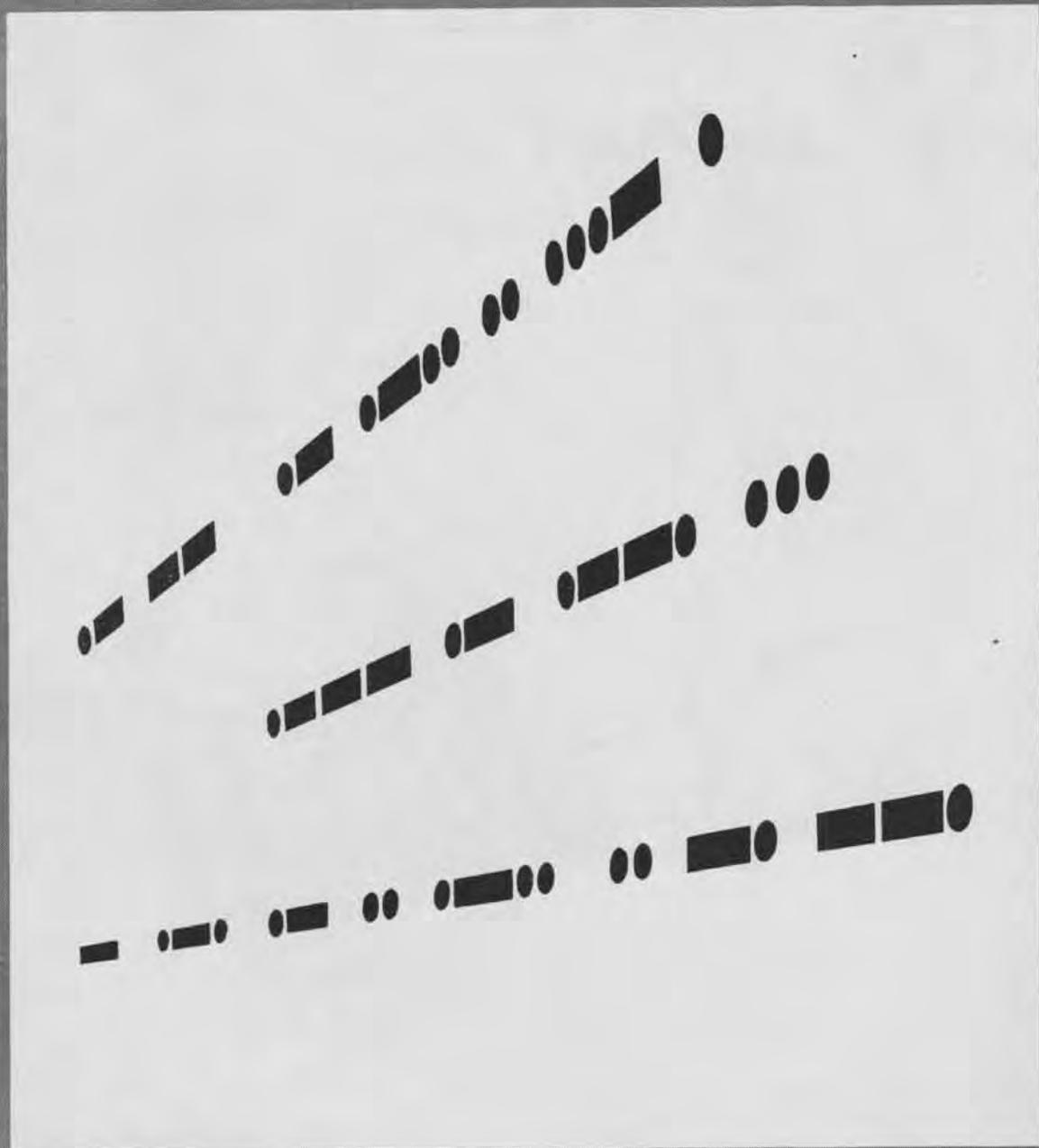
NEWS



Air-Sea Rescue
Rehabilitation
Fatigue Failure

Dec. 1, 1944
RESTRICTED





"AM ALIVE
JAPS
TRAILING"

... flashed through the pilot's earphones in the dit-dah of Morse code. Although badly wounded, the quick thinking and ingenious gunner conveyed this message to his pilot.

The incident occurred during a raid on a Jap-held island. As the SB2C pulled out of its dive, a group of sniping Zeros swarmed around the *Helldiver*. Gunner

Wm. O. Haynes, Jr., swung into action as the *Helldiver* maneuvered for advantage.

In the clear, they headed straight for the carrier. Suddenly a Jap fighter appeared from nowhere and peppered the rear seat with lead. Haynes grabbed the intercom to warn his pilot. Words died in his throat, the man's jaw had been shot away.

Losing no time, Haynes created his own means of communication. By turning the intercom off and on, a slight click resounded in the pilot's earphones. So, by means of the Morse code, Haynes was able

to tell his pilot that he was still alive and to warn him of pursuing Jap fighters. The ingenuity and stamina of this gunner saved two lives and a *Helldiver* airplane.

**Aircrewmen
have
what it takes!**



THE P.I. CAMERA

Just before the armistice of World War I a certain "old school" commanding officer wrote on a batch of aerial photographs: "Very pretty pictures, but there is a war on and I have no time for playthings."

Today this officer would find these "pretty playthings" acting one of the most important roles in World War II. The statement made in 1938 by the Chief of Staff of the German Army, "The military organization with the best photographic reconnaissance will win the next war," has proved to be a prophetic statement indeed. Recent estimates show that much of what we know about the enemy today is due directly to aerial reconnaissance photography and photographic interpretation. The present war is a war of speed and

movement, and victory can be achieved only by those constantly and accurately informed about the enemy's strength and his positions. Today photographic reconnaissance and interpretation units are working in theaters of war and combat areas in every part of the world.

PLANES equipped with the most up-to-date cameras photograph the enemy before, during and after bombing raids. Each element—flying the mission, processing the film and interpreting the photographs—is part of the teamwork which makes it possible for our high command to plan and carry out operations founded on complete and accurate information which will rob the enemy of his important weapon of secrecy and surprise.



Mosaics combine vertical photos to compose aerial map of enemy territory showing all features of defensive installations. This

mosaic of Wake Island required several passes over the target area at constant altitude so all parts fit together at same scale.

AERIAL MOSAIC

THE FIRST and largest scale function of aerial photography is to keep our maps and terrain models of enemy-held territory up to date. This involves photographing enormous areas. Before the plane takes off, a flight pattern is laid out. The intervalometer of the camera then is set to take pictures at regular intervals so that every portion of the area will be included in the series of photos.

After the prints are developed the individual photos are assembled in their proper relative order, the overlapping portion of each one is cut away and the prints accurately fitted together and cemented to a mount to form a single picture resembling a large vertical. The finished mosaic now can be rephotographed to provide a view of the entire area at a workable size, and the interpreter can make an overlay of the mosaic on which to annotate whatever information is desired as to geographical conditions or enemy installations. The finished mosaic can form the basis for large scale planning against the enemy, based on accurate coverage.



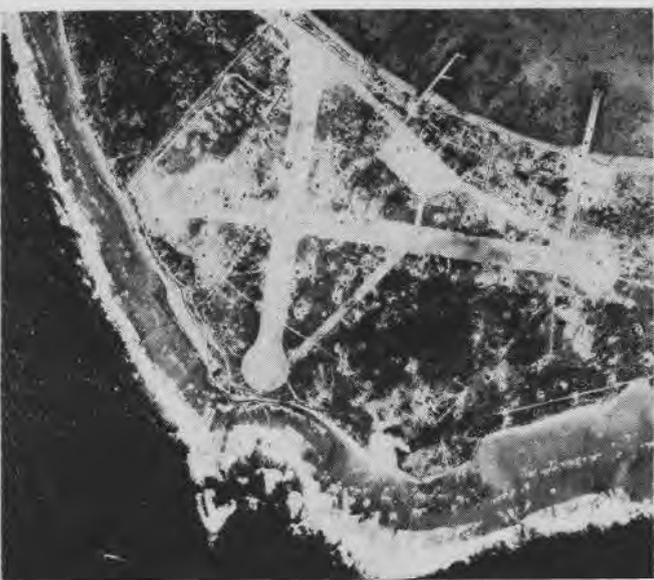
Multi-section mosaic of Kolombangara Island aided American forces in destroying Jap barges attempting to evacuate troops from area



Verticals of Jap military equipment can be measured accurately by photo interpreters. Typical radar grid is approximately 15' x 30'

VERTICAL SHOTS

VERTICAL photographs are taken with the camera lens perpendicular to the ground. This produces a map-like representation of the area with exact delineation of all its features. When an aircraft is detailed to take vertical photos, it is fitted with a vertical camera with a lens of suitable focal length to cover the area at the required scale. A few seconds before the plane passes over the target, the camera control is switched on at the interval required to produce a 60 percent overlap in the pictures. In high altitude bombing attacks the bomb-aimer turns on the camera control at the start of the run so he is free to carry out his main role. The control then is turned off after the bombs have exploded. Vertical photographs are the most useful to photo interpreters, since overlapping pairs can be viewed three dimensionally through a stereoscope and measured.



Post-raid vertical of Wotje shows usefulness of this type photo in assessment of bomb damage to enemy installations and equipment



High altitude vertical of enemy airfield in Philippines makes analysis of Jap strength possible. Note planes on runway and in shelters



Ground shot from captured Jap base shows typical steel hangar and personnel shelter in foreground. This aids study of construction.



Zeke and Kate captured at Saipan are seen inside battered hangar with wood truss construction. Ground shots show equipment details.

GROUND—OBLIQUE

OBLIQUE photographs are taken with the camera lens at an angle with the horizon. They give a good idea of the appearance of the ground, comparative sizes of objects and relief, but it is not possible to take accurate measurements from oblique photos.

Low obliques are easier for untrained personnel to understand because they show terrain the way one might actually see it from a slight altitude above ground-level. They also are very useful in teaching specialists what various types of enemy equipment and installations look like. Ground photos from newly captured enemy bases are extremely valuable for this same purpose. They provide information on new developments in enemy equipment, types of construction, prefabrication methods, building materials and technique, and typical enemy fortifications. The Japs tend

to follow a definite pattern laying out their bases, and information collected by interpreters from photographs taken in the field can be of immense value in future attacks. The information furnished in an aerial photograph is both detailed and accurate, since the camera records in exact detail everything that is in the area covered. Even if good maps of an area are available, photographs always are an additional asset and are essential in the case of an area for which only old or inaccurate maps and charts are available.

AS FAR as military planning is concerned, photos provide the main source of information about enemy territory. It often is very important to have a picture of the ground at a definite scale, so that information can be obtained as to the exact size, shape, and general character of roads, rivers, natural growth or buildings of different kinds. Also it is important to compare photos taken at different dates and report on any new structures or roads recently built or any damage that has been done since the last set of pictures. The camera's major job is baring enemy secrets.



Low oblique shows wreckage of Jap oil tanks and Dublon Town in heart of Truk following surprise attack by our carrier aircraft.



Oblique photo gives details of Jap escort vessels and cargo ship strafed and bombed by Navy planes. An F6F swoops in for kill.



This low oblique taken by a Navy plane during an attack on Jap-held Truk presents varied information to the photo interpreter's analytical eye. Gun positions show typical construction with revetments. The scene is a center of construction activity with various building materials in piles. Stacks of prefabricated wooden trusses are to be used to roof various structures. Narrow gauge railways run into the

area and trucks stand by to carry materials to other parts of base. All indications of enemy activity are important in waging war, and this information is best obtained from aerial photographs analyzed by trained interpreters whose job is to discover and identify all features of military significance. Every move the enemy makes must be watched so our forces can strike at the most advantageous moment.

GRAMPAW PETTIBONE

Good Advice

A three-plane section of fighters was taking off in consecutive order. The number two plane was unable to get airborne due to engine failure and was slowing down to taxi speed on runway. Upon noticing that number two was having trouble, the tower called the remaining fighter to hold his position, but the pilot did not hear the call and commenced his take-off without assuring himself of a clear runway. When almost airborne, he collided with the number two plane.

The accident board said: "When two or more planes take off in the same group, it is strongly recommended that wingmen make sure that the preceding planes are airborne and in the clear before starting take-offs."

 **Grampaw Pettibone says:**
You'll never get to be an old-timer if you don't insure clear runways.

Not Like Golf

A student pilot was practicing S turns to a circle in an N2S. He collided with a grass mower during a take-off.



The mower was not moving at the time; the operator had left the field.

It did *not* have a warning flag.

 **Grampaw Pettibone says:**
The main difference between a hazard in golf and a flying hazard is that when you don't clear a hazard in golf, only your score gets bumped. Aviation has enough natural hazards to be intensely interesting without adding artificial ones. See Flight Safety Bulletin 28-44.

Something To Think About

During an overland flight, engine failure in a PBM resulted in an emergency landing on level desert ground. The pilot (1900 hours) attempted a flaps-up, full-stall landing which ended in a violent crash.

After detailed investigation, the Commanding Officer expressed the following opinion:

"If the pilot had attempted a 'greased on' type of landing with flaps in the



down position to give a slower landing speed, a favorable landing might have been made."

► **Comment**—This is a much-discussed problem among pilots of boat-type patrol planes. The consensus appears to be that it is all a question of the *attitude* of the plane at the moment of contact. If the terrain is such that the hull can slide (either soft ground, hard ground, sugar cane, corn field, etc), the airplane should be flown on (not dropped in) in a slightly nose high attitude, with flaps and using power if available, until contact. Successful landings of this type have been made.

All hands in a patrol boat should jump, if possible, rather than attempt landing on ground which precludes sliding, such as mountains, woods and the like. However, if forced by circumstances to land in such terrain—for example, due to engine failure at low altitude—the best available area should be chosen and the plane set down in the slowest possible, full-stall landing.

Aftermath of a Crash

An old, sunken well was considerably damaged during the salvage of a crashed Navy airplane. In answering the farmer's damage claim, the Navy

tactfully intimated that the well was a bit decrepit to start with and that, therefore, the full cost of a new well could not be allowed. The following is culled from the owner's lengthy reply:

"I don't see how you can truthfully say that about my well. The plane also looked like an old wreck, but it was a *good* plane before the crash."

Emergency Landing Pointers

While on a division tactics flight, an F3A-1 experienced a lubrication failure and the engine began to smoke badly. The pilot had plenty of altitude to reach the field in a glide, but was unable to land immediately due to traffic conditions. He tried to circle the field again, but did not add throttle. Insufficient altitude forced him to land short of the field. The aircraft crashed into the wire boundary fence, ran into a ditch and turned over. The pilot was seriously injured.

After investigating the accident, trouble board gave the following opinion:

"It is better to chance the burning up of an engine in an effort to make a safe landing than to wreck the entire aircraft attempting to save the engine. Also, when a crash is imminent, the mixture control should be placed in the idle cut-off position as well as the ignition switch turned off. This will shut off the supply of fuel from the carburetor to the engine and minimize the possibility of a fire due to gasoline being pumped into the engine. If time and conditions permit, fuel selector valve should be placed in off position."

 **Grampaw Pettibone says:**
Right, and here are a few more pointers for cases such as this:

a. Don't forget to use your radio. Give the tower the bad news and they will usually be able to bring you in.

b. In case of emergency, a wheels-up, flaps-down landing can be made in a very small area, such as turf between runways, on taxiways, etc.

c. Keep as much altitude as you can until you are sure you are going to land. Then make that first approach perfect. If your engine is dead, remember to come in a little high to make sure you reach the field.

d. Don't be afraid to use full throttle in such emergencies. An engine will run for a short period with zero oil pressure. Even if you do ruin the engine coming in, that's better than wrecking the whole business making an effort to save the engine.

A & R Shops

LET NANEWS
HEAR
FROM YOU!



Preparedness pays off when the battle is joined. Deck crewmen on the *Tulagi* keep planes spotted ready for action as convoy steams toward Southern France for Allied Invasion



GRAMPAW'S SAFETY QUIZ



All aviators should know the answers to these questions. In the air, the penalty for not knowing may be death. If you miss an answer on the ground, penalize yourself by looking up the reference.

1. Before leaving the parking area, is it necessary to call the tower for taxi instructions?
2. What is a danger area?
3. Before flying into a danger area what must you do?
4. When being relieved of the controls in flight, is it necessary to receive positive acknowledgment from the pilot relieving you?
5. When complete fuel consumption from any tank is necessary what procedure should be followed?

Answers to Quiz on Page 48

Heads Up

Following a division break-up preparatory to joining the carrier landing circle, an FM-2 was seen to lose altitude in a glide until it crashed into the water.

It was the opinion of the investigating board and the commanding officer that the pilot concentrated his attention inside the cockpit while going over the check-off list and was unaware of his rapid loss of altitude.

► **Comment**—This is not an unusual type accident. "Keep your head out of the cockpit," is one of the first principles taught in Primary and should never be forgotten when flying contact. Of course, it is necessary to make visual checks of cockpit controls, but this can be done at a glance. Never focus your attention inside the cockpit for more than a second, especially at low altitude. Altitude can be lost very quickly, as shown in this case.

The following slogan is a sentence check which should provide pilots with a system of making the necessary landing and take-off checks without visually scrutinizing the check-off list:

Good	— Gas, guns
And	— Altimeter
Careful	— Carburetor heat
Pilots	— Prop pitch
Must	— Mixture
Live	— Landing gear
To	— Tail wheel
Fight	— Flaps
Hirohito	— Hook

If you don't like this sentence, try "All good pilots must contact land to find home." Or make up one of your own, but be sure it includes all the items. Note that the above list is arranged in the approximate sequence of a normal check-off.

They Don't Just Happen

Field repair men were working adjacent to a main taxi-way. Their truck and car were parked on the taxi-way with no flagmen on duty and no warning flags in place. An FM-2 returning to the line taxied directly into one of the vehicles without the pilot seeing it until too late to avoid the collision. The tower made no effort to warn the pilot.



Grampaw Pettibone says:

You'd be surprised at the wad of money expended on this type of accident each month.

I'm not trying to excuse pilots for their share of the blame, but it strikes me that compliance with Flight Safety Bulletins 28-44 (Automotive Equipment on Flying Fields) and 17-44 (Tower Responsibility) would do much to eliminate these unnecessary hazards. Any extra man-hours involved in such effort should be more than offset by a decrease of work in A&R.

Do It Right



Grampaw Pettibone says:

Do a thing right and you get results—do it wrong and you get consequences!

Check BEFORE Take-Off

A TBM-1C was seen to stall and spin in from 200 feet, as wheels were retracted following a carrier take-off. The crew was recovered, uninjured.

The cause of the loss of control in this case was at once apparent when the loading was computed. This showed that at the time of take-off, the center of gravity was approximately 34 percent of the mean aerodynamic chord. The recommended aft center of gravity limit for this airplane is 32.1 percent with wheels down, or 32.5 percent with wheels up.

Every Pilot a C.O.



Grampaw Pettibone says:

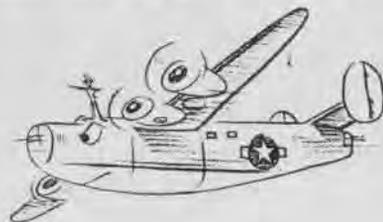
As an aviator you become commanding officer of a ship (your airplane) much quicker than anyone else in the

Deceleration Data

Accident boards are requested to include in Aircraft Accident Reports, whenever possible, the approximate deceleration of aircraft in crashes. This data furnishes valuable information for determining the strength needed in certain parts of aircraft, such as seats, to minimize personnel injuries.

The formula for approximate deceleration will be found in paragraph 3(b) of enclosure (A) to Aviation Circular Ltr. No. 48-44.

Navy. That's all to the good, but this privilege carries with it increased responsibilities. You have got to show by your



actions that you are qualified to carry out these obligations. Every flight is an exam which you flunk if you display general incompetence or irresponsibility.

"Bail Out!"

Case 1. Following a sudden engine failure at 800 ft., an SB2C pilot ordered his crewman to bail out. The crewman did not understand and was again ordered to jump, after which, the pilot saw him making preparations to go over the side. The pilot stayed at the controls to give him a better chance to get out. Altitude was lost quickly until at 100 ft., when the plane was almost completely stalled, the pilot made a long jump out over the wing and pulled his ripcord. His chute opened just before he struck the ground. The crewman left the plane immediately after the pilot, but his chute did not open.

Case 2. The starboard engine of a BD-2 caught fire at 4,000 ft. A steep dive to 3,000 ft. failed to blow out the flames. The pilot then ordered his two crewmen to bail out. One jumped, but the other in the nose compartment failed to heed the order. Again the pilot instructed him to jump. Seeing no response and surmising that the man probably was too frightened to jump, the pilot decided to attempt an emergency landing although the engine now was burning furiously. No suitable forced landing sites were in the vicinity, but the pilot managed a full-flap, full-stall, wheels-up landing in a small pasture. The airplane was demolished and both pilot and crewman were injured seriously.

► **Comment**—These are only two of numerous cases, all of which show the need for more complete indoctrination of personnel in bailing out procedures. The *Parachute Sense* pamphlet is recommended as required reading.

There should be a definite understanding between a pilot and his crew, or passengers, on this subject. The point should be stressed that any delay in executing an order to bail out may result in death, not only of the person concerned, but also of the pilot, if he stays at the controls too long in an effort to give that individual more time to make up his mind to jump.

DID YOU KNOW?

F6F-5 Outflies The Old Hellcat

Changes Include Paint And Windshield

Worthy successor to the F6F-3, which established an outstanding record in the Pacific, is the Navy's new Grumman *Hellcat*, the F6F-5, now in action with the fleet. By smoothing out the *Hellcat's* paint job, streamlining it here and there and reinforcing where needed, the manufacturers have produced a plane faster and better than its immediate ancestor.

