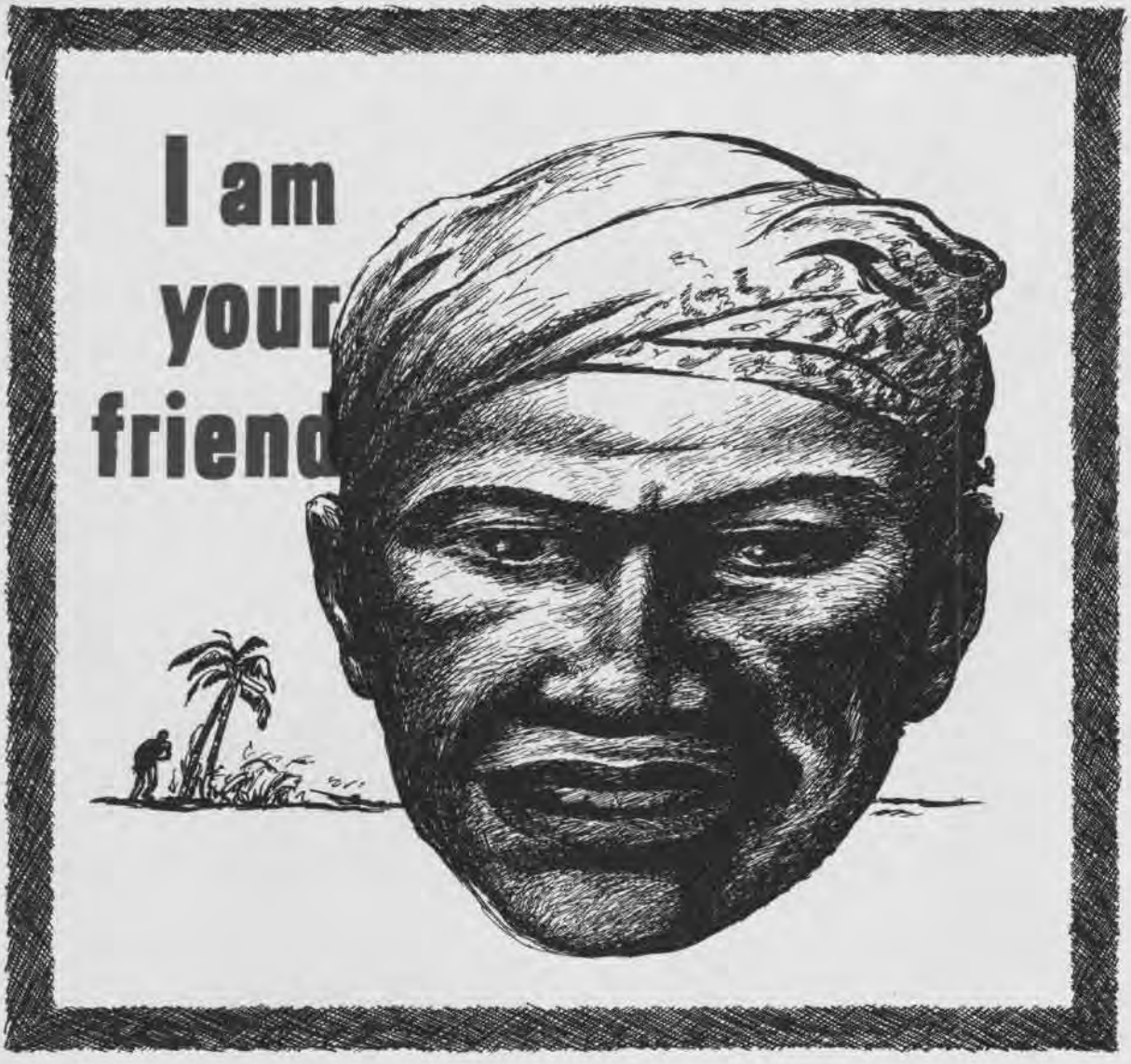
NAVAL AVIATION NEWS

CVE Air Department
Jap Coastal Defenses

May 15, 1945

SHARE THIS

I am your friend



SHOT DOWN during a pre-invasion strike, Alan P. Pray, AOM, survived a water landing, was rescued by guerillas, averted capture by collaborationists, evaded several Japanese patrols, and finally made his way back to his carrier.