Paint on the F6F-3 was rough because the designers wanted to avoid reflected flashes of sunlight. But battle experience proved the silhouette of a plane was as easy to see as sunlight flashes. Rough paint was abandoned for a waxed, highly polished coating which added knots to the new plane's speed. The color chosen is effective camouflage when seen from above.

More streamlining of engine cowling added to the speed and an improved windshield brought better visibility for the pilot. New ailerons and stronger tail and stabilizer structure contributed greater maneuverability. A larger sheet of armor-plate was placed behind the cockpit for pilot protection. Those were the new features by which the old *Hellcat* became the new F6F-5.

Already the new plane has given good account of itself both in the European war theater and in the attacks on Saipan, Guam, Iwo Jima, Palau and the Philippines.

Today the F6F-5 is in mass production. All newly formed fighter squadrons are flying them and all combat replacements are made with the new model. In time the old F6F-3, which caused the Japs so much grief in its heyday, may disappear gradually from the Navy scene.

Seabees Find Use for Gas Mask

Make Diving Helmet to Salvage Plane

A large Navy transport plane which had crashed in take-off was among the equipment recovered from the bottom of a lagoon in the South Pacific because of the ingenuity of a Seabee. The incident further demonstrated the fact that Seabees simply make what they need when no equipment is available.

At this particular island the Seabees were faced with both salvage and building operations which required diving. But they had no diving equipment. The Seabees did not let the stoppage last.

A chief boatswain's mate made a few changes in the face piece of his gas mask, adjusted a small compressor from a spray gun to supply air and made an experimental dive. The mask worked.



SEABEE DEMONSTRATES GAS MASK USED TO DIVE

In no time the Seabees were on the bottom of the lagoon placing concrete slabs for seaplane approaches, freeing a freighter which had fouled its propeller salvaging the transport plane and raising a 40' motor launch.

Waves Get Ready for Overseas

Women Must Serve 18 Months on Job

Machinery is being set up for transfer of WAVES, Spars and women Marines in aviation to certain overseas duty stations, as provided in a recently enacted law which will permit them to serve in Hawaii, Alaska, Canal Zone or the 10th naval district. The latter includes the Caribbean area, part of South America and Bermuda.

Such duty will be voluntary on the

part of women in the three services, based on quotas set up in the areas where they may be employed to replace men. Overseas duty assignments will be for a minimum of 18 months and longer if necessary and no leave will be granted to return before 18 months.

Included in the women who will be able to qualify for overseas duty are the eight types of aviation ratings— aerographers, parachute riggers, machinist's mates, metalsmiths, instruments specialists, Link trainer operators, control tower operators, gunnery instructors and those in the Specialist X class, such as time shack operators and pigeon trainers.

In filling out the applications for overseas duty, women are permitted to specify the areas preferred. Emphasis will be on Hawaiian billets.

Skytrain Comes Home for Rest

NATS Veteran Has Seen Much Service

One of the unknown veterans of the war recently returned to the United States for a much-needed rest. She is a Douglas *Skytrain* (R4D), the first plane to be commissioned for duty in Naval Air Transport during the early days of the war. No glamour girl, she is known simply in Navy records as No. 05074.

The big *Skytrain*, after logging thousands of miles in the Atlantic and European theaters, is suffering from a mild case of operational fatigue, but her campaigning days are far from over. After an overhaul at NAS Patuxent River, she will return to active duty. At one time during her busy career, she made regular runs between Norfolk and Reykjavick with a standard gross load of 31,000 lbs.

Mock-Up Aids Change of Station

AGR Shops Are Reproduced in Detail

ABC-2—To facilitate installation of machinery and equipment in the new overhaul shops at El Toro, a mock-up group was organized under the Engineering Department and a complete large scale mock-up of the two main buildings were produced.

Every piece of machinery and equipment was cut to scale in different colored bristol board and attached to the 36' x 20' panels with wire staples. Commendations were received from both Douglas Aircraft and Lockheed Corporation.



BEST ANSWERS

Survival in Enemy Territory

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

1. Assuming that you have bailed out over enemy territory and that your plane has crashed nearby, you should—

- a—stay by the wreckage until friendly airplanes sight you and drop instructions
- b—sabotage the airplane and get away from the vicinity, taking any small items of value
- c—not go near the airplane under any circumstances
- d—sabotage the airplane but leave a sign, indicating the direction in which you have gone

2. In order to avoid being seen by possible enemy patrols in comparatively open country, you should—

- a—always pass between suspected enemy positions and the skyline or other light background
- b—always run when traversing an unprotected open area
- c—travel along natural contrast lines, such as the edge of streams, vegetation shadow lines or breaks in the contour of the ground
- d—cover yourself with foliage and proceed directly toward your destination

3. If you find yourself in an enemy area frequented by natives, you should—

- a—seek the natives and make friends with them, indicating your needs
- b—remain hidden from the natives under all conditions
- c—keep your hand on a sidearm when in the presence of natives, in case of sudden hostile action on their part
- d—make use of native trails, but keep contact with natives to a minimum

4. In jungle territory, the one of the following least likely to be serious is—

- a—mosquitoes
- b—poisonous snakes
- c—polluted water
- d—the sense of fear and uncertainty resulting from solitary existence in the jungle

5. The method of mosquito protection to be employed with most caution in enemy territory is—

- a—sleeping on high ground away from streams and swamps
- b—pitching a mosquito-protection tent
- c—using strong insect repellents
- d—building a smudge fire

Planes Save Fliers with Rafts

Drop Safety Gear to Them in Water

Lengths that naval aviators will go to protect the lives of comrades forced down at sea was demonstrated recently when two torpedo bomber pilots circled two downed pilots, dropping smoke bombs, dye markers and even their own life jackets. They kept their rescue vigil although their fuel was running low and their carrier was 130 miles away.

One torpedo bomber would circle the two life rafts lashed together while the other flew several thousand feet up to establish communications. Finally a destroyer, in answer to their radioed directions, came and rescued the two men. The *Avengers* flew off and landed on their carriers with only a few gallons of gas in their tanks.

BuAer Distributes New Manual

Plane Weight And Balance Is Covered

A supply of the Army Air Forces' new field manual on airplane weight and balance control has been acquired by the Navy and is being distributed to some of the various naval activities by BuAer. It is believed the new manual should be of interest to those aviation activities which are concerned with weight and balance problems.

Several such activities were selected to share in initial distribution of several hundred copies. This distribution was intended primarily to introduce the manual to Navy aviators. Included in the initial distribution were NAOTC, Jacksonville; ComFairWC, ComAirLant, the Aviation Engineering Officers School



CHARTS AND DRAWINGS ILLUSTRATE THE TEXT

at NATTC, Memphis, the Assistant Operations Officers School at NAS, Atlanta, NTS (Flight Mechanics) at LaGuardia Airport and Naval Air Stations in classes A, B, C, D and auxiliary. Other activities desiring copies can secure them by request to BuAer Publications Section under index number NavAer 01-1B-501.

Charts, diagrams, photographs and cartoons are used in the book to illustrate points involved in weight and balance control. The subjects of weight and balance are treated in a general fashion, after which the manual takes up aircraft weighing, loading calculations, load adjustments and similar detailed problems.

In addition to the Army manual, BuAer is distributing restricted pamphlets which comprise a basic weight check list and loading data on a considerable number of Navy planes. In-



RESOURCEFUL INDEED are men of the United States Navy. Whether at sea or on shore stations they are accustomed to getting the job done with the best means at hand. Personnel of the CASU located on Ford Island, neighboring NAS Pearl Harbor, are no exception to the general rule. They had need of a washing machine and mother's was a good many miles away. So they rigged a barrel with windmill and plunger. Result—a washer

cluded are the PB2B-1, PB2Y-3R, R50-4-5-6, PBM3S-3D, PV-1, TBF-1-1C and TBM-1-1C.

Although the Navy weight and balance program did not come into existence until late in 1943 when Technical Order 57-43 set up the first control system, it is now functioning in all branches of naval aeronautics. A subsequent order, No. 97-44, brings previous directives up to date.

At present, instruction in weight and balance control is being given in the Naval Operational Training Command, at the Assistant Operations Officers School, NAS, Atlanta; and at the Flight Mechanics School, LaGuardia Field. Instruction is also being instituted in the Aviation Engineering Officers School at NATTC, Memphis.

Through arrangement with the Army, a number of Navy officers have attended a brief weights and balance course at Yale university. This course has now been moved to Chanute Field.

AAF Releases Training Losses

Army Wears Out 4,000 Planes on Job

In activities in the continental United States since Pearl Harbor, the Army Air Force has lost 17,500 planes, an average of one plane for 4,342 hours of flight. This total includes 11,000 planes lost in wrecks, 2,500 planes still useful in ground training, and 4,000 worn out by training and transport use.

Since Pearl Harbor the AAF has trained and graduated 163,147 pilots (including 5,122 glider pilots) 31,293 bombardiers and 31,906 navigators.

The AAF has had a training mortality rate of two percent, the Yank says.



SKIPPER of Navy squadron receives Jap Samurai sword at farewell party given to honor departure from Eniwetok to mainland. 'Local color' murals at this club differ somewhat from those found at U. S.

FLIGHT



SAFETY

WHAT is being done to curtail aviation accidents? The Navy has mapped a broad campaign to see that each aviator gets the word that may save his life and plane. Each accident is put under the microscope of analysis to ascertain what went wrong. Here are two actual case histories of what happened when Naval Aviators crashed.

Case 1. Upon returning from a flight, the pilot jotted down, "Check oil system for leak." The plane captain drained the oil and started to work. It was late in the afternoon when he finished the job. He did not refill the tank because the oil truck was not immediately available. Since flying was secured the following day, he did not report the plane out of commission.

The next day the assistant flight officer, knowing no regular flying was scheduled, thought it an excellent time to test fire on aircraft guns. When the mechanic on duty asked which plane the pilot wanted, he pointed to the nearest—the one without oil. The aviator was in a hurry and took off without checking his plane to see that it was operating properly. A few minutes later, the plane crashed.

What was done?

First, the squadron commander investigated the crash and ascertained the fundamental facts. It is doubtful if the plane captain ever again neglects to report a plane out of commission. An expensive lesson, however!

Second, a Board of Investigation report was submitted via the chain of command. On the basis of this report, the squadron's commanding officer was censured for laxity in operational practices in his command.



Third, an Aircraft Accident Report was made on the basis of careful inquiry by the squadrons' Aircraft Accident Board. When this AAR reached BuAer and divisions under the Deputy Chief of Naval Operations (Air) in Washington, experts in aviation safety decided the accident should be written up in NAVAL AVIATION NEWS so that all aircraft squadrons in the Navy could read—and avoid—the combination of errors that lead to such a crash. This item was handled by Grampaw Pettibone who commented:

Let this be a warning! Carelessness in aviation eventually ends up this way. . . . In addition to the negligence on the part of the plane captain, the pilot

was seriously at fault on at least two counts. . . . It's too late for this pilot to benefit from these mistakes, but not too late for the rest of us.

If the crash had been caused by material failure instead of human error, a Technical Note or Technical Order might have been issued on the information in the AAR of R.U.D.M.



Case 2. The airplane's engine cut out. The pilot immediately faced the question of whether to make a forced landing with wheels up or wheels down. He remembered a scuttlebutt discussion of a wheels-down landing without even denting the aircraft. So, he decided to try it with wheels down.

▶ The aircraft hit soft terrain and nosed over, receiving such a battering it had to be stricken; the pilot was hospitalized for a month. After investigating the wreckage and listening to the aviator tell his story from a hospital bed, the Trouble Board sent in an AAR.

Crashes also occurred from wheels-up landings. One squadron adopted the doctrine that landings should be made with wheels down. Another unit at the same air station favored the wheels-up practice in the same emergency. Obviously, this lack of consistency was unbecoming a scientific profession such as Naval Aviation.

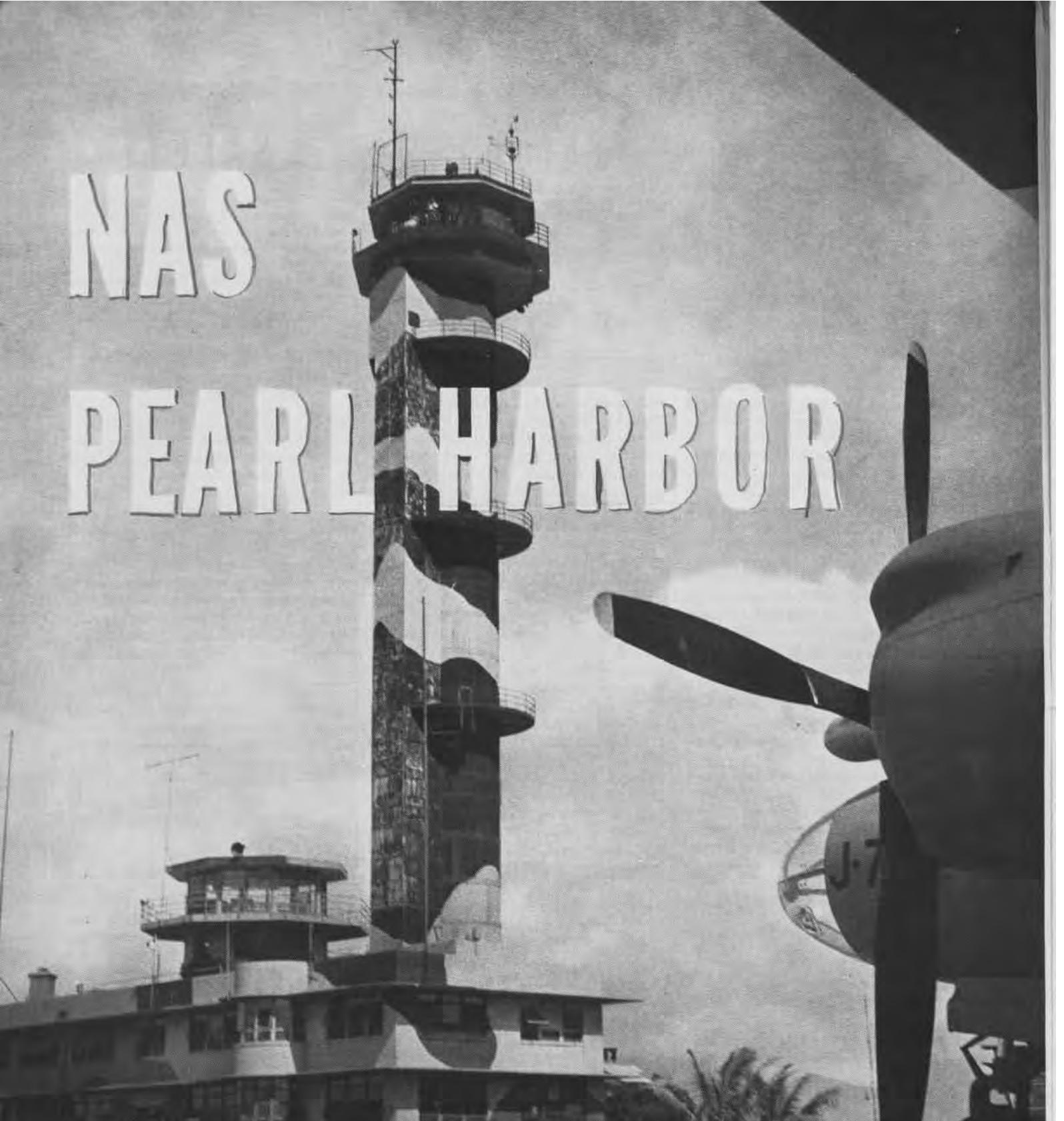


TO SAVE lives and planes, safety experts decided that a standard technique should be required if there was a uniform way to meet this emergency. A statistical study was undertaken.

As many had suspected, no simple answer was found. The survey of AAR's favored wheels down for rough or rocky terrain plus stump areas and wheels up in most other types of landings. Findings of this analysis, incorporated in a Flight Safety Bulletin, were issued to all naval aviation units. It was, as its heading said, TO BE READ BY ALL PILOTS.

Thus in the future each aviator could act on a considered analysis of hundreds of examples published in this bulletin instead of simply on the recollection of a single, and possibly exceptional, crash. A scientific standardization had been introduced into previously haphazard emergency landings.

THIS IS THE FIRST IN A SERIES OF PIECES ON WHAT NAVY IS DOING IN AVIATION SAFETY



NAS

PEARL HARBOR

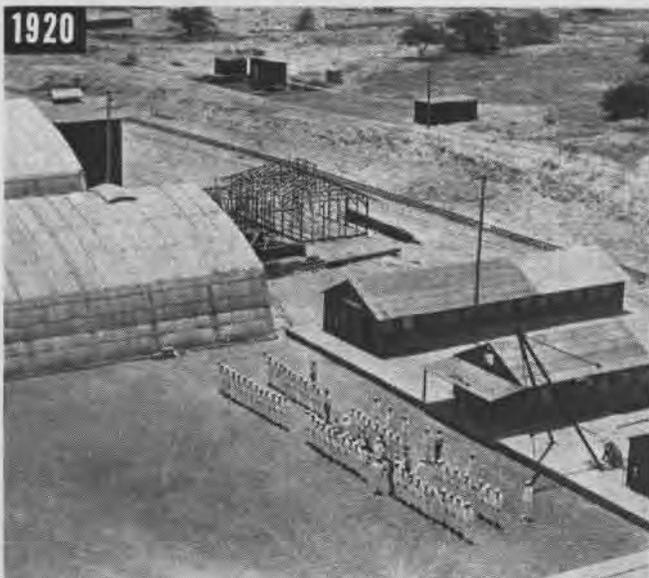
SOMETHING MORE THAN AN AIR STATION IS NAS PEARL HARBOR. MOTTLED OPERATIONS CONTROL TOWER FORMS ONE OF ITS FAMILIAR LANDMARKS

ARISING like a fabled phoenix from the ashes of its setback December 7, 1941, NAS Pearl Harbor has grown today into a major booster station in the lifeline of materials and munitions that flows steadily on westward as war in the Pacific moves nearer Japan.

Much more than a naval air station is NAS Pearl Harbor. Its functions are varied but practically all of them are geared to meet fleet needs. Most important of its

purposes is supplying facilities to Commander Air Force, Pacific Fleet and to the closely affiliated staff of Commander Carrier Transportation Squadron in the Pacific ocean area.

All aviation units of the fleet are serviced by NAS Pearl Harbor including air detachments from carriers, cruisers and battleships which tie up at its piers. A double-sized CASU and a SOSU are located there, also.



1920
In 1920 NAS Pearl Harbor consisted of two canvas hangars and a few shed-like barracks. Entire personnel musters for inspection

PEARL HARBOR CRADLED NAVAL AVIATION IN PACIFIC THEATER

THOUGH Pearl Harbor today holds a key position in our Pacific war strategy, its importance to naval aviation is by no means an overnight development. Navy flying in the Pacific was cradled there two decades before World War II.

In January of 1920 the first Pacific Air Detachment was established at the Navy Yard, Pearl Harbor. It consisted of nine officers and 55 men. The new detachment was supplied with four aircraft including two HS2L flying boats and two N-9 float planes. Canvas hangars of World War I vintage had been erected to shelter the planes.

Three years later, on January 17, 1923, the detachment was moved across the harbor to Ford Island, entering into joint occupancy with the Army's Luke Field. By this time the Navy had a real hangar but had not yet moved into it.



1944
Today's view of the station is not complete without the familiar ferry landing. Here men and trucks are shuttled across the water



Edwin Denby, then Secretary of Navy, climbs aboard an early pusher type plane at Pearl Harbor in 1921 after inspecting the station

Comdr. John Rodgers, USN, now deceased, was skipper of the detachment and was the Navy's No. 2 pilot. Looking over the sky he decided a storm was brewing. It was 1300 Saturday afternoon and his men were preparing for shore liberty, but their skipper decided to commission the field. He issued orders then that all planes be removed from the canvas hangars. That night a storm wrecked the hangars.

Slowly the station grew. By 1934 there were four permanent hangars and three squadrons were stationed there. VP-1 flew PK planes, VP-6 had PM and PD types, and VP-8 was using PH models, all flying boats. Hops were made to advanced bases on Johnston and Midway islands after weeks of hard work expended on the most painstaking preparation.

A FEW years later the first P2Y2's made transpacific hops after being ferried from San Diego to San Francisco because it was 180 miles closer to Pearl Harbor. A year later PBV-1's assigned to VP-6 flew out from the coast.

By the time war came to the Pacific, NAS Pearl Harbor had grown into an active operational and training station.



A far cry from the primitive sheds of 1920 are the enlisted men's barracks and mess hall with tennis courts and a pool at the rear



Supply department cranes load and unload airplanes from carriers tied up at dock. Some are retired from combat by Radford plan



Cargo is hoisted aboard vessels at NAS Pearl Harbor in a record time. Supply services naval aviation for the entire Pacific area



SUPPLY SATISFIES NEEDS OF NAVY IN THE PACIFIC

DISTINGUISHING the Aviation Supply Department of NAS Pearl Harbor from that of any other station is the fact that here again all activities are geared to meet needs of Pacific aviation and the fleet. Functions of the station are closely integrated and Supply frequently works with several other departments.

When a carrier docks, Supply unloads and loads as well as transports some of the stores to the dock. Both CASU and A&R may assist in handling planes while Ordnance transports ammunition, bombs and torpedoes, which form its specialty.

Supply receives stores and issues aviation material to activities of the Fourteenth Naval District including an air facility, air stations and fleet units operating in the Central Pacific. Also, Supply services NATS Pacific, FairWing 2 and screens all emergency requests from all of the forward areas including SoPac, and SoWestPac as well as carriers and supply ships for the entire Pacific.

In addition to these functions Supply exchanges new for damaged material, inspects the old and either turns it over to A&R for repair or salvages it for shipment back.

ALUMINUM from hopelessly wrecked planes is only one of the materials salvaged. Now, numerous carriers can be serviced at one time by Supply. In seven hours 13,500 cu.ft. of cargo has been unloaded from a CVE including planes, and 2,691 cu.ft. of supplies loaded on the same carrier.



RADFORD PLAN IN OPERATION FINDS SOME PLANES ASSIGNED TO NON-COMBAT DUTY WHILE STILL OTHERS ARE MELTED INTO INGOTS BY SUPPLY



Although retired from combat these SBD's are contributing their part toward winning this war by long hours of flying on inshore

patrol duty. Repair work at NAS Pearl Harbor is limited to jobs of not over 30 days. Less man hours are expended on older planes

A&R TEAMS UP WITH INSPECTION SURVEY IN PEARL HARBOR SHOPS

CLOSELY affiliated in their activities at NAS Pearl Harbor are the A&R department and the Inspection and Survey Department. Flexibility and close cooperation keynote their operations. Because of more urgent work, no major overhaul of planes has been handled by A&R since 1942. But less general repairs are made in many instances.

Under operation of the Radford plan, planes are inspected by the I&S department which diverts some to the salvage pile, ships others to the states for general repair and a non-combat future and sends still others to A&R for some repair

work. Less man hours are spent on old planes. New models receive more attention but nothing is accepted if it cannot be turned out in 30 days.

In addition to repairs, A&R handles engine overhaul, the modification of parts, preservation, manufacturing of A&R needs and aircraft shipboard equipment. A semi-production line has been set up in the engine overhaul shop and this specializes in R2600 and R2800 engines. Other engine types are handled by other air stations in the Hawaiian group of islands. After planes are repaired test flights are made.

ALL supplies delivered from outside sources are screened by I&S and all aviation material manufactured, repaired or overhauled on the station is inspected. A safety officer is attached to the department and in conjunction with the other departments he safeguards the welfare of the station.



OPERATOR AT CONTROLS KEEPS A LOG ON ENGINE RUNNING DURING TEST



ENGINE DEFECTS ARE SOON FOUND BY A&R IN ITS OPEN AIR TEST CELLS



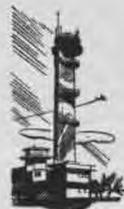
MEN OF ORDNANCE DEPARTMENT ARE WELL VERSED IN AERIAL TORPEDOES



WHEN A TORPEDO OR BOMB LEAVES ORDNANCE IT IS READY FOR BUSINESS



BOMBS ARE KEPT IN READINESS TO BE FUZED AND LOADED ABOARD PLANE



MUNITIONS ARE READIED FOR FLEET BY ORDNANCE

GUNPOWDER and high explosives are sinews of war. Custodians of these deadly stores at NAS Pearl Harbor are the Ordnance Department men. Once again the most important function of a department at NAS links up with the fleet. Working in the closest cooperation with ComAirPac, Ordnance assumes responsibility in the delivery of equipment or supplies to carriers, supply ships.

An adequate supply of bombs, fuzes, torpedoes and small arms ammunition as well as pyrotechnics and chemical smoke mixtures is kept on hand at NAS by Ordnance as an actual readiness for fighting. The department is charged also with custody and upkeep of the station defense guns. A limited range for indoctrination in small arms is maintained as well as a confined and short distance test range for use of machine gun students.

A fully equipped bombsight shop where gear is rebuilt and overhauled is maintained by a branch of Ordnance and a class B school is conducted for technical training on maintenance, upkeep and operation of bombsight equipment. This 12 week course is given only to trained men supplied by ComAirPac who deserve a more advanced study of the subject. Here, men are given practical work in shops and on operating equipment as well as instruction in classrooms and in SBAE Link trainers. Following this course they make actual flights operating the stabilized bombing approach equipment as a sequel to other training.

One of the most important activities of Ordnance is the torpedo overhaul shop. Aerial torpedoes are taken there by the department and are overhauled and readied for transfer to operating units as needed. Torpedoes that have been on shipboard for as much as six months are overhauled by this department and then re-issued to the fleet for further duty.

FORD ISLAND CASU ASSISTS NAS

ALTHOUGH the CASU on Ford Island is not attached to NAS Pearl Harbor it is a powerful aid to that station in handling the tremendous volume of work required for servicing carriers and supply ships. In addition to this activity CASU has many other duties.

Planes must be put into a first class fighting condition before they go aboard a carrier and here CASU plays a stellar role. Its duties include inspecting the engines, installing ordnance gear, boresighting guns, checking and modifying radio, radar gear, oxygen equipment and other accessories. And last of all the CASU test hops all planes before they go aboard for duty.

CASU also readies planes for supply carriers which bring up reserves to fly aboard combat carriers near the scene of action. It maintains a utility plane pool to furnish non-scheduled transportation to nearby islands and also for the use of flying personnel.

A pool for enlisted personnel is maintained by CASU and through this pass men for transfer as replacements to all aviation facilities in the Pacific. Scout-observation squadrons attached to battleships and cruisers receive service from a SOSU group.

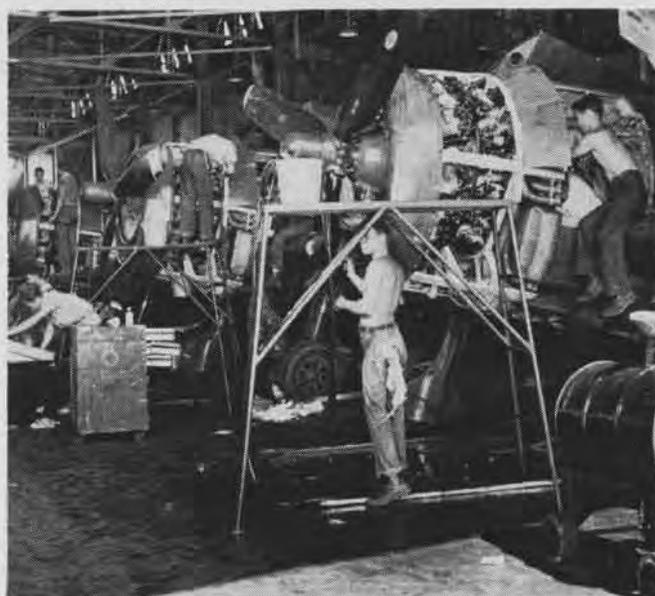
Such are the highlights of major activities at NAS Pearl Harbor. Here, naval aviation in the Pacific had its genesis more than two decades ago. And here, today, has developed a strategic air activity that steadily grows more essential as war moves farther from mainland supply; closer to Japan.



NAS PEARL HARBOR BAND PARADES BEFORE AN AMATEUR FOOTBALL GAME STAGED AS A PHASE OF RECREATION PROGRAM SPONSORED BY STATION



CASU DOES NOT OVERLOOK THE NECESSITY OF RECREATION FOR ITS MEN



PLANES FROM AIRPAC POOL ARE TAKEN TO CASU SHOP FOR OVERHAULING

CADETS



Let The Beginner Make His Mistakes Where They Cost The Least

NAVAL AVIATION TRAINING EXHIBIT

FOR THE first time in this war the folks at home have an opportunity to try out for themselves some of the gear naval pilots and aircrewmembers train in and fight with. Since October 24, scores of synthetic training devices perfected for Navy, Marine Corps, Coast Guard, Army and Allied fliers have been on display at the Museum of Science and Industry in New York. All naval officers and enlisted personnel are admitted by free tickets available at the Special Devices Depot, 1 Park avenue.

Museum visitors can work every device exhibited. There is always a line around those machines that shoot. The kid brothers back home get few hits but they do get a realization of the skill required to fly an airplane and at the same time shoot down Japs. "Eager beavers" not yet in their teens vie with grandfathers for hits in the Gunairstructor. Museum guests marvelled one afternoon when an air admiral took over the controls and scored 93 out of 100.

Devices exhibited range from automatic raters to the Mk. 2 panoramic gunnery trainer. All are devices in which aviators, student pilots and aircrewmembers have met and mastered problems on the ground, where mistakes cost the least.

Rated aircrewmembers, veterans of the Navy's aerial war now on limited service, demonstrate this equipment, all developed to increase combat efficiency and the survival chances of fighting personnel. Several of these aircrewmembers shot down planes in combat. Trainees from the Special Devices artificers school in Chicago maintain all Navy equipment at the museum as "on the job training" preparatory to active duty assignments afloat or ashore. Equipment displayed at the show was developed by BuAer Special Devices Div.



Figures of naval aviator and aircrewman flanked by pictures of cadets and Navy's famed "Ripper" squadron mark entrance



A 20 mm. BuOrd anti-aircraft free gunnery trainer, set up on museum's main floor, is checked. Second trainer in background



“...got to be damned sure no boy’s ghost will ever say, ‘if your training program had only done its job’...”



An aircrewman back from combat duty in the Pacific explains the technique of operating BuOrd anti-aircraft gunnery trainer



These fixed gunnery trainers are two of the busiest devices on the museum floor. Two civilians are briefed by crewmen



Instructor gives directions to bombardier crouched over bomb sight in the 7A3 bombing trainer just above simulated terrain



Like many museum gunners this man holds his mouth right to get on target with this BuOrd anti-aircraft gunnery trainer



Cutaway engine is used to demonstrate engine principles and parts to officers, who later will join CASU's, PATSU's or other units



Students at Aviation Engineering Officers' school, Memphis NATTC, learn fine points of removing Curtiss electric prop from an FM-1

ENGINEERING Officers' School Trains Men for Service Units

AN AVIATION Engineering Officers' school, the only one of its kind in the Navy, is operating as a division of the AMM school at NATTC Memphis. The school turns out men to assume the duties of aviation engineering officers with CASU's, PATSU's and other aviation repair activities.

Students at the school are given a complete overall knowledge of aircraft, eventually working on combat types including F4U, F6F, FM, TBM and SB2C. Previously, officers were trained on specific parts of the airplane.

Twenty-five officers a week are sent through that 12-week course, with the

"student body" approximating 120 officers. The course has been broken down into four hours of shop work and three lecture hours each day, combining theory with practical work.

The lecture period has been broken down further into two hours covering the actual subject being studied that day, with the third hour devoted to the Aviation Engineering Officer's duties. Three days a week an hour is devoted to athletics and the other three days of the week this hour is spent in general familiarization work in radio, ordnance, gunnery and recognition. Officers who have not had indoctrination receive six hours a week of instruction at night.

Men Learn of Planes by Actual Doing

Dressed in dungarees, the same as enlisted men on the center, the officers have enlisted men for instructors. About 70 percent of the shop work is done on actual planes. Each subject is discussed before any work is done.

Men attending the school come from all sorts of planes, some directly from

the fleet. Some have already been engineering officers; others are on their first Navy assignments, while still others are pilots who have been instructors in primary training or just graduated from flight school. They range from ensign to lieutenant in the Navy and warrant officer to one captain in the Marines.

College-trained Teachers Are On Staff

All of the instructors were chosen from the AMM school, with 60 percent of them being college graduates. The school work has been divided into 12 phases of aviation engineering: structures, metal work, electrical, hydraulics, engine familiarization, propellers and instruments, fuel and oil systems, accessories including generators, ignition, trouble shooting, engine changes and squadron operations. Under each of those headings, the students receive considerable material that ranges everywhere from embalming engines to changing tires and shooting trouble on electric propellers. He has to check out as a "taxi pilot" before he graduates.

SHORE STATIONS

► **MCAS EL CENTRO**—Personnel classification charts in use at this station indicate 95 percent of the officers and 92 percent of enlisted men in the group are working at jobs for which they are best suited. Charts are changed daily to show what duty the individual is performing also indicate the job for which he is best qualified.

► **NAAS GREEN COVE SPRINGS**—The first double proxy wedding in this country was performed at the chapel recently. The groom had been transferred to the Pacific while he was attempting to complete arrangements for the wedding. Later the bride left Florida to return to her home. Marriage papers traveled a total of three times around the globe, taking six months to iron out the legal difficulties.

► **MCAS MOJAVE**—Grass grows in the Mojave desert, and it's no mirage! This phenomena was the result of a wife's desire to create beauty in a place practically devoid



of plant life. For some time, she devoted all her spare time to planting and watering an enclosed plot of ground behind the Women Reserve barracks, and she has been rewarded with a lush lawn of grass and clover. To complete this bit of "isolated Eden," she has transplanted a few small shrubs and four trees which are showing signs of life.

► **NAS OTTUMWA**—Thirty-three WAVES, approximately ten percent of the WAVES stationed here, have applied for overseas duty during the first five days on which applications were accepted. Two hundred at this base are eligible for overseas duty under existing rules.

► **NATTC JACKSONVILLE**—Florida's hurricane turned the supply building into a haven of safety for some 1,700 people. A hurriedly devised hospital, cafeteria, and movie provided comfort through the storm-torn hours. 500 babies slept peacefully in cribs improvised from empty shipping boxes. The A&R swing band furnished music in half-hour programs for those less inclined to sleep. Although some were forced to spend the night, the floors were swabbed, the furniture replaced and the employees back in their routine of duty by 1000 the following morning.

► **MCAS EWA**—A promise made two years ago by a sergeant when he doubted he'd live long enough to fulfill it, has been kept. Four of his former buddies finally received military burials in the Army, Navy and Marine cemetery on Guadalcanal.

Two years ago when his friends were killed, the sergeant helped bury them which consisted simply of placing the

fallen comrades in foxholes, covering them with stones, and marking the graves with tiny sticks and bayonets.

"If I get out of this alive," the lanky New Yorker said, "I'll see that they get a decent burial."

When he checked with officials on his second tour of duty in the Pacific, he was told that the graves had never been located. For two days, the sergeant searched every inch of the ridge. Finally he found a rusty bayonet splitting a stick to form a crude cross . . . then a second cross, the third and then the last. The next day, the sergeant stood at attention while a chaplain officiated at funeral services. He had kept his promise.

► **NAS MEMPHIS**—A prominent civilian walked into ship's service cafeteria and asked for an order of bacon. "We can't sell you an order of bacon," replied the waitress. "You did yesterday," said the customer. "I don't know about yesterday," she returned, "but I can't sell you an order of bacon today."

"Well, what have you today that includes bacon?"

"Bacon and eggs, bacon and egg sandwich."

"I'll have a bacon and egg sandwich, without the egg."

"Can't do it."

"Well, then, suppose I pay for a bacon and egg sandwich, and ask them to omit the egg?"

"No. Can't do that, either."

The customer had toast and coffee.

► **NATB CORPUS CHRISTI**—A "Prayer Squadron," composed of officers, aviation cadets and enlisted men who will offer a prayer each day of the war, has been organized at Cabaniss Field, NATB Corpus Christi.

► **NAS JACKSONVILLE**—Navy personnel throughout the world will have the usual turkey and all the "fixin's" Christmas Day. The Navy purchased 12,000,000 pounds of choice young tom turkeys for its three "turkey days"—Thanksgiving, Christmas and New Year's—which will allow about one pound for each man in the states and 1½ pounds for those afloat or overseas. In addition to roast turkey, the holiday menu will include such delicacies as tomato juice, sweet pickles, celery, olives, giblet gravy, sage dressing, cranberry sauce,

mashed potatoes, asparagus, fruit salad, Parker House rolls, mince pie, ice cream, nuts and coffee.

► **MCAS SANTA BARBARA**—American naval aviators will never be guilty of overstatement if they're all like one pilot, whose message to his mother carrier was picked up by Marines monitoring radio during the early stages of a recent campaign.

First, the Leatherneck radiomen heard a carrier direct the pilot to a certain sector to "investigate anti-aircraft fire reported coming from a farmhouse." A few moments later came the calm, casual reply:

"Have investigated anti-aircraft fire. Am bailing out."

► **NPFS ST. MARY'S COLLEGE**—"Workingest man on the base"—that's the description often applied to the chief storekeeper by



rate, jack-of-all-trades by performance. Assigned to this school in 1942, after a couple of years at the University of Oregon as custodian and renovator of athletic gear, the chief found himself guardian of approximately half a million dollars worth of athletic equipment. Since that time, he has never rolled down his sleeves. The department repairs everything in the athletic line from boxing gloves to trampolines. "If you handle athletic gear just as you do your car," he explains, "it will last a long time."

► **NAS MELBOURNE**—The following letter was received by a S1/c from his friend somewhere in the Pacific.

Dear Bob:

Just a few lines to let you know I am alive and well, so don't worry.

After leaving where we were we left for here but we couldn't tell if we would arrive here or not. After leaving by what we left by we had a good trip. From here to there is just as far as it is from there to here.

It is now time to stop this letter before I give away too much valuable information as the censor might be a spy.

As always,

Eddie

► **MCAD MIRAMAR**—This story is one of the prize understatements of the Pacific war. During the height of a determined midnight counter-attack, a Jap officer jumped into a Marine's foxhole, brandishing a naked sword. It was pitch dark and the Pfc. at first mistook him for a Leatherneck with a bayonet.

Pushing the sword blade aside, the Pfc. admonished him, "Be careful, Mac, you're liable to hurt somebody with that thing."

The surprised Jap leaped out of the hole and a moment later was shot by a Marine.



▶ **NAS OTTUMWA**—Twenty flight instructors are acting as "part-time executives" in addition to their flying duties. New groups of twenty will take over every two weeks in order to familiarize all instructors with station operations.

▶ **NAS JACKSONVILLE** — One bluejacket wasn't worried about the impending danger of the September hurricane. "Even a hurricane wouldn't come to Jacksonville," he stated, "without orders from BuPers."

▶ **ZJ-1**—The broadcast of one of the vital games of the St. Louis World Series was interrupted repeatedly by one of the ZJ-1 ships calling the control tower at the field. It was the ninth inning; the score was tied; one out, and the Cards had men on first and second base; Walker Cooper was at bat; and the count was three and two. The announcer's voice, dripping with emotion, was cut, and a droning sound could be heard, "Navy Meacham, Navy Meacham, this is flight two, over," followed by tremendous cheering.

Some time later the disgusted fans found that Cooper hit into a double play.

▶ **NAS OTTUMWA**—Station mess halls were adequately supplied all summer with vegetables grown in their thriving victory gardens, which in September alone yielded the following bumper crop: 3,300 pounds of corn, 360 pounds of squash, 260 pounds of lettuce, 144 pounds of radishes and ten bushels of beans.

▶ **NAS CLINTON**—Two enlisted WAVES, from Nebraska and Florida, recently reported aboard and were housed in adjoining compartments. One day each received a letter from her uncle. The two letters, telling one to look the other up, were written by the same man.

▶ **NATB PENSACOLA**—NAS Atlanta, formerly under NAITC with headquarters at Corpus Christi, is now an activity of the Pensacola NATB. Addition of NAS Atlanta brings to eight the number of stations included in this command. Others are NAS Pensacola and NAAS Barin Field, Bronson Field, Corry Field, Ellyson Field, Saufley Field and Whiting Field. Activities at the Atlanta station include Instrument Flight Instructors school, Link Instrument Training Instructors school, Control Tower Operators school and Assistant Operations Officers school.

▶ **NAS FORT LAUDERDALE**—Bearing the rating of PhM1c, a bluejacket reported for duty at the dispensary here recently after two years overseas where he had suffered a concussion and a tropical disease. During his evacuation to New Guinea he misplaced his wallet. Since it bore no identification other than a picture of his wife and baby, he had given up hope of ever seeing it again. A few weeks ago the missing wallet turned up in the Red Cross office at Fort Lauderdale. One of his Marine friends had recognized the picture of his wife, and had turned the wallet over to the Red Cross.

ITEMS APPEARING IN SHORE STATIONS MAY BE REPRINTED BY NAVAL AIR STATION NEWSPAPERS

TOKYO TALKS

—TO THE PHILIPPINES

Jose P. Laurel, president of the Philippines, declared in a speech at Manila that his country would "need more young men to carry on the affairs of state with a view to enhancing such relations with Japan as have been formed" by his administration.

—TO OCCUPIED AREAS

Domei reported that Japanese newspapers have been restricted to a maximum of two pages a day. "More articles for foreign consumption are requested."

—TO THE UNITED STATES

A recent broadcast did not reveal what further measures would be taken by the Japanese fleet, but "one thing is now clear. America has lost the war." Success was attributed to a "secret weapon." "All

the Japanese have to do in future operations is to project their indomitable spirits at the enemy and they will suffer internal fear that will defeat them before they get into the fight. The Occidental mind, of course, will not understand this great Oriental power."

—TO JAPAN

A noted Japanese geologist gave a vivid description of the "complete annihilation" of Admiral Halsey's Fleet in a recent broadcast. The commentator reported that "it took 30 minutes for 500,000 tons of American warships and 30,000 American fighting men to reach the bottom of the sea."

—TO OCCUPIED ASIA

A Japanese war correspondent in Berlin was named as first recipient of a Japanese journalism award, because of his reporting of the "shifting European situation," the Japanese Domei agency informed its readers. The young winner of the new Soho newspaper award was complimented on his ability to keep the Japanese people well informed at all times and his contribution to their fighting spirit.

—TO JAPAN

Tobacco, state monopoly and rich source of government revenue, will be rationed. The cause is a "shortage of raw materials, lack of factory workers, difficulty in transportation, necessity of rationing, increased smoking due to limitation of sweets and other luxuries, and wasting of time by war workers standing in line to buy tobacco."