Filipino fishermen carried Pray and his pilot to shore where they were met by a member of the guerillas. Soon after their arrival, a group of excited civilians gathered around the bamboo hut. The airmen became uneasy for the guerilla prepared his weapons for use.

One of the civilians spoke in English, "Listen to me. I am your friend," and quickly produced an old Cavite Navy Yard pass. Then he suggested the party come with him.

"We'll stick to our original host," and the crew returned to their hut. Four days later, the "friend" was shot as a spy.

The Americans then were led through countless rice paddies—from one village to another—from camp to camp. The guerillas fought several skirmishes with the Japs during this period, and Pray was commissioned in their army for his outstanding valor.

One day an Army officer appeared to arrange their evacuation. Aboard a small sailboat, they skimmed through a Japanese-controlled area. At a designated spot, the airmen were met by a PT boat and taken back to their carrier.

JAP COASTAL GUNS

PHOTOGRAPHIC INTELLIGENCE

THE EYES of many cameras are directed toward landing beaches that are progressively nearer to the Japanese mainland. These must be analyzed in respect to obstacles, and nature of terrain. If possible, their coast defense guns must be located.

Several types of Japanese CD guns have been captured in the Pacific. Some are old models, purchased from British manufacturers 20 to 40 years ago. Some were taken from the British at Singapore and pressed into use defending island outposts. Numerous copies of British guns, made in Japanese arsenals, have been found. AA guns, especially the 120 mm., often are set in covered emplacements and used in a coast defense role, and a number of naval guns are mounted ashore and used for similar purposes. Howitzers also form part of the enemy's coast defense set-up. The Japs are believed to be improving their methods of fire control, and photos show more elaborate fire control installations. Deceptive dummy CD guns also are built by the enemy.

Many Jap coast defense guns have been recognized on aerial photographs, and constant checking up on appearance and location of captured enemy weapons improves the accuracy of photo intelligence for future operations. Ability to recognize these guns should be useful to Navy airmen, and photographic interpreters are on watch for any new enemy coast defense weapons.

JAP 76.2 MM. COAST DEFENSE GUN WAS PURCHASED ORIGINALLY FROM BRITISH FACTORIES. THE GUN IS POINTED AND RAISED BY HAND

76.2 mm.

This is a naval gun which was purchased originally from British manufacturers (Armstrong, Whitworth and Co., and Vickers). The Japanese also produced copies of it at Sasebo Naval Arsenal. It is used on Jap cargo ships and transports.

The 76.2 mm. cD is laid out in batteries of one, two and three guns situated to defend beaches or harbor entrances. Revetments usually are square covered emplacements, measuring approximately 16′ x 16′. On one island, hexagonal revetments with an inner diameter of 16′ were constructed by the enemy, and a palm leaf canopy extended over the emplacement. No external fire control equipment has been photographed in connection with the gun. Firing is done by direct laying with telescopic sights, combined with range scales. The 76.2 mm. is on a fixed pedestal mount and has no shield. Overall length, including breech is 11′ 3″.

Fire control equipment, when found with Jap coast defense guns, consists of four main elements: range finder, binoculars, plotting board, and on-carriage sighting telescopes. Range finders vary in size from a one-meter base to a 4.5-meter base or larger, and range finders and binoculars often are mounted on a tower for better visibility. A plotting board, sometimes located in an underground shelter, is used with the heavier caliber guns.

Iwo Jima demonstrated that the enemy is able to locate coast defense guns in positions where it is almost impossible to detect them from the air and extremely difficult to knock them out by naval shelling. The Japs did some effective firing from the shore there even after all known installations had been pounded heavily.

In recent campaigns the Japs have put many installations wholly or partially underground. Photographic intelligence has slim, if any, clues to these, and such positions often require days to knock out even after the main fighting ends.

COCONUT LOGS AND ROCKS COVER THIS 76.2 MM. EMPLACEMENT

JAP COPY OF BRITISH GUN APPEARS SIMILAR TO THE ORIGINAL

120 MM. NAVAL GUN, FOUND ON DD'S OF MINEKAZE, WAKATAKE AND MOMI CLASSES, OFTEN IS USED ASHORE FOR COAST DEFENSE WORK

120 mm.

THE JAP 120 mm. .45 caliber coast defense gun is a naval weapon found on destroyers of the *Minekaze*, *Wakatake* and *Momi* classes. It is emplaced ashore with or without a shield. Batteries of 120's on land usually consist of one, two, three or four guns laid out in a straight line along the coast. Open revetments measure from 20′ to 25′ in inner diameter, and covered positions are approximately 10′ x 10′.

No external fire control has been used in captured batteries. Firing was conducted by direct sighting (telescopic) combined with range scales. The weapon has a pedestal mount. An 8′ x 3′ shield sometimes is found on the 120, but often the Japs remove it. Overall length of gun, including breech mechanism, is 18′ 4″.

A 120 mm. .40 caliber Japanese coast defense gun was photographed at Kiska, where four weapons of this type were captured. Two were British-made (Armstrong, Whitworth & Co.) and two were Japanese copies, manufactured at Kure Naval Arsenal. One 150 centimeter searchlight was located on each flank of this battery, and communication was conducted by telephones and buzzer systems.

Revetments measured approximately 20′ in inner diameter and had a rear blast wall that contained ammunition. Fire control equipment consisted of a 2-meter base range finder (measuring 7′ 6″ overall), a plotting room and binoculars. The 120 .40 caliber, had a pedestal mount, which was set in concrete. There was no shield. Overall length of gun, including breech mechanism, was 16′ 6″. Although the Kiska battery consisted of four guns, photo interpreters anticipate batteries of one, two and three guns also.

The Japanese 120 mm. heavy AA frequently is used for coast defense, often being placed in a covered revetment for that purpose. New types of battery layouts for this weapon are noted on photos, and added revetments indicate a more elaborate system of fire control. Numerous Jap 120 mm. AA guns, emplaced for CD, were captured in the Marianas.

BATTERIES OF 120'S ARE IN STRAIGHT LINE ALONG THE SHORE

PRESENT HERE, THE SHIELD OFTEN IS REMOVED IN OTHER SITES

OBSERVATION TOWER OFTEN IS BUILT NEAR THE 140 MM. CD GUN

140 IS THE MOST FREQUENTLY USED ENEMY CD WEAPON TO DATE

140 mm.

THIS IS a naval gun which is mounted on Jap battleships, carriers, light cruisers and submarines. It is used also on land and is the most frequently found Japanese coast defense gun to date. The shield often is removed when the 140 mm. is mounted ashore.

Batteries of 140's consist of two or three guns, with a tower usually present for observation purposes. Revetments are from 34′ to 37′ in inner diameter. Sometimes they are built of concrete and sometimes of earth or other local materials. This gun is not always placed in a revetment.