—TO OCCUPIED MANCHURIA

Guards assigned to protect Japanese war factories in Mukden province, some of which were recent targets for American Superfortresses, are due for a special treat. The Japanese radio said that "comfort-encouraging" groups of women were scheduled to begin a tour of the "production bases" in the Mukden area to distribute tobacco to the guards and "entertain them with plays, music and comic monologues."

—TO THE PHILIPPINES

Lieut. Gen. Masaharu Homma, commander of the Japanese forces that took over the Philippines two years ago, sent a message of "heartfelt sympathy" to the people of the islands because "Americans are again trying to invade your country," the Tokyo radio reported. "We were then forced to punish the Americans," the broadcast continued, "who poisoned East Asia by establishing headquarters in your land, and now the same Americans are again trying to invade your country, this time not only to fight Japan, but also to do harm against you Filipinos."

—TO JAPAN

The Japanese War Ministry promulgated an order officially lowering the age for army conscription to 17 years, Domei stated. Since, according to Japanese reckoning, a child is one year old at birth, this means that the Japanese have lowered the conscription age to 16 years. Before youths of 16 served as Japanese reservists.

SHOW ME THE WAY TO GO HOME



Scouting Search

A task force is under way with sealed orders. Just before dawn the planes are ordered to scout the area. At 0600 you depart to scout out 145 miles from the ship and return, always maintaining a bearing of 282° from the ship, which is on Cus 214°, speed 20 k. TAS 132 k, Var. 9° E, Alt. 3,000', T+6°. Wind is 22 k from 130°.

MH	_____	_____
DRM	_____	_____
SRM	_____	_____
Cus	_____	_____
GS	_____	_____
Min. on leg	_____	_____

At 1742 aircraft flew over a life raft. What is its bearing and distance from the ship?

Bearing	_____
Distance	_____

(Answers on page 48)



AIR-SEA RESCUE

Naval air-sea rescue equipment developed by BuAer incorporates lessons learned in the Pacific war. New techniques are designed for carrier based rescues

Carrier Aircraft Rig Out For Rescues



SAVING pilots and aircrewmembers downed at sea is the sole purpose behind every phase of the Navy's air-sea rescue program. Methods and equipment developed in the laboratory of Pacific war were demonstrated recently off the New Jersey coast in an air-sea rescue show staged by BuAer.

Every item of survival equipment exhibited and virtually every air-sea rescue technique tested there were the results of demonstrated fleet needs. Since Coral Sea and Midway naval fliers have continuously operated over ocean areas within the enemy's perimeter, frequently beyond reach of friendly rescue aircraft and miles away from their own bases.

IN SUCH areas it is BuAer's aim to make carrier striking forces self-sufficient in air-sea rescue. Droppable equipment designed for stowage in operational type carrier based planes now is becoming available to the fleet. Three different types of carrier based planes were demonstrated at sea under conditions simulating combat.

Largest, and at this time most important of these rescue assemblies, is the AR-10. It consists of five individual containers connected in train with 240 yds. of buoyant line all rigged for stowing in an *Avenger's* bomb bay. AR-10 units are selected to provide equipment most frequently required by naval personnel downed at sea. Largest unit is the raft. A 9.7 hp. outboard motor together with enough gasoline for approximately 7 hrs. continuous operation are dropped in two other units. More boat than raft, this motor-propelled unit can speed survivors away from hostile shores.

Air-sea rescue assemblies are designed for each type of carrier based plane. *Helldivers* carry a three-piece AR-4 assembly. Now in an experimental stage, an AR-1

assembly of two units is designed for *Hellcats*. These two assemblies differ from the AR-10 in size and absence of motor propulsion units. All air-sea rescue assemblies include basic survival gear to meet the physical needs of the downed airman.

Survival gear today is different in composition from that of a year ago. Water, not food, is the first essential of survival for men forced down at sea. Life raft survivors in 1944 and 1945 will have four sources of water available: distilled water in cans; water chemically prepared in desalting kit; rain water caught and stowed in vinylite bag; and fresh water evaporated from sea water by use of a newly developed solar still.

IN BRIGHT sunlight this solar still can supply fresh water indefinitely for survivors afloat in tropical seas. Simple to operate and easy to stow, the still is capable of turning ordinary sea water into fresh water through an evaporation and distillation process.

Before downed airmen can be rescued they first must be located. Analysis of survivor reports from the Pacific show several devices to be effective for signaling. Green fluorescein dye marker, in a recent study of Pacific survivor reports, was found to have effected rescue in 30 percent of cases studied. Dye marker is effective in daylight aerial searches. Planes flying below 900 ft. altitude are much less likely to notice dye marker on the surface of the water.

A newly developed orange smoke grenade used under average daylight conditions can be seen easily for five miles at 7,500 ft. The new Learned principle mirror, now in new survival kits, has attracted rescue craft from more than 15 miles. Reflector buttons on the back make these mirrors effective in night signaling. Waterproof flashlights, Very's pistols and whistles are effective signaling devices for men in the water. Every signaling device now in use is credited with saving lives of downed airmen in combat areas. Even the smallest droppable air-sea rescue assembly is equipped with all of these signaling devices plus survival gear.

Fliers Are Not Expendable

THE RESCUE of Navy fliers forced down at sea in combat with the enemy or from other causes is a matter which always has been given prime consideration by the Bureau of Aeronautics. Every possible effort is made to provide the fleet with the facilities and equipment to accomplish this objective. When equipment is outmoded and better rescue equipment is obtainable, the latter promptly is supplied.

Every flier is provided with the latest and best equipment available such as life rafts, emergency rations, and water mak-

ing devices to help him survive if he is forced down at sea. He is also provided with the latest and best signaling device to aid his rescuers in locating him. Further, special squadrons have been organized and specially equipped whose sole purpose is to locate and rescue fliers who fail to return from their missions when expected. These squadrons have no other duties but sea rescue.

Our fliers know when they take off on their various missions that we want them back and that every possible effort will be made to bring them back should they for any reason fail to return when expected.

We have been extremely and increasingly successful in this important operation and this fact has contributed tremendously to the excellent morale of our pilots and air crews.

There will be no relaxation in our efforts in this respect. Neither will we in any way curb our work in the research and development of new and improved rescue equipment.

We want our fliers back. They are not expendable!

DeWitt C. Ramsey
Rear Admiral USN
Chief, Bureau of Aeronautics

WATER JUMP



Seated well back in the sling preparatory to dunking, this parachutist is carrying out approved procedure. The jump, made into Atlantic off New Jersey coast during air-sea rescue demonstration, was one of 73 water jumps made into ocean during recent equipment tests

SIX JUMPS from a Navy blimp during the air-sea rescue show were part of a series of 73 made during extensive BuAer tests of parachute water landings. This investigation was initiated to test present procedure with standard and experimental gear under varying conditions. Jumps were from altitudes of 2,000 ft. with surface winds up to 25k.

All jumpers were immediately and thoroughly briefed concerning experiences and performances of equipment. By inflating the life jacket and remaining calm, jumpers found they could extricate themselves in dangerous situations. In all cases testers used approved jump techniques.

Parachute equipment will operate under adverse conditions with greater safety than previously was assumed. These test findings, which will be published in detail later, instill greater confidence in use of parachute equipment.



Jumper has loosened his harness chest snap, inflated his Mae West, and deflates canopy by pulling in a few shroud lines



His Mae West inflated, jumper slips out of harness and is working upwind to keep gear between himself and parachute



Jumper boards life raft from small stern end after making all gear fast to the forward and larger end of the inflated raft

RESCUE



Shipwreck kits, pneumatic raft, outboard motor and fuel, in that order and properly rigged, fit snugly into Avenger bomb bay. An AR-10 assembly is dropped from 100 ft. elevation to survivors in sea below. Rescue units are connected by floating line

AR-10 DESIGNED for release from bomb bay type aircraft, the AR-10 rescue assembly provides a pneumatic raft and survival equipment for 10 men. A rubber boat, sail, outboard motor, fuel and two shipwreck kits make up AR-10.

Linked together by a floating line, these units are released from rescue plane's bomb bay in a train 240 yds. long. A pilot or aircrewman in the water, on reaching any portion of the assembly, can quickly haul in the other four.

An AR-10 assembly is designed for dropping from 100 ft. at an indicated air speed of 80 to 90 k. When bomb release is depressed rescue assembly drops in the following order: shipwreck kits, life boat, motor, fuel. Of these units the life boat should be dropped nearest men in the water. An accurate release will permit survivors to reach the boat in a minimum amount of time with a minimum amount of effort. Once reached, an AR-10 boat can quickly be broken out and inflated. Aboard the boat survivors can pull in remaining assembly units. Any one of the AR-10 units dropped will support an injured or exhausted man in the water.

Technique in releasing an AR-10 assembly is highly important. For survivors in water without a raft, the assembly should be released quartering the wind on the upwind side in order to drift toward survivors. When survivors are already in a life raft, the units are dropped quartering the wind on down-wind side. Survivor's raft then will drift toward the floating AR-10 assembly.

In the water and assembled, the AR-10 rescue assembly is a motor- and sail-propelled craft with 60 survival aids.



Green fluorescein dye marks where floating survivors hopefully wait for searching Avenger pilot to sight them. Dye marker is best seen above 900 ft. Dye marker signals accounted for approximately 30 percent of all air-sea rescue cases analyzed



Avenger sweeps low as it releases AR-10 rescue assembly to survivors in water. Two shipwreck kits and raft, in that order, already have dropped from bomb bay. An outboard motor and fuel will follow. Entire assembly train is 280 yds. long



Plane drops life raft near survivors. Injured or exhausted men can cling to any one of the five containers and be hauled into raft. Life raft has an inflated floor which provides protection against sea water in bilges. Other assembly units are attached



Survivors break life raft out of AR-10 assembly unit. Men cling to lines as raft inflates. Unit dropped by *Avenger* is large enough for 10 survivors. Raft is dropped on upwind side of swimmers so that entire assembly unit floats to survivors



Sea anchor is thrown out as survivors ready raft for use. Two men on port side are inflating seats and rubber floor covering bilges, center and aft. Outboard motor, fuel and other AR-10 assembly units are hauled alongside life raft ready for stowing



Outboard motor is quickly set up on wooden mount. Motor can be easily detached and replaced with collapsible rudder for use with sail. Six gallons of 70 octane gasoline and 4½ pints oil are dropped with fuel unit for 9.7 hp. outboard motor



Motor aids survivors in getting away from enemy shores. Fuel is sufficient for about 50 miles. Mast is stepped and rigged for getting sail aloft. Shipwreck kits contain water, desalting kit, signals, solar still and about 60 other survival aids

RESCUE



Helldiver with AR-4 rescue assembly ready for stowing. The gear is carried on the three internal bomb shackles of an SB2C. The entire AR-4 assembly is rigged in train for dropping and includes one pneumatic 4-man raft and two revised M-594 shipwreck kits

AR-4 CARRIED in the bomb bay of a *Helldiver*, an AR-4 rescue assembly is designed for rescue of three or four-man survivor groups. Like the AR-10, this assembly is dropped in train with individual units connected by lengths of floating line. Three units make up the assembly. Procedure for release is similar to that used with the AR-10 rescue assembly.

This four-man raft contains oars, hand pump, fishing kit,

compass, smoke grenade clamp, signaling mirror, jackknife, whistle, bailing sponge, fish spear, raft repair kit, leak plugs, sea anchor and one hammock bed. Two revised M-594 shipwreck kits dropped with the assembly contain additional survival gear and signaling devices. Smoke grenades used in the photograph on this page are highly effective in attracting searching planes. Shipwreck kits include those items that rescue reports from combat areas list as most necessary. The raft is an Mk. 4, type D.



Smoke grenade is actuated in water to attract search plane. Vivid orange-yellow smoke from Mk. 1 grenade easily is seen



Five-minutes after reaching AR-4 assembly dropped by SB2C, two of the survivors have inflated raft and hauled in kits

SMALLEST of the Navy's new air-sea rescue assemblies, the AR-1 is designed for dropping to individual survivors. Now in an experimental stage, the AR-1 is designed primarily for use with fighter planes. The experimental assembly consisted of two units, a pararaft with paddles and other regular equipment and one container holding essential survival gear items. Experiments conducted by BuAer proved it was impractical to drop any assembly in train by hand. Cockpit stowage, while feasible, is not desirable because of the potential threat of items going adrift during violent maneuvers and shifting around the plane interior.

AR-1

A downed pilot can't set up housekeeping with an AR-1 rescue assembly, but he can survive a lot longer with it than he could floating around in his Mae West. By using his AR-1 rescue equipment properly, a lone survivor can remain alive and afloat until he is picked up by surface craft or *Dumbo*.

Original procedure in release of the AR-1 experimental assembly called for the *Hellcat* pilot to fly low over the survivor at approximately 50 to 100 ft. altitude at 80 to 90 knots speed with full flaps. Original experimental units stowed in the cockpit were dropped by hand. BuAer now is modifying the AR-1 design to hang the unit on bomb toggles under the *Hellcat's* wing. Release is made upwind of the survivor in Mae West so that rescue assembly will float toward, rather than away from, the man in the water.

THE FINAL AR-1 assembly will include a sea anchor, bailing, sponge, hand paddles, raft repair kit, dye marker, one can of water and leak plugs. Equipment contained in the final AR-1 assembly will include three dye markers, one signal mirror, one whistle, one desalting kit, one can of water, two smoke signals, one can of rations, one projector kit, one single cell, waterproof flashlight, one water storage bag, and 25 ft. of 75 pound test line.

Proper use of equipment dropped is essential if the survivor is to make the most of his opportunities for rescue. In an accompanying photograph the survivor has removed his shoe; this is faulty procedure. Proper use of signaling devices has everything to do with whether or not a survivor is picked up at sea. Mirror signals, as shown in photograph, can be seen 15 miles away. Dye markers, smoke grenades, whistles, Very's pistols, and flashlights are effective.



Survivor prepares to signal with Learned type mirror. Signals can be seen 15 miles away. Reflector buttons are used at night



Hellcat rescue pilot releases first unit of original experimental AR-1 assembly from 50 to 100 ft. Assembly was stowed in cockpit



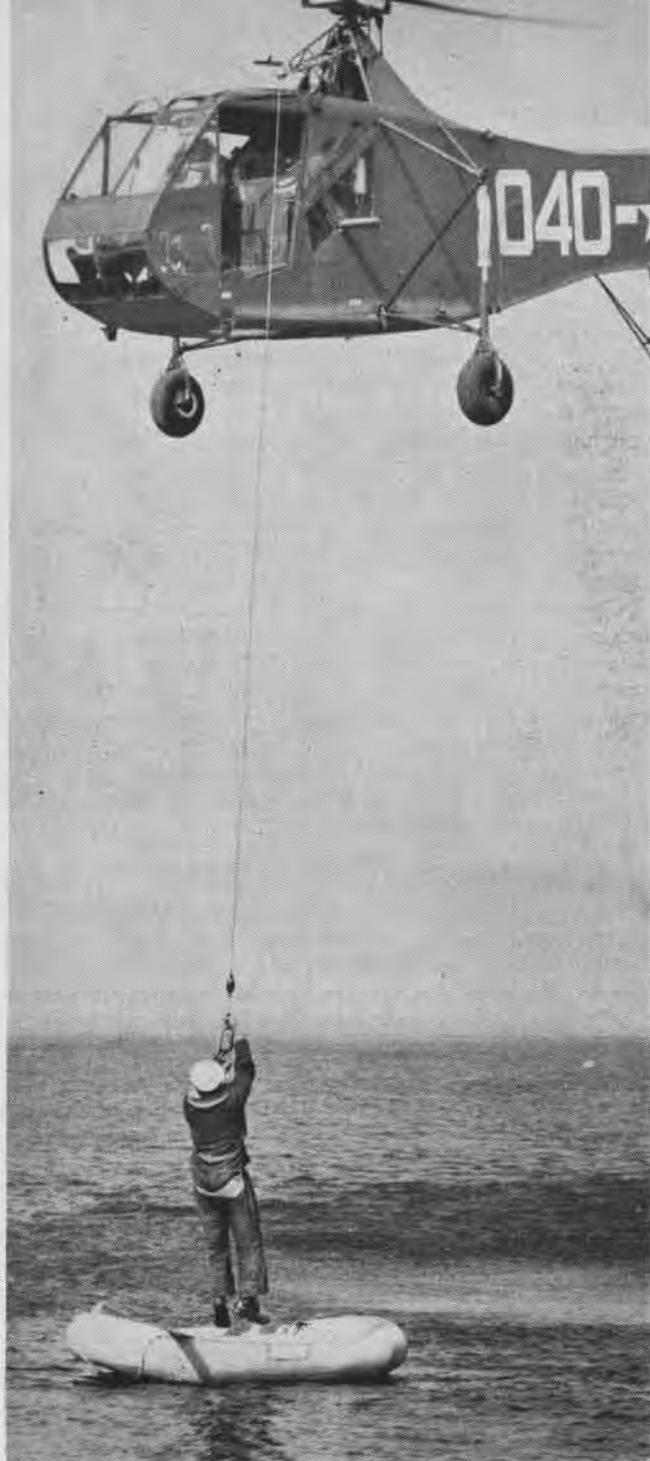
Aboard inflated raft, survivor opens balance of AR-1 gear dropped on *Hellcat's* second pass. Survivor should keep shoes on

RESCUE



Injured survivor riding in basket-like kapok rescue ring is hauled aboard blimp. Ballast bag by raft holds 600 lbs. of water

LTA LIGHTER-THAN-AIR rescue demonstrations carried out off the Jersey coast demonstrated equipment and methods developed in coastal operations. Two survivors, simulating injuries, were rescued by a Lakehurst based κ type blimp. Descending to approximately 200 ft. directly over the floating survivors, the blimp lowered a canvas ballast bag. Held in position by this sea-anchor, the blimp lowers a crewman in a kapok rescue ring to assist in picking up injured survivors. Directly below the ring, on the same line, is an inflated rubber raft. The crewman swims to the injured men and assists them into the raft. One at a time the injured are then assisted into the rescue ring and hoisted aboard the blimp. With the rescue completed, the crewman climbs aboard the ring and is hauled aboard. The ballast bag then is released or cut away.



Helicopter hovers over survivor as hydraulic hoist hauls downed airmen aboard. Life jacket is rigged for hoist attachment

HNS SOMETHING entirely new in air-sea rescue equipment and technique is the Coast Guard's HNS HELICOPTER demonstrated over Atlantic waters off Manasquan, New Jersey. Experimental to the extent that helicopters now are not used in actual air-sea rescue work, the aircraft is receiving extensive tests. Equipped with a rescue hoist, the Coast Guard helicopter hovers over survivors in raft or water and lowers a line. The line is snapped into rescue harness incorporated in the survivor's life jacket. A hydraulic hoist aboard the helicopter quickly hauls the survivor up and aboard the hovering plane. Even badly injured men can be hauled aboard. Reversing the process and using the same equipment, survivors can be lowered to the deck of a surface craft. Experimental helicopter rescue testing as demonstrated by the Coast Guard is continuing.

NEW GEAR



PARARAFT

MODEL PK-1 WILL REPLACE PRESENT BACKPAD KIT AND PARACHUTE RAFT HAS NEEDED SURVIVAL ITEMS



EXPOSURE SUIT

SUIT WILL BE ABOARD ALL MULTI-ENGINE PLANES IN NORTHERN LATITUDE AREAS



SIGNALING KIT

DESIGNED FOR RELEASE TO SURVIVORS IN WATER. KIT IS SIZE 14" X 7" X 7", WEIGHS 8 LBS. (ADS-1)



Inflated

SOLAR STILL

Deflated

Packed



RATION KIT

KIT WEIGHS 14 LBS. IS 15" X 4" X 6" SIZE. DESIGNED FOR RELEASE TO PERSONNEL AFLOAT IN WATER



SHIPWRECK KIT

DROPPED IN TRAIN WITH VARIOUS AIRCRAFT RESCUE ASSEMBLIES CONTAINS SURVIVAL ITEMS (SWK-3)

PILOT SAILS FROM TRUK HARBOR

A NAVY HELLCAT pilot was forced down by engine trouble caused by flak near a strongly defended Jap island base. Ingenious use of his survival equipment saved his life until a rescue plane picked him up. His story follows:

MY ENGINE was kicking and vibrating so badly I was afraid it would come loose from its mount. I turned the ignition switch off and it finally shook itself quiet. At about 500 feet I put my flaps down. The shock of landing wasn't bad at all—not much worse than an arrested landing on a carrier.

The minute the F6F stopped moving, the nose sank down from the weight of the engine. The tail rose up in the air about a 60° angle. I had to stand on the instrument panel and crawl out of the cockpit sideways.

The plane sank in about 30 seconds, but that was plenty of time for me to get out and inflate my Mae West. I wore my parachute, back pack safety kit, and seat pack raft strapped to me throughout. Our squadron had adopted that method of dunking as doctrine, and it proved completely satisfactory in my case.

I got out as far as I could from the fuselage, walking along the trailing edge of the wing up to my waist in water. There were no whirlpools or suction when the plane went down. I unbuckled the chest snap of the parachute harness next, so I'd have more freedom of movement. If I had thought to do this before inflating my Mae West it would have been much easier. Then I unsnapped the leg straps of the harness and pulled the seat pack around to my side so that I could unsnap it from the parachute harness and back pack.

Marine Issue Shoes Not for Swimming

I pulled the raft out, turned it right side up and inflated it. Next I pulled off my Marine issue shoes. They were much too heavy for swimming around in, and as I was in the middle of a Jap-held atoll, I didn't figure that I'd be walking around much. Still wearing my back pack, I crawled up in the raft and sat down. I remembered that I should tie everything to the raft so that it wouldn't drift away, but I found that everything already was tied.