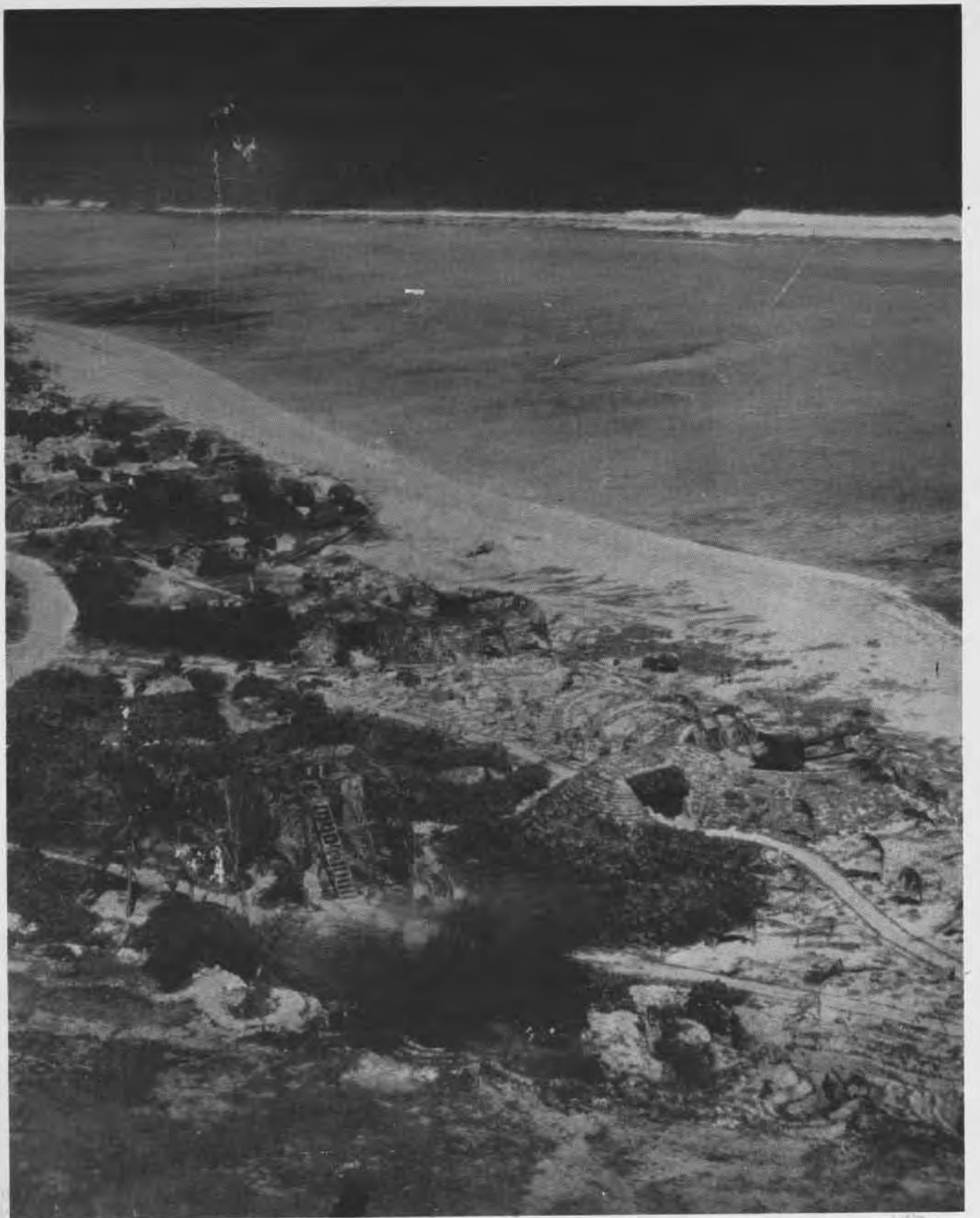
Fire control consists of binoculars and a two-meter base coincidence-type range finder. These often are mounted on an observation tower. A plotting room usually is beneath the tower. The gun has telescopic sights and is on a fixed pedestal mount either with a large "spade" buried beneath it or on a concrete base.

The shield is almost square, with rounded front corners, prominent bump on top at the left rear, and two "windows" in front. Shield measures about 7′ x 9′, and breech of the gun does not project beyond the shield. Overall length of this frequently encountered weapon, including shield, is 24′.

Accurate measurements of captured guns are of great importance to photographic intelligence since, given the correct altitude of aerial pictures and focal length of camera used, photo interpreters can determine almost exact dimensions of installations on the ground. These figures are compared with known dimensions of captured Jap guns, and the weapons photographed usually can be identified.

Information about Japanese-held coasts is a many-sided story. On Iwo Jima, for instance, a number of fuel drums were spotted on the beach which later turned out to be filled with explosive—a sort of improvised mine. Use of color film enables interpreters to spot some enemy installations which might not otherwise be identified. New digging, for example, stands out clearly on colored negatives. Large numbers of color prints cannot be made in the field, and this prevents any wide distribution of aerial color pictures. Considerable information can be obtained from the original negatives, however, and these have been used advantageously for intelligence prior to several Pacific landings.

THESE 140'S, CAPTURED UNASSEMBLED ON FLAT CARS IN THE MARIANAS, NEVER HAD OPPORTUNITY TO FIRE ON AMERICANS



Japanese 150 mm. coast defense gun battery has three revetments in straight line along shore (third revetment is at extreme right and cannot be seen). Fire control building, which has camouflaged range finder on top, is located centrally at rear of revetments. A hit has been made on gun pits in foreground. Japs appear to have set palm fronds in sand and to have attempted camouflage on revetments and fire control building, but white paths and large gun shields make this battery conspicuous from the air. Revetments have covered section in rear, which probably is for ammunition storage. This section can be entered by a visible outside door with a small shed roof over it. Breeches of guns project well beyond shields. There are landing obstacles and apparently some barbed wire on the beach. This type of low oblique photo, sometimes hard to get, reveals much about defenses.

HEAVY REINFORCED CONCRETE EMPLACEMENT COVERS JAP 150 MM. COAST DEFENSE GUN ON SAIPAN, MAKING IT A DIFFICULT TARGET

150 mm.

THE JAP 150 mm. CD was purchased originally from the British (Armstrong, Whitworth & Co.–Model 1900), and it has been copied by the Japs at Kure Naval Arsenal. It is used afloat and ashore. Land batteries consist of two, three or four guns, usually arranged in a straight line, with centrally located fire control building and range finder. The 150 has been captured in circular revetments, with an inner diameter of 26′ to 30′, and also in covered emplacements.

Fire control equipment for this gun includes a two-meter base range finder, binoculars and plotting room. Although two range finders were used on one captured battery, one is sufficient. The gun is on a fixed pedestal mount. A wedge-shaped shield, approximately 6′ x 6′, is standard equipment, but the breech projects beyond the shield. Top of shield inclines sharply at the rear, and there are two small windows in the inclined portion. Overall length of weapon including breech mechanism is about 21′.

A different type of 150 mm, CD was captured at Guam, but less is known of it. It appears to be of British design. Three guns were in each of the captured batteries, and revetments were 31′ in inner diameter. A 4.5-meter range finder was used. The weapon had a pedestal mount, no shield, and was considerably longer than the Jap 150 mm. CD guns that had been captured at other enemy strongholds.

The Japanese construct a good many dummy coast defense guns similar to the 150 mm. (and to other types as well). Some of these are extremely deceptive to the air observer and photo interpreter. Dummy 150 mm. batteries were captured in the Gilberts and Marianas and have been photographed at Nauru and other islands. The dummy CD's on Nauru were exposed by low oblique photos showing a vertical stick supporting the end of each log gun barrel. There is some evidence that the Japs try to build dummy batteries so that they will discharge simulated gun smoke. Dummy guns often are given considerable strength so that they will not be exposed immediately by shell fragments. Photographic intelligence has a difficult but important task in separating real coast defense guns, which may be camouflaged with branches and netting, from dummy CD positions.

150 POKES OUT DANGEROUS NOSE FROM TINIAN EMPLACEMENT

NEW, LONGER TYPE OF 150 MM. WAS TAKEN FROM JAPS ON GUAM

200 mm.

THE JAP 200 mm. heavy CD is laid out in batteries of two guns. An observation tower and large ammunition storage building also are present, and a small gauge railroad is used to transport ammunition from storage building to gun. Revetments, varying from 37′ to 39′ in inner diameter, are built of concrete. A 12-inch steel ammunition trough almost encircles the gun, and a ready ammunition building is located in the rear of the revetment. The 200 mm. is on a pedestal mount, which is set in concrete or on a large "spade" buried in the ground.

Fire control equipment consists of an observation tower, with range finder and director mounted on it. An underground plotting room is constructed either beneath the gun emplacement or under the tower. Telephones and voice tubes are used for communication. The shield is built on a roughly rectangular platform but covers the gun only about half way back to the breech. Shield is rounded in front and tapered toward the rear. It has a door on each side and two "windows" in front. A davit on the rear platform is used to lift shells from the ammunition trough to the gun. Canvas sometimes is stretched over the entire shield and platform, giving the impression of a continuous shield. Overall length of the 200 mm. CD is approximately 39′. It is believed to be a British gun, probably taken by the Japanese when they overran Singapore.