I broke the parachute loose from the canvas raft container and let it drift away. I couldn't see that it would be of any use either. Then I got out those two dinky paddles and began paddling. One of our planes put its flaps down and came in low. I held my thumb up to

show him I was okay. He came by again and dropped dye marker up wind of me. Dye marker always should be dropped down wind of a man in a raft so that he will drift toward it instead of away.

After paddling 45 minutes, I decided I hadn't changed my position appreciably, and the inside of my arms were becoming chafed from rubbing against the raft sides, so I quit. It is practically impossible to get anywhere paddling a one-man raft against even a light wind. The wind was blowing 15 knots and drifting me toward the Jap islands.

I decided to use the rubber cloth that's packed with the raft for a sail. I held one corner of it between my fingers and held my arm up in the air to act as a mast, sitting on the bottom edge of the "sail" and holding the outboard corner between my toes. I used one of the paddles as a rudder and my bony posterior gave some slight indentation to the lower side of a raft as a keel.

Life Rafts Need Keel to Aid Sailing

The sail halted my drift toward the island and gave me a tremendous psychological lift. If the Bureau could design some sort of hard rubber keel or center board on the bottom side of the raft, sailing them might become more feasible. You can't do yourself any good by paddling them.

Once or twice the planes lost me. The water was rather choppy and it is hard to see a raft if there are a lot of white caps. I broke out one of my two dye marker bags and threw part of it in the water, putting the rest back in the rubber sack and sitting on it. The planes soon picked me up and started circling over me again.

The one-man raft is seaworthy but extremely wet. Water washed in and out all the time. The dye I had retained in the sack began to dissolve, turning the water in the raft green—so that every time a wave came in, some of the green water went out. So quite by accident I discovered this perfect way of leaving a trail in the water. Our planes never lost me after that. This trail I left also gave me an idea of the course I was making good.

After several hours adrift, an OS2U, escorted by F4U's, came in sight. I turned the yellow side of my sail up and waved it frantically, throwing the rest of the dye marker in the lagoon. The *Kingfisher* located me on his first pass, made one circle and landed. I crawled in and rode back to the ship in the rear cockpit, with the radioman in my lap.



TECHNICALLY SPEAKING

Moving Dual Projector Trainer

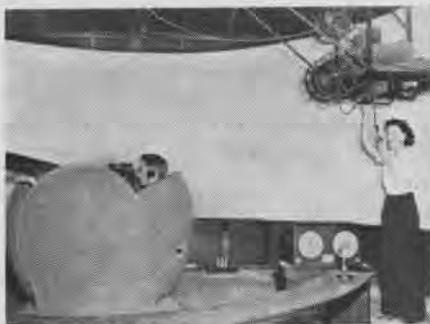
The Moving Dual Projector Trainer, designed to increase effectiveness of the 3-A-2, allows the target plane to move through a full 90° arc.

Developed by an officer at NAS Pensacola, units of Device 3-A-35-a are being built by BuAer's Special Devices Division for use at other air stations.

While providing for true angular motion of the target plane on the screen, the trainer at the same time eliminates the motion of clouds and background produced by panning the camera—the photographic technique necessary to give the effect of a full attack with the standard 3-A-2 mount and screen.

A screen area of seven by nine feet is illuminated, giving the student gunner the effect of watching the attacking fighter through a moving window. The device consists of a circular track for the 3-A-2 projectors that permits them to be swung about a central point so they always are the same distance from a semi-cylindrical screen.

Although suitable for use with the Mk 9 illuminated sight, it especially is



TRAINER INCREASES EFFECTIVENESS OF 3-A-2

recommended for use with the Gun-sight Mk 18. It may be used with various types of turrets to conform with the type of training desired. A limited number of the trainers will be available. Requests should be directed to Chief BuAer, via OP-33D, CNO.

[DESIGNED BY LT. NEWHALL DOUGLAS, USNR]

Tool Helps Align Bars of Compass

NAS SAN DIEGO—A tool to facilitate alignment of magnet bars on a Mk. VIII compass has been developed and used successfully at this activity. The device was designed by an aviation instrument maker under the Navy Em-

ployees' Suggestion Program in effect.

When making repairs on a Mk. VIII compass, it is necessary that magnet bars be parallel and centered with north and south points of the compass



MILLED SIDES OF PLATE FOLLOW BAR CONTOUR

card, prior to assembling the compass. The tool permits ready alignment of the bars in relation to each other and to points on the compass card.

Simple in construction and easy to install, the tool is composed of three principal parts: a non-magnetic aligning plate, a non-magnetic centering plug and the aligning points.

Processes involved in manufacture and use of the tool are:

1. Both sides of the aligning plate are milled out to conform to contour of the magnet bars on the compass card. Centering plug which fits in the center hub of compass card and the aligning points, are mounted on a line central with the milled surfaces. This insures correct alignment of surfaces and points on the tool with the corresponding parts of the compass card



when tool is mounted for checking.

2. Alignment checking begins with mounting of the tool on compass card. Position of north and south points on compass card is observed in relation to aligning points of the tool and necessary adjustments are made. If magnet bars are not parallel or centrally aligned, this is quickly indicated by milled sides of the tool and bars are adjusted accordingly.

Shop tests showed the tool saved three man hours a week and achieved accurate alignment of magnet bars.

[DESIGNED BY VICTOR H. SMALL]

New Rack Facilitates Maintenance

CASU 1-A rack designed to facilitate maintenance of the AN/ARC-1 VHF transceiver has been developed by this activity. The rack permits access to all tuning adjustments and eliminates the necessity for turning equipment on its side during alignment. Servicing man hours thereby are reduced.

The rack may be rotated through 360 degrees clockwise or counter-clockwise. It also can be rotated in the horizontal plane to any desired posi-



PERMITS ACCESS TO ALL TUNING ADJUSTMENTS

tion. Control box of this equipment is mounted on a plate perforated at dynamotor fan end for ventilation. The plate extends over fan opening on left hand side of chassis rear. The extension is perforated and serves as a safety measure, making it impossible for anyone carelessly to place their fingers in the fan blades.

As a permanent part of the assembly, a plug receptacle is mounted in rear of rack in line with the plug on back of the AN/ARC-1 connecting the electrical circuits by merely pushing unit in rack. Two leads supply power.

[DESIGNED BY R. M. OTTENSMEYER, JR USN]

Operating Without Compass Rose

U.S.S. MEMPHIS—Calibration of the aircraft compass in an OS2U airplane aboard this ship is a problem due to



COMPASS IS FIRST INSTALLED ON A TEMPLATE

lack of a compass rose in our operating area. The following method can be used easily by other ships and by advanced bases.

An astro compass received was mounted on a non-magnetic template. This was fastened to the windshield by removing two screws forward and then fastening the aluminum plate underneath. Plane was put on beaching gear and the compass was easily swung. An air almanac and the sun must be available to use this system.

► *BuAer Comment*—The astro compass is now installed in VPB aircraft for use in air swinging and checking deviation on a single heading. If beaching gear does not cause deviations this seems to be an excellent method of ground swinging when a compass rose is not available.

STAG Mounts Test Set and Plant

STAG 1—The engineering department of this command has combined a C-1 portable instrument field test set and Onan electric 115 v AC plant in one unit mounted on a Mk 2 bomb trailer. Not only is it mobile, but in many cases



TASK GROUP COMBINES FIELD SET, POWER UNIT

eliminates necessity of removing instruments from an airplane for shop test.

The bottom frame of the test set is fitted over the trailer bomb supports and permanently tack-welded into place. The electric plant is mounted to the after end of the trailer frame, flush against the bomb supports.

► *BuAer Comment*—Possibility of procur-

ing an instrument test set with a built-in gasoline engine driven generator was at one time considered by the bureau. Design considerations showed, however, that the resultant set would be too heavy and too large for standard use. An experimental model verified these expectations.

It was considered, moreover, that the majority of sets would be used where a source of electrical power was available and that, if it were not available, the supply of the portable auxiliary power plant, stock No. R17-P-7428, would provide a solution.

Current emphasis is being placed on design of a test set which will consist of an assembly of easily portable units for testing individual instruments, e.g. an air-speed tester, remote-indicating compass tester, etc., which may be removed from the test set carrier and taken to various points in an airplane. Test set stock No. R88-T-903-20 is an initial design of this type. The flexibility of this new design permits inclusion of items which are needed by a particular squadron for its aircraft and elimination of those which are not. In general, it is believed that variations of the basic designs furnished by the Bureau are best accomplished by individual service activities to meet their special needs.

Time Saved on Bomb Shackles

U.S.S. ESSEX—Much time and trouble in the latching of Mk 4 Mod 2 and Mod

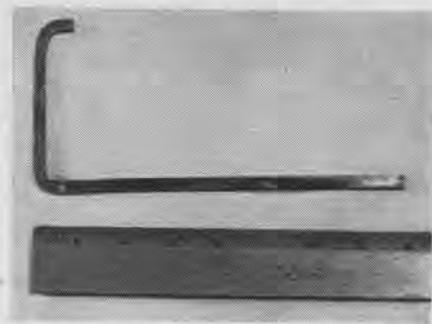


SIMPLIFIES OPERATION IN BOMB BAY OF TBF

3 bomb shackles by hand when suspended in TBF bomb bays, has been saved on this carrier by use of a shackle latching tool. This tool, designed by an aviation ordnanceman, simplifies and



expedites the latching operation. In the past considerable difficulty had been experienced with this operation because of limited amount of space and increased



AVIATION ORDNANCEMAN DESIGNED THIS TOOL

spring tension due to insertion of the connecting link spring.

[DES. BY MALVERN FRAZIER JONES, AOM2C, USN]

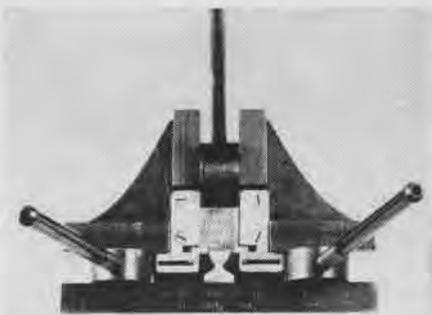
► *BuAer Comment*—This looks like a good idea worthy of dissemination to other aviation activities.

Clip Machine Saves Much Time

NAS ALAMEDA—All naval air stations use sizable quantities of small clips, brackets and clamps of all shapes. Economic considerations make procurement of clip making machines undesirable while purchase of clips on the open market is difficult. Manufacturing lots for these articles vary in quantity from 50 to 1,000 parts, which makes tooling up unwarranted.

In the past the practice has been to use squeeze blocks or hand forming devices to make these parts. Manufacture of these blocks involved considerable time and expense. Problems involved in securing skilled help to operate these blocks were appreciable.

Observing these conditions, a civilian employee in the A & R department here devised the idea of making a machine



FULFILLS ALL CLIP MANUFACTURING STANDARDS

capable of fulfilling all clip manufacturing requirements of this activity. Adjustment of this machine to accommodate various types of clips is made by changing inserts. Now there are 15 or more inserts for this machine.

This tool is portable, easily changed from one job to another, and may be clamped in a bench vise when desired. Forming dies are actuated with and by

SCREEN NEWS

three manually operated cams.

Greatest asset of this machine, which was developed under the Navy's beneficial suggestion program, is its adaptability to short run orders. In addition considerable savings in time and tooling costs have been realized since adoption of this device.

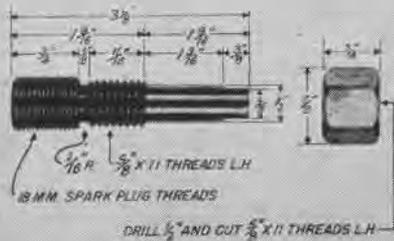
[DESIGNED BY ERNEST E. LYNCH]

Tool Drives Spark Plug Bushings

CASU-20—A spark plug bushing driver which requires neither cylinder heating nor removal has been designed and manufactured by a machinist at this activity. On several occasions spark plug seizures have occurred with consequent loosening of bushings, particularly in P. & W. R-2800 aircraft engines. It is believed the new driver answers a great need in the field, particularly where A&R facilities are limited.

In use, a driver nut is screwed partly on the body, body is clamped in a vise, a copper washer next is put on, then a spark plug bushing is screwed on the 18 mm. threaded end of the body. Driver nut is then brought up tightly against the washer and bushing face, locking it in place.

Exterior bushing threads are coated



DRIVER NUT AND WASHER SECURE THE BUSHING

with litharge and glycerine and by using a 3/8" spark plug socket wrench the bushing can be installed. After installation, driver lock nut is loosened and the driver removed from cylinder.

In manufacture of this driver the hexagon driver nut must not be larger than 3/8" because a larger nut would require larger socket wrenches which would interfere with the cooling fins on cylinder heads of late model engines.

There are several advantages to this design of driver. It is easy to manufacture, does not expand the bushing during installation and due to the difference in pitch of left- and right-hand threads the driver tends to be more firmly locked as friction increases.

[DESIGNED BY MACHINIST ALONZO F. GUYMON]

► **BuAer Comment**—The designer of the spark plug bushing driver is commended on his ingenuity in developing this tool. The bureau is interested in locally developed ideas and it appreciates the idea.

Water fall. Parachuting to dry land has its difficulties, but when the trip ends in the drink, formalities to be observed for survival become even more exacting. The technique is presented in:

MA-4583 *Parachuting Into Water* (Restricted—20 min.)

DEMONSTRATED: methods of jumping without removing parts of the plane in the process, body position on the way down, getting ready for landing, avoiding entangling alliances with gear after hitting water, inflating jacket and raft, using parachute as a sail, giving colorful publicity to the landing by use of sea-marker dye.

It's an Army film and jumps shown are made from the aft hatch of a B-24, but the doctrine is the same for Navy from the jump-off on.

Safety first and last. In the observance of safety precautions, hindsight is always sorry, frequently fatal. A notably common-sensical plea for more foresight to reduce accidents ashore is made in:

MN-1921b *Safety in Air Stations* (Unclassified—14 min.)

Need for the film is highlighted by grisly facts: a fatal casualty occurs every 20 minutes and accidents short of death give a continuous performance of carelessness in action.

SYNOPSIS: two sailors visiting accident victims in a dispensary get from each a different story with a similar point—thoughtlessness leads to grief. Newcomers are shown being instructed in use of machines, cautioned on smoking rules, taught to wear tight clothes, goggles, caps, no jewelry.

Most telling sequence: oil on wing of a plane spells blackout for George Hansen, whose one slip takes him out of the game—for good.

Holcat Radio. Recently released for fleet and shore activities:

MN-3717a *Operation of Electronic Equipment in Aircraft—Operation of F6F Radio Communication Equipment* (Shore version—restricted—20 min.)

MN-3717b *Operation of Electronic Equipment in Aircraft—Operation of F6F Radio Communication Equipment* (Fleet version—restricted—20 min.)

COVERED: use of electronic equipment; operation of radio range and navigation receivers and transmitters; importance of pre-flight checks.

Not quite dead. Certain recognition films may be declared obsolete from time to time because of a discarded system or method, but some life may remain in the form of still usable individual shots. These can be weeded out by careful splicing and used for quizzes or in other aspects of "Spot 'em before you pot 'em" practice.

Place in the sun. Film screenings run into great handicaps 1. in locations where indoor spaces cannot be darkened sufficiently, and

2. in tropical areas where intense heat makes indoor showings almost unbearable.

More and more films, however, are now seeing the light of day with increased use of translucent rear projection screens, which make showings possible in outdoor locations as well as in undarkened indoor spaces.

Working plans for building a cabinet to house a rear projection set-up may be obtained from CNO (OP-33-J9), Washington 25, D.C.

Shipped. CONFIDENTIAL MOTION PICTURES:

MN-151f *Carrier Operations—Field Carrier Landings*
 MN-2741 *AN/APS-4 Interpretation*
 MN-2867c *Radex—Fire Control Radar Equipment, Mark 3 and 4, Part I*
 MN-2867d *Radex—Fire Control Radar Equipment, Mark 3 and 4, Part II*

RESTRICTED MOTION PICTURES:

MN-1327a *Flight Characteristics of Service Aircraft—the SB2C-1C*
 MB-1432L *Aircraft Recognition—Quizzes #12*
 MB-1432n *Aircraft Recognition—Quizzes #14*
 MA-2286ar *Recognition of Japanese Planes—Nick*
 MA-2286as *Recognition of Japanese Planes—Dinah*
 MA-2286at *Recognition of Japanese Planes—Tojo*
 MA-2286au *Recognition of Japanese Planes—Tony*
 MA-2286av *Recognition of Japanese Planes—Helen*
 MN-2837 *Stowage and Handling of Aircraft Bombs at Naval Air Stations*

RESTRICTED SLIDE FILMS:

SN-3694 *The Navigation Dome*
 SN-2773a-p *Naval Aircraft Radio Series, individual titles as follows:*
 SN-2773a *Introduction to Airborne Communication Equipment*
 b *Radio Equipment in Fighter Airplanes*
 c *Radio Equipment in Torpedo Bombers*
 d *Radio Equipment in Long Range Aircraft*
 e *Radio Equipment in M-Ships*
 f *Operating the ARA*
 g *Operating the ATA*
 h *Operating ARB and RL-7*
 i *Operating the RAX-1*
 j *Operating the ATC*
 k *Calibrating and Pre-Tuning the ATC*
 l *Operating the RL-24C*
 m *Homing with the ARR-2 or the ARR-1 Homing Devices*
 n *Operating the DZ-2*
 o *Aligning and Adjusting the DZ-2*
 p *Operating the ARB as a Direction Finder on LTA*

Where to get 'em. The above films are being distributed to Aviation Film Libraries:

ComAirPac	4th MBDAW
NAB Navy #140	NAS Seattle
ASD Navy #3205	" Alameda
Hedron 3, 4, 10	" San Diego
11, 12, 16, 17	" Norfolk
FAW 7, 15	" Patuxent
NAOTC Jacksonville	" Floyd Bennett
NATB Pensacola	" Quonset
" Corpus Christi	" Atlanta
NATEC Lakehurst	" Clinton
MCAS Cherry Point	" Moffett
" Navy #61	" Navy #115
MarFairWestCoast	" Navy #117

HINTS ON NEW FORM

New Monthly Report of Operating Aircraft Brings in Added Data Required for Naval Aviation Program Adopted by Radford Board

UNDER A NEW reporting system on operating aircraft, drafted by the Radford Board, monthly statements from operating units now are being submitted.

These forms, NavAer 1872, 1873A and 1873B, contain additional information to that formerly received on the *Monthly Report of Operating Time*. Explaining use of the forms is Aviation Circular Letter No. 64-44.

The Radford Board recommends that all operating units be supplied with new aircraft

as rapidly as possible and that the average life of aircraft be limited.

Despite the inauguration of the new system, returns to date have been gratifying. However, further improvement in accuracy and speed in reporting must be obtained. Those units beyond the continental limits have been urged to expedite submission of reports, using airmail.

To aid these units in proper preparation of the new reports, NANews presents on these pages some suggestions in question-answer form.

QUESTIONS & ANSWERS

- 1 Who reports on NavAer 1872?**
Every unit with operating aircraft. Units that have both operating and spare aircraft report all their aircraft.
- 2 Which aircraft are to be covered?**
Only naval aircraft in custody of the reporting unit or detachment. Detachments operating independently report directly to CNO.
- 3 May units having permanent custody of aircraft report those loaned for temporary operations to other units?**
Yes, but loaned aircraft must be reported on a separate form indicating the unit actually operating them. Example: - "Reporting Unit - CASU-7 (Aircraft in Temporary Possession VF-24)."
- 4 When are these reports to be made up?**
As of 2400 local war-time on last day of each month.
- 5 How soon must they be submitted to CNO, Op-31-R?**
Not later than the fifth day of following month and by airmail.
- 6 What is the most convenient order in which to list aircraft?**
In the following subdivisions.
I. (a) Aircraft on hand during entire month (i.e., not gained or lost during month). (Specific Instruction 3, first sentence on form itself).
(b) Aircraft on hand at end of the month from gains during month.

(Specific Instruction 3, second sentence.) (Spare aircraft in subdivisions I (a) and (b) require only information indicated in General Instruction 4).

II. Aircraft on hand at beginning of month but lost during month. (Specific Instruction 4.)

III. Aircraft both gained and subsequently lost during month. List only once. (Specific Instruction 5.) Aircraft transferred and subsequently regained during month are only aircraft listed twice:



once as loss in subdivision II and once as gain in subdivision I (b). Aircraft gained and lost several times during month can be shown most conveniently by listing columns 1 to 10 on a single line and showing the dates of gain and loss in chronological order on successive lines.

- 7 Which aircraft require submittance of operating information (columns 4 to 6 incl., and 3 and 7 when applicable)?**
All aircraft on-hand at end of month, except for "spare" aircraft in possession of CASU's Hedrons, etc.
- 8 When is an "X" inserted in column 3?**
Whenever an aircraft has been subjected to major overhaul, reconditioning, major repair (airframes) at an established overhaul base.
- 9 When is an "X" inserted in column 7?**
Whenever an aircraft in custody of re-

porting unit cannot be put into operating condition within one week. An aircraft in permanent custody of a squadron or situation but temporarily in a repair unit or A&R facility for minor repairs falls in this class provided it will not be flyable within one week from date of report.

10 How are receipts and transfers shown?

Dates of gain (col. 8) or loss (col. 9) must be shown, in addition to the unit



received from or transferred to in column 10. Aircraft both gained and subsequently lost during month (subdivision III of the report)

show both dates on a single line and only the unit transferred to in col. 10.