Considerable use of howitzers for coastal defense has been made by the enemy. A 200 mm. heavy CD howitzer is the principal one encountered thus far. Batteries of these, usually consisting of two guns, are located at strategic beaches and used to fire on landing boats. Concrete covered emplacements normally are built, but some howitzers are found in open revetments. Other positions are built into hillsides and cliffs. No external fire control has been identified with this weapon. It has a pedestal mount, no shield and is short, overall length including breech mechanism amounting to only 6′8″. A swinging-arm loading mechanism is located at the rear of the howitzer on the left side.

This weapon apparently was designed to be used by Japanese merchant ships for AA and anti-submarine defense. There are indications that some howitzers were intended for AA defense of strategic areas, but those captured in the Marianas were employed only for coast defense. They illustrate the enemy's resort to almost any kind of shooting piece.

THIS 200 MM. PROBABLY WAS LOOTED BY JAPS FROM SINGAPORE

12-INCH STEEL AMMUNITION TROUGH ALMOST ENCIRCLES JAP GUN

200 MM. HOWITZERS ARE USED BY ENEMY FOR COAST DEFENSE

CAPTURED PHOTO SHOWS CANVAS AWNING OVER 200 MM. SHIELD

GRAMPAW PETTIBONE

Single Engine Emergency

The right engine suddenly failed when a PBJ was ten miles from the field at 1000 feet altitude. The pilot advanced power on the port engine but having allowed the airspeed to drop below that required for efficient single engine operation, he was unable to maintain altitude. The propeller was not feathered. Slow speed made necessary an exaggerated amount of rudder and rudder trim for the power being used. Hatches were open preparatory to abandoning ship.

All of these errors resulted in excessive drag. The plane just barely made it back to the field where it crashed due to a hurried and poorly executed landing.

Grampaw Pettibone says:

The winning jockey in a horse race is usually the one who knows how to get the most out of his mount. It's the same in aviation; the winning pilot is the one who knows how to get the most out of his plane because he knows *all* its flight characteristics.

Despite the engine failure in this case, there would have been no crash if the pilot had known his business. Merely knowing how to take off and land isn't enough; you've got to know how to handle your airplane under all circumstances.

Single engine operating technique is a *must* for all twin-engine pilots. Squadron CO's should insure that their pilots are proficient in this technique. Flight Safety Bulletin No. 31-44 is a good point of departure.

He's Up! He's Down!

The following pilot's statement is quoted from a recent TBM-3D accident report:

"The accident occurred during night touch and go landing practice. One landing had been made. On the downwind leg of second approach I had too close an interval on the plane ahead and was not going to land. Just before I reached the turn into cross leg the plane ahead decided to go around again. I put my flap lever in the *Down* position, felt them go down and assumed the wheels too had gone down. I did not check the wheel lever which, due to the fact that the interlock had been removed, stayed in the *Up* position. Resulting landing was wheels up with damage to plane as indicated."

▸ *Comment*—**This pilot was assigned 100% responsibility (carelessness) because of failure to check for fully extended gear before landing.**

The landing gear and flap control interconnector has been removed from TBM's in production and Aircraft Service Change No. 210 calls for its early removal in older planes. It is up to the squadrons concerned to see that information of this nature is properly disseminated and to insure, by careful briefing, that it is fully understood.

Expensive Business

An electrician's mate from the attending PATSU at an advanced base was sent out to check a faulty fuel pressure gauge on a PBM-3D. When he had finished his work, the plane crew made preparations for getting underway to conduct a taxi test in the bay.

Sometime during these preparations, the electrician went aft to answer a call of nature, following which he *left the tunnel hatch open.*

Approximately 20 minutes after the airplane had cast loose from the buoy, it filled with water and sank—a total loss.

Grampaw Pettibone says:

We are at WAR, gentlemen! The enemy lie awake nights trying to figure out ways to destroy our aircraft. Just how serious this accident really was may be judged from a statement appearing in the accident report: "No replacement plane is available in this area."

The electrician was far from being alone to blame for this accident. Had the pilot required proper inspection to be made before getting underway, this important hatch would have been found open. Also, as has been pointed out several times before, all men who are allowed to work around airplanes must be given at least basic indoctrination in safety precautions, including special stress on all tabus.