11 How are recommended strikes handled?

In cases where the reporting unit has authority to recommend a strike, col. 9 will show date of loss, col. 10 will be blank, and cols. 11 to 14 incl. will contain appropriate entries. In cases where the reporting unit does not have this opportunity but is transferring aircraft to an A&R facility, aircraft will be reported as a transfer.

In all such cases, complete information concerning loss factors and date of loss must be submitted to such A&R facilities in the event the aircraft is later recommended for strike by such facilities, which deem action advisable.

NAVAER 1873
CONFIDENTIAL
 (WHEN FILLED IN)

MONTHLY REPORT OF OPERATING AIRCRAFT
 TO BE SUBMITTED BY ALL UNITS HAVING OPERATING AIRCRAFT
 (As of 2400 Local War Time on Last Day of Calendar Month)

AIR MAIL

PAGE _____ OF _____

REPORTING UNIT _____

DATE OF LAST REPORT _____ DATE OF THIS REPORT _____

ORIGINAL TO: CNO—Op. 31 COPIES TO: _____

RECONCILIATION (Aircraft Only)

TOTAL AIRCRAFT ON HAND AT DATE OF LAST REPORT	GAINS SINCE LAST REPORT	TOTAL NUMBER OF AIRCRAFT LISTED BELOW	LOSSES SINCE LAST REPORT	TOTAL AIRCRAFT ON HAND AT DATE OF THIS REPORT

Box: A B C=A+B D E=C-D

(THIS LINE FOR CNO USE ONLY)

AIRCRAFT

(USE ALSO FOR SPARE ENGINES: COLUMNS 1, 2, 7 AND 11)

MODEL	BUREAU SERIAL NUMBER	RECONDITIONED MOS. IN OP. UNIT	Use SINCE NEW OR RE. CONDITIONED ACCUM. FLYING HOURS	FLYING HOURS THIS MONTH	NOT READY	DATE OF—		UNIT RECEIVED FROM OR TRANSFERRED TO—	RECOMMENDED FOR STRIKING	LOSS FACTORS			BUREAU SERIAL NUMBER	INSTALLED ENGINES		
						GAIN	LOSS			I	II	III		ENGINE HOURS SINCE LAST OVERHAUL	RECOMMENDED FOR STRIKING	
																11
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

REFER TO COPY OF THIS FORM WHEN READING ARTICLE



Every unit with operating aircraft must fill out this new form each month so that Chief of Naval Operations can implement its new system, which calls for combat units to have the newest and best aircraft available. By keeping close check on usage and condition of all airplanes, CNO can plan a program of replacement. Activities requiring additional information should contact CNO, Op-31-R.

12 What information is submitted with regard to installed engines?



For all engines which are in aircraft on hand at end of month, the engine bureau number will be shown in col. 15 and engine hours since new or since last engine overhaul in col. 16. Col. 15 is entered in every case where aircraft is recommended for strike. Installed engines are recommended for striking in col. 17 of monthly report.

13 How are spare engines reported?

At the close of the aircraft report, col. 1, 2, also 7 and 11, are used to furnish information on spare engines.

14 Miscellaneous Instructions:

I. Do not leave spaces blank to indicate zero entries. Whenever a space calls for an entry of this kind, insert "O" or "NONE."

II. Reconciliation at the top of the form must be completed on each report submitted, in accordance with instructions on back of form. When a report consists of several pages, recon-

ciliation should be given only on the first page and must include all aircraft in report.

III. The box at the foot of the form ("Engines changed this month") must show "O" or "NONE" if no engines were changed by the reporting unit. When a CASU makes these changes for a squadron, CASU should report them.

IV. All information called for at head of form should be completed. Reporting units must be clearly specified, giving location within U.S. and Navy number beyond the continental limits.

BM2C Develops Wrench for Blimps

NAS MOFFETT FIELD—A boatswain's mate here has developed a turnbuckle wrench for K and L airships under the beneficial suggestion program.

The wrench is made of three parts: 1. A handle of suitable length with provision for receiving the turnbuckle near its operating end; 2. A pin mounted in a wheel, and 3. A pin to hold the wheel in the tool.

In operation, the wheel pin is inserted in turnbuckle, and the handle is rotated until the turnbuckle is brought to rest in the radial recess in the wrench's handle. Pressure is brought to bear on the handle of the wrench, and the turnbuckle then is tightened or loosened as desired. The wrench has two radial recesses for right or left hand turning. All sizes of turnbuckles are accommodated with only five different wrenches.

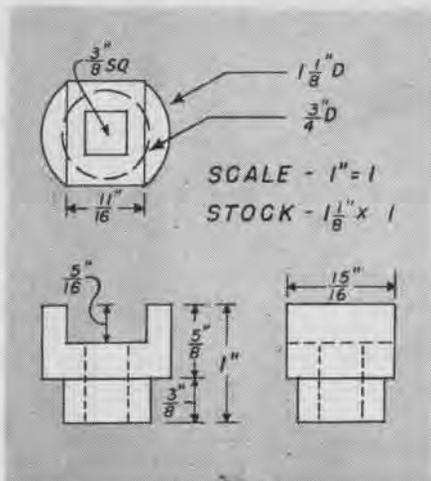
Use of this tool saves about 40 percent of the time formerly required for this operation.

[DEVELOPED BY MILTON F. CARRIS, BM2C]

Socket Aids in Removal of Strainer

ZR-24—A machinist's mate with this squadron has devised a socket which facilitates removal of finger strainers from Bendix-Stromberg NA-Y9E-1 carburetors, an operation which had proved troublesome for many months. The socket is simple to make and use.

[DEvised BY ANTHONY COZZOLINO, AMM3C]



SOCKET HELPS REMOVE CARBURETOR STRAINER

► **BuAer Comment**—This tool is simple in design and can be made easily by stations requiring it. The inventor is to be commended for his interest in designing it.

Method of Riveting With Rubber

NAMC PHILADELPHIA—A method of riveting with rubber has been developed here under the beneficial suggestion program. The suggestion substitutes machine power for hand power in riveting operations on base assemblies.

Prior to submission of the suggestion,

it was the practice to draw up the assembly by hand rivet set before riveting. Under the new method this tightening and riveting are accomplished at the same time.

The rubber piece is cemented to the rivet set and in operation serves to compress two flat pieces together in preparation for the riveting operation, which is performed in the same movement. This method can be used on almost all riveting machines.

It is estimated that 833 man-hours will be saved under this system on a schedule of 2,500 parts.

[DEVELOPED BY CHARLES W. SILBERT]

Heliarc Weld Saves Vital Metals

NAS MOFFETT FIELD—By using the new helium (Heliarc) welding process, the A&R department at this station re-



MOFFETT FIELD SALVAGES MANY ENGINE PARTS

pairs many magnesium alloy engine parts which would otherwise have been scrapped. Heliarc welding also has proved successful for stainless steel, brass, inconel, monel metal and some of the carbon steel alloys.

Five pieces of equipment are necessary: arc welding machine, oxygen flow meter, helium regulator, helium gas cylinder and a special Heliarc torch easily obtained from several welding equipment distributors.

Other activities can secure from this station a detailed Local Process Specification, Moffett Field No. 14 on Heliarc welding which has been prepared here for that purpose.

Experimental work now is being done to expand this type of welding to aluminum and carbon steel alloys.

► **BuAer Comment**—Through use of the Heliarc welding process maximum strength joints having exceptionally good corrosion resistance may be produced. In weld-

ing with the Heliarc torch the helium valve is opened prior to the striking of the arc between the tungsten and magnesium alloy. The arc is struck by a light brushing action and quickly drawn back from the metal. As soon as the metal becomes molten under the arc, the filler rod is advanced to the arc which rapidly bites off small pieces of the rod.

If preferred, the rod may be pushed into the molten pool under the arc and withdrawn similar to the technique involved in gas welding. The filler rod should be advanced while at an angle of not less than 60° to the tungsten and preferably when rod and tungsten are at an angle of nearly 90° to each other. When welding thicknesses greater than 1/8", multi-pass welds normally are used. Good single-pass butt welds have been made on plates up to 5/16" thick using a 1/4" tungsten electrode, but the narrow melting range of the magnesium alloys makes the effect of traverse speed and current so critical at these thicknesses that it is not recommended.

It is very important that the filler rod be of the same composition as the original base metal being welded, and, as in the case of all types of welding, too much emphasis cannot be placed on welding thoroughly clean surfaces.

Jig Trims Grease Retainer Cups

NAS PENSACOLA—A time-saving jig for trimming ragged ends of grease retainer cups has been designed here by an aviation metalsmith under the beneficial suggestion program in operation.



JIG OPERATION REDUCES JOB TIME 80 PERCENT

The jig consists of a long flat strip of metal, a band clamp partially welded to the flat strip in the center and two clips welded to the face of the flat strip at each end. In operation, the grease cup is inserted in the spring holder and hand pressure is applied to the end of spring to hold retainer securely. The clips are fitted over the table guide, thus bringing into contact the back face of the flat strip and the side of table guide nearest saw. When the jig is mounted properly, the whole unit is

POWER PLANTS

pushed along, the can being fed into the saw.

Tests show 300 grease retainers can be trimmed by the jig in 1½ hrs.; it took 8 hrs. by the old method.

[DESIGNED BY JOEL C. HASKINS, AMIC]

Airplane Turntable Is Available

The Bureau of Aeronautics is considering the procurement of a quantity of portable aircraft turntables for use at naval air stations. Of particular use for multi-engined aircraft, the portable turntable supplies a rotating surface plate upon which airplanes may make locked-wheel turns without loss of tire rubber, excessive torsional strains on landing gear or injury to airfields.

The turntable consists of a cast steel base plate, with a rotating top plate resting on a continuous set of ball



B-17 WHEEL RESTS ON PORTABLE TURNTABLE

bearings. It comes in two sizes, one for single-wheel weights up to 20 tons and a larger size for single-wheel weights up to 40 tons. The small turntable is 2' high by 65" in overall diameter, with a rotating plate 52" in diameter. It weighs 1100 lbs. net and has a shipping weight of approximately 1140 lbs. The larger size is 3¼' high by 94" in overall diameter with a rotating plate 70" in diameter. It weighs 2425 lbs. net. Shipping weight is approximately 2500 lbs.

The turntable needs no special foundation other than the usual flat, hard surface commonly found on airport taxiways, loading ramps and hangar floors. The weight of the turntable holds it in place. It is designed for use at such places as clover leaf off runways, terminal ramps, and in A&R shops.

Several of the turntables are in use at naval air stations. The two types of turntables described may be obtained by forwarding a requisition or letter to BuAer justifying the need for request.

Whenever the PB4Y-1 engine operating limits situation appears to quiet down, it's high time to get set for the next blow. Because it is fundamentally an "off-the-shelf" plane, the PB4Y-1 has never been through the complete obstacle course of cooling surveys and other Navy tests designed to wring the surprises out of airplanes before they go into service.

In April 1944, BuAer issued PB4Y-1 Bulletin No. 49 to settle the question of what manifold pressure limits and power control methods are recommended. For an airplane manufactured under Navy contract, a situation like this would be remedied by revising the pilot's handbook.

For "off-the-shelf" airplanes, however, the handbooks are not subject to direct revision by BuAer, and because of certain basic differences in policy, and because Wright Field is rather remote from Washington, such handbooks frequently contain instructions with which BuAer is not prepared to agree wholeheartedly. Such differences usually are eliminated later, but not without considerable delay. To correct serious errors, or to warn against practices which BuAer considers unsafe or questionable, bulletins are issued immediately.

There are two recommendations in the current PB4Y-1 (and RY-1, -2) Pilot's Flight Operating Instructions with which BuAer is strongly at odds. One is a recommendation for use of "War Emergency Power" when taking off with heavy loads. Recommended power setting is 56" manifold pressure and 2,700 rpm.

This instruction is obscurely located on the take-off chart in all except the RY handbook, in which it appears on the Specific Engine Flight Chart. It is easy to overlook in the PB4Y-1 handbooks. This happened.

Limit Take-offs to 49" and 2,700 rpm's

Before sounding off in a bulletin, BuAer has requested reports of the test on which the rating was based. Meanwhile, the attention of pilots is invited to the fact that the rating never has been approved by the engine manufacturer, and that BuAer considers it excessive and views with alarm its probable effect on an engine. It is strongly recommended that pilots avoid taking off at more than 49" and 2,700 rpm. When genuine and unforeseen emergencies come along, the rules may have to be relaxed a bit, but this does not justify engine abuse brought on by deliberate "emergencies" that could be avoided.

The other recommendation to which BuAer takes exception is that head temperatures of 270°C (instead of 260°C) at normal rated and higher powers, and head temperatures of 248°C (instead of 232°C) at maximum cruising power are allowable in PB4Y-1's corresponding to B24-G, -H, or -J models. The higher figures appear in the August 15 revision of the Pilot's Flight Operating Instructions for these airplanes. BuAer intends to get out a bulletin on this situation as soon as a temper-

ature survey has been completed. Until that time, it is recommended that every effort be made to keep head temperatures below the lower limits.

There is an interesting story behind the sudden jump in head temperatures noticed immediately when B24-J type PB4Y's went into service. Previous models had the front bank thermocouple on No. 5 instead of No. 1 cylinder. No temperature survey having been run by BuAer, it was assumed that No. 5 was the hottest running cylinder.

On B24-J's, however, the thermocouple was moved to No. 1 cylinder, and special baffles were installed on No. 1 and No. 13 cylinders to improve cooling. These baffles proved very unsatisfactory, and it is believed that all have been replaced by standard baffles, either at the modification center, or after some of the early airplanes had gone into service. With the thermocouple relocated on No. 1 cylinder, it also immediately became evident that No. 1 cylinder runs consistently hotter than No. 5—as much as 20°C hotter, in fact.

The situation was aggravated by the change to Ceco carburetors, which at that time had no limit stop at 65° throttle opening. (Mixture distribution is poor at more than 65° throttle opening. This causes some of the cylinders to run rich and some lean.) PB4Y-1 Bulletin 80 describes a fix for carburetors that do not have a built-in stop and should be an aid.

BuAer Suggests Safe Temperature Rules

► Pending completion of the temperature survey, and determination of a fix, the following suggestions are offered for keeping head temperatures down:

1. Be sure that standard baffles (Pratt & Whitney Part Nos. 35976 and 35-977) are installed—not the special baffles (Part Nos. 32P2085 and 32P-2087) previously mentioned.
2. Apply the fix described in PB4Y-1 Bulletin No. 80, if the carburetors do not have built-in throttle stops.
3. Raise the fuel pressure setting to 17-18.5 pounds per square inch, but not until correct throttle stopping has been confirmed by check.
4. Avoid climbing at low air speeds, unless obstacles must be cleared. An impressive reduction in engine trouble has been accomplished by one squadron which adopted the practice of accepting a lower rate of climb in order to get more air speed in climbs. This was done with PB4Y-3's, but the same benefits should be obtained in PB4Y's. Unless you have tried this before, the effect on rate of climb will be less than you think. A moderate increase in air speed (over the speed for maximum rate of climb) does not do much to the rate of climb.
5. Continue to observe the limits recommended in PB4Y-1 Bulletin No. 49, and disregard the startling innovations in limits that are sure to occur.

Safety Catch Prevents Accident

VC-58—During night field carrier practice recently, a bad accident occurred when a pilot with 2,400 hours switched his fuel selector valve to the droppable tank position after running one tank dry.

The plane, a TBF-1, was not carrying a droppable tank at the time, and because of the low altitude, necessitated by field carrier practice, the pilot did not have time to discover and correct his mistake. He presumably thought his fuel selector valve was on LEFT MAIN and he intended to switch to RIGHT MAIN by a clockwise turn. Actually, he was on RIGHT MAIN so that when he turned the selector valve he switched to the droppable tank.

To prevent recurrence of this type of



SAFETY LOCK ON FUEL VALVE BARS ACCIDENTS

accident, the mounting bolt on the starboard side of the lettered plate was removed and a round-head bolt and two small washers installed in its place. This makes it impossible to turn the fuel selector valve to the droppable position at any time.

To prevent the pilot from inadvertently switching to the OFF position while in flight, a safety lock was devised. The lock was made of a brass rod and piece of hacksaw blade. The brass rod was silver-soldered to the hacksaw blade and the ensemble bolted to the mounting plate. The lock is cut off at a 45° angle to permit the red fuel selector valve to pass from OFF to ON only. The safety lock can be depressed by hand to turn the selector valve to the off position.

► *BuAer Comment*—This bolt installation is not recommended for airplanes in operational squadrons, but is satisfactory for airplanes engaged solely in training.

In an operating unit where drop tanks are often used, the stop to prevent shifting to DROP TANK will be left off perma-



FINGER DEPRESSES LOCK TO MOVE FUEL SWITCH

nently. The stop to prevent shifting to OFF position may prevent emergency shift to the OFF position. It is pointed out that installation of the OFF stop should be made as shown in the photograph to permit proper positioning of the valve on center main. Note that stop is located so that valve handle does not come against stop until it is beyond the normal position of the handle. This allows the latitude required for positioning the valve.

Tracing Cloth Used On Microfilm

MCAS CHERRY POINT—The A&R photo laboratory at this station has developed unpublicized uses for the Eastman Kodak Ortho Tracing Cloth VA.

This tracing cloth is a standard material and comes in projection or contact speed, originally for use in the photostat machine. However, due to its transparency it has been used very successfully in processing microfilm where a very high degree of contrast is essential. Translucent Vellum TA paper which is usually used in the processing of microfilm enlargements has not proven satisfactory where the print is a fine line drawing requiring a high degree of contrast or where the original print received is not clear.

In cases where large numbers of copies are required, reproductions can be made on the ozalid, portagraph and blueprint machines with good results.

It is developed in a 1:1 or 1:2 solution of D72 (1:1-30 sec., 1:2-45 sec.). The projection cloth should be developed under a Wratten Series I safelight, and the contact under a Wratten Series OO or OA.

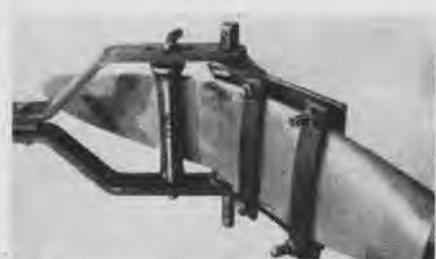
Straightening Clamp Avoids Kinks

NAS SAN DIEGO—A tool for straightening Curtiss steel propeller blades has

been designed by a sheetmetal worker at this activity under the Navy Employees' Suggestion program. The tool eliminates kinks in the blade which resulted when other straightening methods were used, and saves a considerable amount of time.

This tool is essentially a clamping strap suitably shaped and jointed to a lever by which pressure is applied to a section of the blade forcing it to assume its original position. It is first properly mounted and secured on the blade after which straightening begins.

Construction of the tool is simple. A list of parts which comprise it includes a handle, sleeve, nut and bolt, fork assembly, spacer, lever roller, fulcrum roller, pins-roller, plate assembly, bolt-hex, bar and pin-cotter to secure it.



LAST STRAIGHTENING IS DONE WITH MANDRELS

Straightening operations utilizing this tool proceed in the following order:

1. Hub of the blade to be straightened is clamped in a standard fixture supplied by the manufacturer.

2. Plate assembly is clamped in position so fulcrum roller is slightly aft of bend in plate.

3. Lever roller which is adjustable in three positions is placed in position so that it is approximately one or two inches forward of the bend.

4. Sufficient force is applied to handle to straighten blade.

During initial straightening operations it may be necessary to make one or more additional adjustments of the plate assembly and lever roller. Final straightening is accomplished by using various shaped drift mandrels supplied by the manufacturers.

Actual shop tests of the tool prove that 10 to 15 man-hours per blade are saved over previous methods employed. During 2½ months 30 blades were straightened here with this tool.

[DESIGNED BY W. C. BROWN]

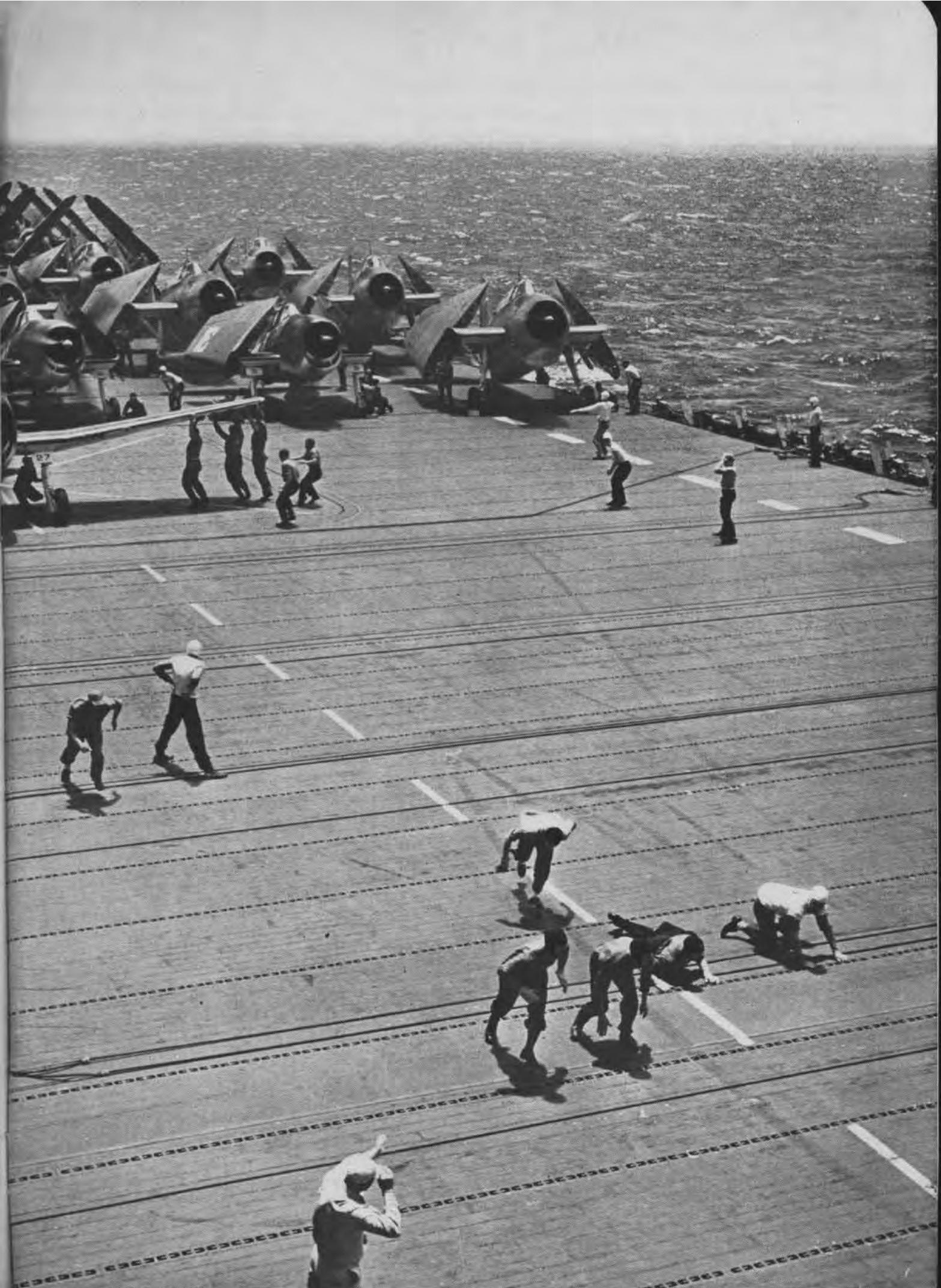
CARRIER DECK SCENE

In the foreground, plane handlers cling to the tiedown cleat-strips aboard the big new combat carrier of the cv class, a unit in Task Force 58. They're steadying themselves from the effects of the slip stream of a fighter

plane that has just taken off. In the background, three more F6F Hellcats, carrying belly gas tanks, are ready to roll down the deck. The remaining planes, TBM's and SB2C's, are warming up. Taxi signal men stand ready. Handlers crouch beside wheel chocks. Fighters need shorter run, take off first. Torpedo planes and dive bombers fol-

low. Note that there are no idlers on deck. Every man has a job to do and does it. Safety among the whirling props and close quarters of the carrier deck require heads-up crewmen who know their duties down to the last detail. Barriers can be seen on deck. A gun gallery appears in background.





ABG-2 Leathernecks Improve Jig

ABG-2—The Ordnance Section, in cooperation with the Machine Shop, designed and manufactured an improved jig for removing and installing the oil buffer spring and guide from 50 caliber Browning aircraft machine guns.

The jig holds the oil buffer in an upright position and the spring may then be compressed by a plate which is operated with a foot pedal. In one month, this group disassembled and reassembled over 2100 oil buffers using this device. All of the parts were parcolubricized before being reassembled. Blueprints will be furnished upon request to the Commanding officer, Air Base Group Two, NAS San Diego.

Jack Pad Facilitates Tire Repairs

CASU 1—A mech with this unit has designed a jack pad which is useful for elevating an SB2C airplane so that a flat tire can be fixed. There is insuffi-



AXLE EXTENSION PERMITS FLAT TIRE REPAIRS

cient height to operate the jack when the tire is flat, so the mech devised an extension pad.

By inserting the jack pad in the axle as shown in the accompanying photograph, there is sufficient height and clearance to operate the jack. The jack pad is recessed on both sides at an angle of about 20° to the center line. These recesses make the jack pad interchangeable, from left to right, and provides a flat working surface for the jack parallel to the ground.

[DESIGNED BY ROBERT M. BRAZKROL, AMM2c]

► **BuAer Comment**—This appears to be a good idea. If desired by any activity servicing SB2C airplanes, it can be manufactured locally without too much labor.

Support Pins Must Be Checked

Maintenance personnel are cautioned to insure that engine work platform support pins on F4U, F3A and FG airplanes do not slip out of their attachment at engine cowl and allow front

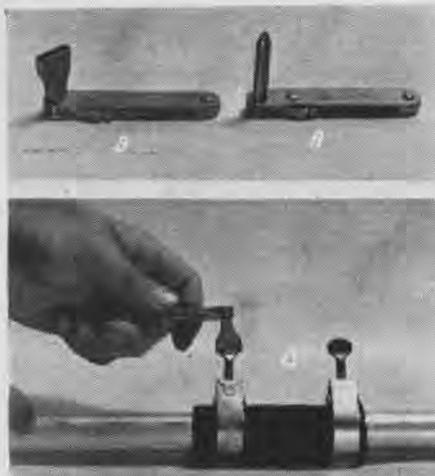
ends of engine work platform to fall.

The front support pin should be pushed into engine cowl opening far enough so that cowl opening cover locks on the pin. Contractors are incorporating decalcomanias on work platforms and on engine cowl near the platform support fittings on model F4U-1 airplanes, serial nos. 57384 and subsequent and on production FG-1 airplanes as follows:

INSERT FRONT SUPPORT PIN OF SERVICE BEAM INTO NOSE COWL UNTIL LOCKED BY COVER.

Wrench Modified To Fit Clamp

NAS-RICHMOND—This station's A&R department has modified a standard wrap-lock wrench to fit hose clamps. The standard wrench, manufactured by Actus Products Corp., is pictured in photograph (A). In photograph (B) the wrench has been modified into a simple ratchet type, designed to fit hose



WRAP-LOCK WRENCH BECOMES RATCHET TYPE

clamps as shown in photograph (C).

Normal hand pressure is below the maximum allowable torque.

Radioman Speeds Battery Service

An aviation radioman of Hedron 11 Detachment found it difficult to check the level of electrolyte in a PBM's batteries and decided to find a way to speed up the inspection. In so doing, he not only made it easier to work on a PBM's batteries, but also provided the means for easier battery service on all other "hard-to-get-at" installations.



GUN DEVICE SIMPLIFIES DIFFICULT OPERATION

The ARM made a gun with a wooden stock and barrel, on the end of which he mounted a mirror and lamp. He then attached a rubber hose to a battery water container, running it through a metal trigger and down the length of the barrel. At the forward end of the gun and extending down from the mirror, he reinforced and guided the rubber with a metal tube. The lamp, energized by the battery under inspection, directs its light downward and the mirror clearly reflects the interior of the cell under inspection.

To use the gun, the operator simply removes the vent cap from each cell and holds or places the water container above the level of the battery. The gun is directed over each cell, in turn, and the level of the electrolyte is noted. If additional water is needed, the trigger is pulled and a stream of water flows into the cell until correct level is attained.

[DESIGNED BY MARK A. BRADY, ARM3C]



ACCURACY OF GUNNERS IS IMPROVED BY ARROW

Bomber Flight Indicator Is Used

An arrow called Bomber Flight Indicator is used by the gunnery school at Pensacola to show the gunner the relationship of his line of flight with the picture on the screen. The arrow, 3½ ft. long and painted white, is attached to the stand of the 3A2 trainer handheld free gun. The arrow can be pointed manually in the direction corresponding to the dead astern position. For training purposes, the line of flight is considered the same as the bomber's fore and aft axis.

The Bomber Flight Indicator increases the accuracy of 3A2 trainer instruction and is an aid to the gunner in his development of correct habits while applying free gunnery principles.

Guide Pins Align Parts, Cut Work

NAS SAN DIEGO—A beneficial suggestion of a mechanic at this station, a set of guide pins for aligning bolt holes, cuts the time required to install engines in F4U-

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

1 and F6F-3 airplanes. The problem of aligning the 12 bolt holes in diaphragm, engine mount and dynafocal fittings is solved by these pins. They are $3\frac{3}{4}$ " long, have an Aero thread on one end and are tapered on the other end for a distance of $1\frac{1}{2}$ ". The tapered portion is flattened to receive a wrench.

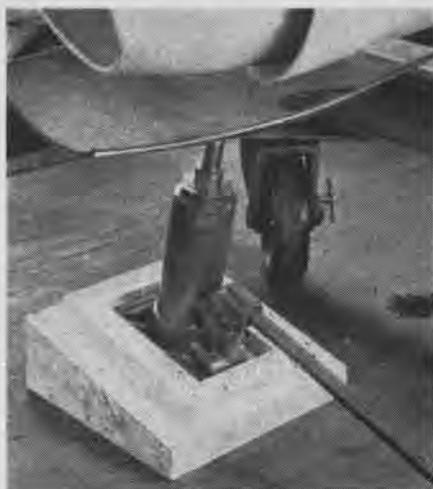
In use, the pins are mounted, one in each boss of the engine mount, and then the diaphragm and engine dynafocal are installed over these studs. With the several parts properly aligned each stud is removed and a mounting bolt inserted in its place.

[DESIGNED BY W. D. BAKER]

Jack Cuts Cost, Reduces Hazard

NAS PENSACOLA—An idea developed under the beneficial suggestion program here has brought about considerable improvement in mounting oil cooler scoops on aircraft.

The installation is facilitated by use



PENSACOLA JACK HELPS WORKER DO JOB SAFELY

of a hydraulic jack with an angular wooden base and a saddle 15 in. wide secured to the top of the jack. The saddle conforms with the shape of the air scoop for the oil cooling system.

[DEVELOPED BY FREDERICK L. EGGLEHOFF]

Wrench Makes Nut Removal Easy

NAS JACKSONVILLE—Removal of nuts from landing gear retracting cylinders on PBO and PV-1 airplanes has been simplified, and damage to cylinders has been minimized here through use of a wrench developed under the beneficial suggestion program.

The wrench has a circular opening to fit over the cylinder head and is provided with a lug having a hole for insertion of a screw that engages the cylinder nut and makes removal a simple operation. In use, the wrench slips over the cylinder head; screw is inserted through the hole in lug and is screwed in the hose connection hole.

[DESIGNED BY CLAUDE H. ISRAEL]

Malfunction of Mark 7 Trigger Control

During a gunnery exercise in a PBM-3D, a runaway gun resulted when the port gun of the deck turret was charged. The gun, for some unknown reason, was pointed toward the tail turret position. Several rounds were fired through the tail turret position, injuring the gunner fatally. Upon investigation it was found that the fire interrupter was functioning clearly and that no current was being supplied to the electric trigger control. It also was found that the electric trigger control adjustment was turned all the way to maximum, thereby holding the flipper at a height great enough to fire the gun mechanically.

If Technical Order No. 11-5-55 is followed closely in making solenoid adjustments, such malfunctions will not occur. Also, *remember and observe*: Never charge a gun when it is pointed in a direction where it possibly will cause a casualty. Guns are designed to kill—the enemy only.

Flash Eliminator MK. 1 for cal .50 Guns

The Flash Eliminator Mk. 1 is designed to decrease the blinding effect created on the gunner's eyes by the flash from a caliber .50 BAM gun. It consists of a conical section and a sleeve that screws on to the muzzle end of the gun barrel in place of the barrel sleeve. This flash eliminator can be used only with barrel assembly (Stock No. 1-B-710) that has the removable sleeve and threaded muzzle end barrel.

The flash eliminator sleeve can be locked to the barrel by means of three brass set screws (the first type using only two), which should be staked in after installation of the sleeve on the gun barrel. This installation should be made with the gun barrel removed from the gun mechanism.



FLASH ELIMINATOR DECREASES BLINDING EFFECT

For more complete details covering the installation of the Flash Eliminator Mk. 1 (Stock No. 1-E-465), see OTI GVI-44.

Machine Guns Will Be Rebuilt for Use

In an effort to utilize the thousands of used caliber .50 machine guns formerly relegated to the scrap pile, BuOrd has adopted a policy of rebuilding such guns and installing them in new aircraft. This policy was not adopted, however, until exhaustive tests had been made indicating

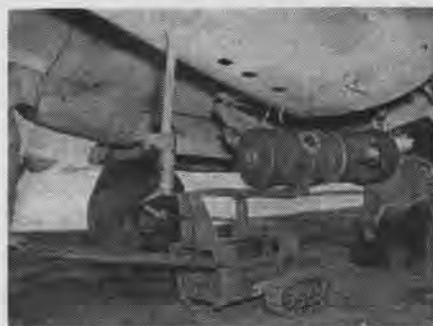
that very few guns actually were worn out and that such a rebuilding program would be highly successful in reconditioning these machine guns. Most important, however, from the standpoint of pilots and aircrewmembers, is the fact that the rebuilt guns will be given a uniform overhaul, will be subjected to rigorous tests and will not be released for general use unless they have been found to be as good as new.

To assure the satisfactory performance of these rebuilt guns, all broken, worn or otherwise questionable parts will be replaced with new parts and the entire gun carefully test-fired. The guns must attain a minimum rate of 750 rpm and develop a belt feed pull of 20 lbs. before they are pronounced qualified for service.

The A&R Department at NAS San Diego is at present the only agency operating under this general program, and it is doing a splendid rebuilding job on all guns turned in for that purpose. The monthly quota at San Diego is expected to reach 2,000 guns. All guns rebuilt and tested there will be marked with an "S.D." on the top of the trunnion block between the trunnion block cover and the right hand side plate to distinguish them from new guns. As the need for rebuilding facilities increases, this program will be placed in effect in other A&R shops set up to follow the procedure set forth in the Overhaul and Inspection Manual now being prepared.

Detachment Designs PV Bomb Lift Truck

The Navy 119 (Land) Detachment of FAW-16 has designed a hydraulically operated lift truck for loading bombs into pv type aircraft. It consists of a bomb skid, Mk. 1 type, onto which a hydraulic jack has been mounted to raise or lower a lift



ORDNANCE UNIT DRAWS PRAISE FOR INGENUITY

arm having a tiltable bomb cradle at one end. This ordnance unit has greatly facilitated its bomb loading operations by its ingenuity in constructing new equipment from available materials.

BuOrd does not intend to furnish this modified skid, inasmuch as the bomb truck, Mk. 6 Mod O (NANews, August 15, 1944) was designed specifically for this purpose and was being made available for distribution in November. However, the design is being passed along for other activities.

PHOTOGRAPHY

New Photo Supply Point Has Been Added

In addition to the photographic supply points mentioned in a recent issue of *NANews*, this new one has been added: Aviation Supply Depot, Navy No. 926. There also are three supply ships now carrying a full line of photographic material. These are:

U.S.S. *Supply* (IX-147)
U.S.S. *Grumum* (IX-174)
U.S.S. *Fortune* (IX-146)

Soon the U.S.S. *Webster* (ARV-2) and the U.S.S. *Chowee* (ARV-1) also will be carrying photographic supplies. As additional supply points are established, information will be given in the prescribed manner. It is suggested that, when possible, photographic officers call on the photographic materiel officer of the supply point in their area to discuss any problems of supply that may arise.

LIFE Photog Praises K-20 Aerial Camera

In the "Fairchild News" magazine *Life* photographer William Vandivert pays a glowing tribute to the K-20 camera. Here are excerpts from his article:

"Most of us *Life* war photographers have used the K-20 aerial camera out in the field. We behold it with covetous eyes; it is the one camera a reporting photographer needs and can't buy privately. So we use them on loan from our armed forces when we can. The procedure is to find an obliging supply officer and put the bite on gently but firmly. . . . But the thing that impressed me was not my professional use of the camera; anyone seemed to be able to use it. Pilots, mechanics and scratch observers who flew with the light planes on reconnaissance missions took good air pictures with a K-20 after only five minutes' instructions on the ground. And the reconnaissance pictures that were made this way saved U.S. lives and killed Japs."

Transparencies for Public Relations Use

At present the principal use of color transparencies in the Navy is for public relations release to the press. It is highly desirable that all releasable color transparencies be forwarded to the Navy Department where they may be placed in file permanently for this purpose.

It is impractical to copy the original in order that it may be returned to the forwarding unit, as the copies are expensive and the results are poor.

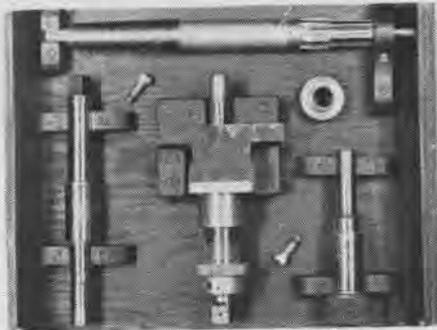
BuAer Assumes Cognizance of Equipment

To centralize responsibility for the procurement, production, distribution and maintenance of all aerial photographic equipment under one bureau, effective November 1, BuAer assumed cognizance of this equipment as outlined in Joint Circular letter BuOrd VII-44, BuAer 103-44 dated October 16, 1944. Hereafter all requests for information on gun cameras, film or assessing equipment must be directed by the sender to the Bureau of Aeronautics.

Fittings Tool Saves Man-hours

NAS JACKSONVILLE—A tool has been designed here to expedite reworking of the Model F4F-4 wing locking fittings by eliminating the necessity of replacing fittings. The latter operation required removal of the skin.

With the aid of this tool, developed under the beneficial suggestion pro-



NEW TOOL ELIMINATES SKIN REMOVAL PROCESS

gram, the fittings may be reworked in approximately one-quarter of the time required by the old replacement method. The tool consists of the following parts: the jig including the bushing, bushing guide and pilot bushing; the alignment bar; the rough boring bar; the smoothing bar, and the reamer.

Rework of the fittings is accomplished as follows:

1. Remove the bracket, Part No. 10214-1, from outer panel, bore $\frac{3}{8}$ " oversize, press in a bushing of the same material and heat treat having an I.D. of .715.
2. Replace the bracket on the panel.
3. Remove the lock assembly, Part No. 10410, from the stub wing and bolt the jig to the fitting, Part No. 10214-2, using four holes existing in the fitting.
4. Line up the jig and bushing using the alignment bar and pilot bushing.
5. Spread the wing, insert the rough boring bar, and bore through. The feed of the boring bar may be controlled by turning bushing guide in the bushing.
6. Bore to blueprint dimensions using smooth boring bar.
7. Clean with reamer, if necessary.

[DESIGNED BY CHARLES S. SINKS]

BuAer Schedules All Overhaul

BuAer Nov. 1 assumed control of scheduling and work load distribution in all continental assembly and repair facilities. Control of work loads at facilities outside the continental limits, including the Alaskan area, will continue to be exercised by cognizant fleet commanders.

Monthly distribution and work load schedules for aircraft and engines will be disseminated by BuAer. Schedules, in a form similar to enclosure (B) of ACL 70-44, will cover a three-months period. Requirements for the first month

will be firm and for the ensuing two months as accurate as information allows, but subject to quantitative revisions, issued primarily for planning.

Schedules should be used by A&H activities for planning equipment, tools, material requirements, shop lay-outs, collection of technical information, familiarization and instruction of personnel. Supply activities are to be guided by the schedules in procurement and distribution of material. Schedules for activities outside continental limits are subject to change by cognizant fleet commanders. Schedules cover only reconditioning and major overhaul of aircraft and engines and in no manner affect distribution of maintenance spare parts. Aircraft overhaul and reconditioning schedules will not include minor and crash repairs or any modifications.

Three Maintenance Offices Open

Detailed instructions for shipment of aircraft and engines requiring overhaul will be issued by BuAer. Airplanes will be turned in to major supply points, designated in the Sept. 10 Joint BuOrd, BuAer, BuSandA circular letter, and from there will be shipped or flown to designated overhaul activities.

BuAer maintenance representative offices (BAMR) have been established at NAS Norfolk, NAS Pensacola, and NAS San Diego. Air stations to be served by these (BAMR) offices are listed in ACL 99-44.

Dolly Cuts Time in Wing Handling

NAS SAN DIEGO—A leadingman joiner here recently won an award in the beneficial suggestion program for designing a wing dolly that can handle both right and left wings.

Prior to construction of the new dolly, it was necessary to use a right wing



DOLLY FITS WING UP TO 17-IN THICKNESS

dolly for right wings and a left wing dolly for left wings. The new dolly fits all types of wings up to 17 inches thick. It is provided with one hinged side that allows easy removal of wing and requires less manpower in handling of wings. The dolly was designed for handling surfaces in a storeroom only.

[DESIGNED BY A. W. MAWHINSKY]

PIX QUIZ WHAT DO YOU KNOW ABOUT RADIO FUNDAMENTALS?

THE EARLY pioneers in radio unquestionably were far-sighted men, but it is doubtful if they could possibly have envisaged the extent to which radio would be used in global warfare. Naval aviators realize and appreciate radio's value. See quiz answers on page 48.

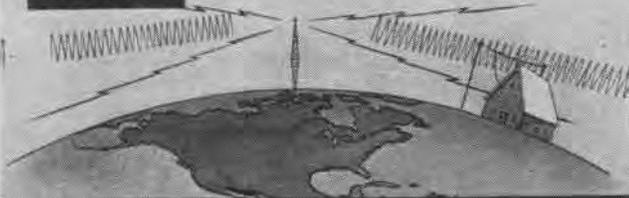
[QUESTIONS FROM BUAEER SPECIAL DEVICES VISUAL QUIZZER FILM No. 26, AVIATION TECHNICIAN, RADTOMAN]

Write answers here

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



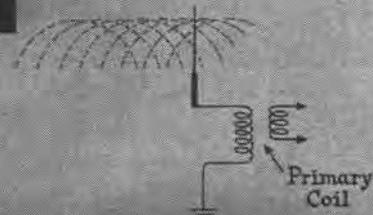
Question 1



Waves of this type travel...

1. 186,000 miles per second
2. 86,000 miles per second
3. 8,600 miles per second
4. 860 miles per second

Question 2

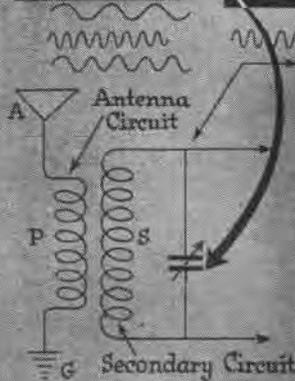


This diagram illustrates the...

1. Audio-frequency transformer circuit
2. Antenna circuit
3. Two-stage RF amplifier circuit
4. Plate circuit

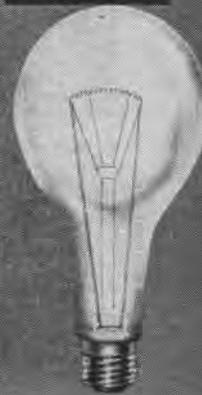
Question 3

This serves to tune...



1. Antenna circuit primary
2. RF transformer to cathode capacity
3. RF transformer to ground
4. RF secondary to desired signal

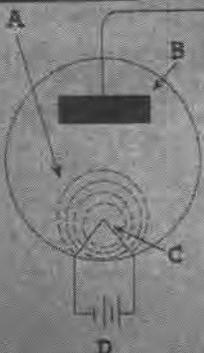
Question 4



When this lamp filament becomes incandescent it...

1. Has no electrical resemblance to a radio tube
2. It emits electrons
3. Exhibits no special characteristics
4. Does not emit electrons

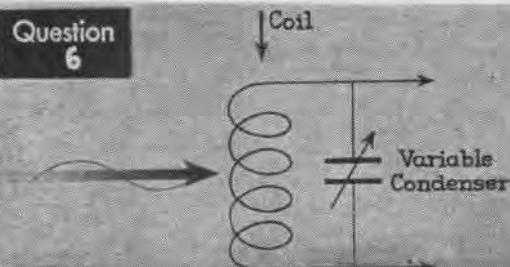
Question 5



In this diagram of a diode tube, the "plate" is indicated by...

1. A
2. B
3. C
4. D

Question 6



Impedance to a.c. currents in this circuit...

1. Varies with length of antenna
2. Varies with temperature of cathode
3. Varies with frequency
4. Is constant

PUBLICATIONS

The following Flight Safety Bulletins, Aviation Circular Letters, Technical Notes and Technical Orders recently have been issued. Copies are available on request to Publications Branch, Bureau of Aeronautics.

FLIGHT SAFETY BULLETINS

- 32-44 *Water Injection Equipment, Dangers Involved in the Use of Water Injection during Take-off.*
- 33-44 *PBJ Airplane—Danger Involved by Attempting to Use the Pilot's Escape Hatch as an Exit in Flight.*

AVIATION CIRCULAR LETTERS

- 73-44A *Instructions in Regard to Ferrying of Naval Aircraft.*
- 96-44 *Log Books—Retention.*
- 97-44 *Aviation Flight Clothing.*
- 98-44 *Special Engine Tool Kits and Slings—Information on.*
- 99-44 *Scheduling of Work Load in Continental A and R Facilities—Bureau of Aeronautics Control of.*
- 100-44 *Aeronautical Information, Continental United States.*
- 101-44 *Propeller Governor Control Head, Electric—Centralized Overhaul of.*
- 102-44 *Classification of Naval Aircraft Maintenance and Overhaul Activities Ashore.*
- 103-44 *(Joint Ltr) Gun Cameras and Related Equipment—Change in Cognizance of.*
- 104-44 *Reports Regarding Service Deficiencies—Forwarding of.*
- 105-44 *Flight of Aircraft in Stricken Status.*
- 106-44 *Field Service Branch, Maintenance Division, Bureau of Aeronautics, Mission of.*
- 107-44 *Overhaul, Reconditioning and Redistribution of Aircraft.*
- 108-44 *Specification SR-2a—Exterior Color, Insignia and Markings of Naval Aircraft.*
- 109-44 *Personnel (Officer and Enlisted) of Naval Aviation Shore Establishments and Fleet Aviation Units—Relationship between and Coordination of.*
- 110-44 *Addition of Wrist Compass, Stock Number R88-C-890, to Optional List of Flight Clothing for Naval Aviator, Naval Observer, Naval Aviation Pilot and Aircrewmembers.*
- 111-44 *Miscellaneous Flight Operational Letters in Effect.*
- 112-44 *(Conf.) Procedures for Striking and Disposition of Naval Aircraft in Continental U.S.*

TECHNICAL NOTES

- H-44 *Model AN/APX-2 Aircraft IFF Equipment—Recommended Modification of Pilot Control Unit Type C-57/APX-2.*
- 1-44 *AN/APX-1 and AN/APX-2 Aircraft IFF Equipment Switches, Possible Defect in.*
- 88-44 *Radio Equipment and Installation Thereof Required for Instrument Flight of Aircraft on or Over U. S. Civil Airways.*
- 89-44 *Rain Repellent for Application to Exterior Surfaces of Windshields and Transparent Clozures.*
- 90-44 *Bubble Sextants—Information Concerning.*
- 91-44 *Life Raft Paulins—Emergency Signals.*
- 92-44 *Eclipse 800-1 Airborne Motor-Alternators; Application Notes on.*
- 93-44 *AN/ARC-5 VHF Radio Equipment, Improved Control For.*

TECHNICAL ORDERS

- 124-44 *Caging of Gyroscopic Instruments.*
- 125-44 *Model GB-1, -2 Airplanes, Restrictions and Permissible Maneuvers.*
- 126-44 *Model F6F-5, -6N Airplanes, Restrictions and Permissible Maneuvers.*
- 127-44 *Model PV-1 Airplanes, Restriction on Practice Extension of Landing Gear by Emergency System in Flight.*
- 128-44 *Model F4U-1, -1D Airplanes, Model FG-1, -1D Airplanes, Model F3A-1 Airplanes, Restrictions and Permissible Maneuvers.*



A & R Shops

LET NANews
HEAR FROM YOU!

Men Learn Feel of Chute By Proxy

A parachute orientation and harness adjusting device was constructed recently by parachute personnel of CASU 31 and placed in service for use by an air group. It was found that only a small percentage of the group had ever experienced sitting in a parachute sling and the enthusiasm with which this experience was received was very high.

Numerous harnesses were tested on the new device and were found to be out of proper adjustment. The apparatus will allow airmen to practice getting back into the sling so that snaps can be loosened in preparation for a water



ADJUSTMENT OF THE STRAPS IS MADE PRECISE

landing. For this exercise, the risers should be shortened so that the man's feet are at least 12" off the deck.

Vacuum Tube Remover Is Versatile

A versatile vacuum tube extractor for removing hot, broken and inaccessible glass and metal receiving-type tubes has been designed and constructed by a member of Blimp Headquarters Squadron One, Detachment Twelve.

Two pieces of steel welding rod $\frac{1}{4}$ " in diameter and $8\frac{1}{2}$ " long were flattened and the handles bent to a suitable position. A piece of steel spring $4\frac{1}{2}$ " long and $\frac{3}{8}$ " wide salvaged from a broken clock spring, forms the band which clamps around the tube base when handles are compressed. This band will fit around the base of any receiving-type tube. When the device is used with metal tubes it can be clamped around the tube base or the envelope proper.

Since the steel spring band is loosely riveted to the flattened ends of the welding rods, it can be turned 180°



TOOL ELIMINATES RIVET HOLE ENLARGEMENT

so that the tool can be applied to the tube at any angle from horizontal to vertical. A second rivet $9/16$ " out from the fulcrum, prevents the tool from closing too far and placing too sharp a bend on the steel spring.

This device has saved much time and many burned fingers. It may be used to replace as well as to remove tubes in inaccessible places.

[DESIGNED BY A. E. D'EMIDIO, ARTIC]

► *BuAer Comment*—This tube extractor is an improvement over the standard extractor being used at present.

Portable Compass Rose Saves Time

PATSU-1-9—a portable compass rose, designed by two enlisted men in this organization, has eliminated the building of a large compass rose at each advanced base. The portable assembly, developed under the Navy's beneficial suggestion program, is easily carried with a squadron or service unit.

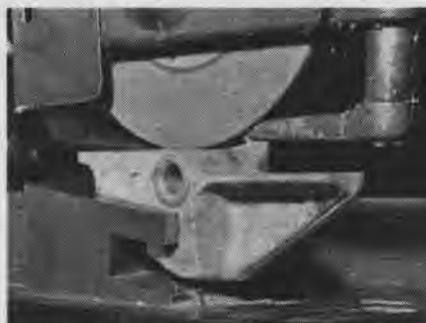
The portable compass rose eliminates use of the Astro compass or other sighting instruments after it is set up. Fewer men are required for swinging compasses if the portable compass rose is used and the necessity for measurements after each set-up is eliminated. The delay in swinging compasses after arrival at a new base is also eliminated through use of the portable compass rose.

Detailed specifications for installation and use of this portable compass rose should be requested from the Industrial Division, Office Procurement and Materials, Navy Dept.

[DESIGNED BY HERBERT VERNON SHAW, AMM3c AND RUSSELL KENNETH TREACY, AOM1c]

Use Jig to Rework SNJ Fittings

NAS CORPUS CHRISTI—The reworking of SNJ hoist fittings has been con-



REWORKING JIG IS FOR SNJ HOIST FITTINGS

siderably simplified and improved at this station by the introduction of a cast iron block upon which the fittings are mounted for reworking.

The block, a beneficial suggestion by a machinist at this activity, is so designed as to incorporate the compound angles contained in the fitting. By using the block for setting up work, the back of the fitting is squared with the inside, thus permitting a minimum of removal of metal and eliminating to a large extent a need of replating for grinding.

Use of the jig saves at least 50 percent in compound over the former method of grinding the inside of the fitting without first grinding the base or back side. When plating is necessary it is found that fittings reworked on the precisely dimensioned block require less plating than fittings reworked without using the block. The estimate of a 50 percent time saving includes time for replating and regrinding.

[DESIGNED BY SAMUEL D. BEARD]

Fabric Bag Expedites Installation

NAS SAN DIEGO—Four man hours per week are saved in the installation of fuel cells on F6F planes through use of an airtight rubberized fabric bag. The idea, developed by a station aviation mechanic, was suggested under the Navy's beneficial suggestion program.

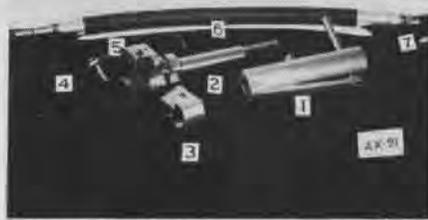
The rubberized fabric bag with air valve for inflating is used in connection with installation of main fuel cell in the center section of F6F airplanes. The fuel cell is completely collapsed to permit its entrance into the opening of the center section. When it is set in place the top of fuel cell tends to sag, making it difficult to line up screw holes and install screws and fittings.

Use of the fabric bag eliminates installation difficulties. After the fuel cell is in place the deflated fabric bag is inserted in the fuel cell and immediately inflated to two or three pounds pressure per square inch. Expansion of the fabric bag has the effect of straightening out the fuel cell and forcing it into its proper position so that screws and fittings may be easily attached. In some cases it is necessary to deflate and inflate the bag several times in order to allow it to shift to the proper location. The fabric bag should be equipped with an air regulator or safety to prevent overinflation.

[DESIGNED BY E. A. SCHATTE]

Cutting Tool Saves Much Time

NAS ALAMEDA—A tool to cut radius on valve guides, designed by two civilian workmen, has resulted in savings of at least one hour's time over the method previously used. Developed under the Navy's beneficial suggestion program, this tool is a suitably mounted radius milling cutter for the dual purpose of removing edge left by spot



MADE IN TWO SECTIONS, OPERATES IN 180° ARC

facing tool and for cutting the radius on the boss as per BuAer change.

The tool, in two sections, is inserted

from both ends of valve guide and locked into position before cut is started. Locking handle also acts as the pull hand power to pull cutter into cutting position. Due to construction of valve guide boss, tool operates in an arc of 180°. Plate that holds the stops is so constructed that tool can only be inserted in guide in a proper position.

Cutter cannot cut until pressure is applied from pull handle. Power to cutter is applied from an electric or air power drill. The tool is adjustable to take care of different size guides.

[DESIGNED BY C. W. BURNS AND E. W. SMITH]

(Succeeds List of October 1, 1944)

1 November 1944

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

(Contract changes are not included)

Airplane	Bulletin	Date	Change	Date
F6F	72	10-12-44	78	9-5-44
FM-2	23	11-2-44	27	9-27-44
F4U-F3A-FG	128	10-30-44	197	10-19-44
J2F-6	2	10-9-44	8	8-26-44
N2S-5	9	10-14-44	11	8-14-44
OY-1	1	8-24-44	3	10-7-44
OS2U-3	58	10-9-44	64	10-11-44
PV-1	73	10-16-44	154	9-18-44
PV-2	5	10-20-44	1	8-1-44
PV-3	13	6-17-44	13	3-29-44
PBJ-1	34	10-26-44	59	10-23-44
PBM-3D	29	10-13-44	53	9-7-44
PBM-3R	53	10-26-44	139	9-7-44
PBM-3S	36	10-26-44	86	9-7-44
PBM-5	5	9-12-44	5	9-21-44
PBM	55	10-20-44		
PBY-5	62	10-23-44	169	8-10-44
PBY-5A	77	10-23-44	161	8-10-44
PBY-5B	13	8-31-44	36	3-13-44
PB2Y-3	40	7-22-44	149	10-7-44
PB2Y-3R	42	7-22-44	130	10-17-44
PB4Y-1	85	10-26-44	122	9-19-44
PB4Y-2	8	10-7-44	2	10-11-44
R4D-5	23	10-24-44	23	9-7-44
R5C-1	18	10-12-44	82	10-13-44
R5D-1	25	9-22-44	85	10-13-44
RY-1	32	10-26-44	22	9-13-44
RY-2	16	10-26-44	9	9-13-44
RY-3	1	8-31-44	0	
SBD-3	86	8-22-44	156	10-12-44
SBD-4	41	8-22-44	68	10-12-44
SBD-5	59	10-6-44	77	10-17-44
SBD-6	19	10-6-44	17	10-17-44
SB2C-1	82	10-20-44	109	10-20-44
SB2C-1C	75	10-20-44	116	10-20-44
SB2C-1A	17	10-25-44	21	8-30-44
SB2C-3	69	10-20-44	80	10-20-44
SB2C-4	37	10-21-44	18	9-13-44
SBF-1	54	10-20-44	52	10-25-44
SBF-3	41	10-16-44	18	10-23-44
SBF-4	5	10-4-44	0	
SBW-1	55	10-20-44	71	10-23-44
SBW-3	55	10-20-44	59	10-23-44
SBW-4	5	10-4-44	0	
SB2C/SBF/SBW	83	10-20-44	0	
SNB-1	19	8-8-44	23	8-24-44
SNB-2	20	10-25-44	16	8-24-44
SNB-2C	10	10-25-44	10	8-28-44
SNJ-5	12	10-26-44	10	8-8-44
TBF-TBM	134	10-18-44	210	10-5-44
TDR-1	0		7	9-7-44

For a complete list of Aircraft Service Changes and Bulletins see Navy Aeronautical Publications Index NavAer 00-500.

LETTERS

SIRS:

My attention has been called to a copy of NAVAL AVIATION NEWS. If permissible I should like very much to subscribe to this magazine to be used by our cadets in the library.

I was particularly interested in the story, "Parachute Fails; Marine Lives," on page 26 of the September 15 issue. This happens to be one of our former cadets and he is quite well known to us.

COLONEL D. C. PEARSON
Superintendent

New Mexico Military Institute

SIRS:

Your excellent article on CASU organization in the 1 September issue would have been complete if some mention had been made of the important role played by Aviation Equipment Officers. Each CASU and CASD, as well as each Air Group, should have aboard one such officer whose duties are outlined in the Aviation Circular Letter 17-44 of 4 March 1944.

These officers, specially trained at Jacksonville and Pensacola, have been given little recognition by the fleet. They are charged with upkeep, repair and inspection of all aviation oxygen gear and all types of personal survival gear, including life rafts, Mae Wests and parachutes, as well as disseminating the latest information on survival procedures. There is a relatively new and extremely vital job growing more so daily as new devices are developed to insure greater pilot safety.

LIEUTENANT, USNR.

Staff Survival and Altitude Officer
ComFair, Quonset Point

SIRS:

In your edition of October 1, 1944, I was giving myself the Pix Quiz on small arms and upon looking up the answers, lo and behold, I found that according to your answers I had missed the No. 3 question relative to the quarter-clicks on the Springfield 1903 model.

According to your answer, "A quarter point on the wind gauge equals one inch on the target for each 500 yards." I beg to disagree with you and am sure that I am correct in saying that the answer should have been 100 yards.

SERGEANT, USMC

VMF-314

FPO San Francisco

¶ The sergeant and several other small arms experts caught this error.

SIRS:

As commanding officer of a British naval fighter squadron I have been acquainted with NAVAL AVIATION NEWS and consider that there is a lot of useful information contained therein, with which I should like to keep in touch after our departure from this country. Would it be possible for you to send a copy or two to the squadron?

LIEUT. COMDR. P.C.S.C.

NAS Brunswick Royal Navy

¶ Distribution of NAVAL AVIATION NEWS to squadrons of British Fleet Air Arm in England is arranged by British Admiralty Delegation in Washington.

SIRS:

Congratulations on a very timely article, at least from the point of view of this squadron. The day after your Oct. 1 issue was received, containing the article on page 38 on the inverted flight procedure for unlocking stuck landing gear on SBD's, one of our pilots found himself in that predicament.

After all other normal procedures had failed, he was instructed to try the in-

SBD Inverted to Break Jam Procedure Unlocks Landing Gear

NAAS CECIL FIELD—An addition has been made to the procedure for lowering SBD landing gear which are jammed in the inverted position.

verted flight method. However, this also failed to help, on two tries. Accordingly, he was instructed to try the same procedure, but not to apply hydraulic pressure with the pump, and he coupled this with a roll out recovery in the direction of the stuck wheel instead of a split S recovery. This last procedure worked like a charm, and the wheel came down of its own accord.

Incidentally, this squadron has typed the recommended steps to unlock landing gear, reduced the writing by photography, mounted the result on a small shellacked board, and carries one of these boards in the map case of all planes, just in case somebody forgets the procedure. The new inverted flight method is now being added to all these boards.

COMMANDING OFFICER

Pacific Fleet VS-47

¶ Cecil Field deserves credit on two counts: 1. developing this procedure for SBD's, 2. reporting it to NANews. This should tip off other squadrons on sending NANews dope on new ideas.

CONTENTS

The P.I. Camera	1
Grampaw Pettibone	6
Did You Know?	9
NAS Pearl Harbor	12
Special Devices	18
Engineering	20
Shore Stations	21
Tokyo Talks	22
Air-Sea Rescue	23
Pilot Sails from Truk	32
Technically Speaking	33
Hints on New Form	36

Flight Safety 11; Screen News 35; Power Plants 39; Aviation Ordnance 43; Photography 44; Publications 46; Airplane Bulletins 47.

ANSWERS TO QUIZZES

● PIX QUIZ (p. 45)

1.1 2.2 3.4 4.2 5.2 6.3

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

● NAVIGATION PROBLEM (p. 22)

	1st leg	2nd leg
MH	258°	106°
DRM	282°	102°
SRM	144 k	114 k
Cus	276°	113°
GS	153 k	137 k
Min on leg	60	76
	Life raft	
Bearing	282°	
Distance	65 mi.	

(Tolerances of 2 or 3 miles or 2 or 3 degrees from ans. are considered correct)

● GRAMPAW'S QUIZ (p. 8)

1. Yes. Reference: Par. 1.110 Army-Navy-CAA Standard Airport Traffic Control Procedures.
2. An area in which exists an invisible hazard to aircraft in flight. Reference: CAA Regs 60.3481
3. Obtain specific authority from the agency having jurisdiction over the area. Reference: CAA Regs 60.3481.
4. Yes. Reference: BuAer Manual.
5. As tank approaches empty condition, fly level; watch fuel pressure gauge carefully and shift tanks as soon as needle starts to fluctuate. Reference: Flight Safety Bulletin 7-44.

● BEST ANSWERS (p. 10)

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

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Identify...WHEN APPROACHING FRIENDLY SHIPS



REMEMBER

It's you ...



and your plane

OR



your ship ...



and its crew

SALVO SINKS JAP

1. JAP MINELAYER
IN DISTANCE MA-
NEUVERS TO ESCAPE
ATTACKING AMERI-
CAN BB SILHOUETTED
IN THE FOREGROUND



2. JAP SHIP AP-
PEARS SLICED IN
THIRDS BY POWER-
FUL BROADSIDE FROM
AMERICAN BATTLE-
SHIP'S 5-INCH RIFLES



3. EXPLOSION
SMOKE SHROUDS
JAP SHIP AFTER SAL-
VO STRIKES. DEBRIS
FROM ENEMY
THROWN HIGH IN AIR



4. COLUMN OF
SMOKE TOWERS
SKYWARD AS JAP
MINELAYER AND
CREW SINK BENEATH
CALM PACIFIC