Collision in Tail Chase

During an *authorized* six-plane tail chase in training, No. 4 lost sight of No. 3 and ended up in front of No. 3. No. 3 did not see No. 4 and overtook him from behind and above. Both planes crashed out of control.

▸ *Comment*—**While it is desirable in maneuvers such as this that the leader be kept in view, the primary responsibility of following planes is to keep the plane next ahead in sight *at all times.* Once the plane immediately ahead is lost sight of, it is vital that the following plane pull out of the formation immediately. Failure to do so in this case proved fatal.**

Of equal importance during tail-chase maneuvers is the question of altitude. Although not involved in this accident, there have been numerous instances of following planes being flown into the ground or water. This is particularly true in dives and glides due to the tendency for each following plane to go a little lower than one preceding. Flight leaders should be aware of this tendency and fly accordingly; pilots of following planes *must* watch their altitude.

▸ **It is desired to point out that tail-chase maneuvers are a violation of flight regulations unless *specifically authorized* for training purposes among pilots of adequate experience who have been previously briefed on the maneuvers.**

Cut! LSO gives the signal to pilot of torpedo bomber coming in the groove. The LSO runs the show in landing operations; upon his good judgment depends the speed with which his carrier takes its planes aboard for rearming and refueling. Pilots must learn to obey his signals promptly.

An Automatic Stimulator

A pilot with 550 hours' flying time was making a familiarization flight in a TBM-3. On his take-off roll, retracted the landing gear before becoming airborne. The usual damage resulted.

The squadron commander commented on this accident as follows: "Remedies to prevent accidents of this 100%-pilot-error type are hard to find. In cases such as this, we restrict pilots not in training to flying types of aircraft which have manually operated landing gear, so that the extra chore of turning a crank 30 or 40 times will impress upon them to 'never raise the gear too soon.' Now if we can find some similar way of impressing upon pilots 'don't forget to lower your landing gear,' we may yet disprove the theory: *You can teach them to fly but you can't teach them to think.*"

Grampaw Pettibone says:

With regard to getting pilots to lower their landing gear, experience has shown that bells, buzzers or lights are too

easy to ignore to be good reminders for this. I am working on a gadget, however, which I think will do the trick. It is very simple, consisting of a radio altimeter with two electrical devices attached; the complete installation to be known as the Automatic Stimulator.

As the name indicates, this equipment operates automatically. When the altimeter registers 200 feet above the ground in the landing approach, a relay closes. This energizes an electric circuit which actuates an arm housed in the fuselage. The arm swings out and slaps the pilot awake.

When the altimeter registers 50 feet, another relay closes and another circuit is energized which actuates a tenpenny nail in the pilot's seat pack. The nail jabs upward one inch and prods the pilot into action. It is of interest to note that there will be a cut-out switch installed in the nail circuit. If the wheels are down *and locked*, this switch will prevent the nail circuit from being energized.

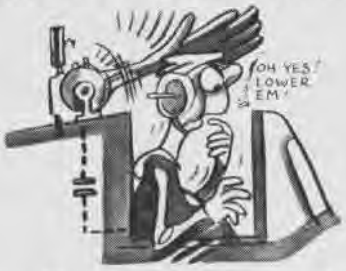
After a very few flights with this equipment, it will be found that it acts as a thought stimulant; pilots using it will be less prone to forget their landing gear. To obtain the best results, however, the equipment should first be used in training on the ground. Installation should be made in a mock-up fuselage to which is also attached a motion picture projector and a radio loud speaker. The pilot should wear his flight gear to help increase the illusion of flight.

At the start of this training, a one-reel movie should be shown of actual wheels-up landings with the attending serious results. The movie should be in technicolor to bring out the red faces of the pilots involved.

Immediately after this movie, the pilot should get into cockpit for his first lesson. The loud speaker furnishes sound effects to make the training more realistic. When the arm swings out and slaps him at 200 feet on his landing approach, the loud speaker blares out, "Don't forget to lower your landing gear". And when the tenpenny nail starts jabbing him at 50 feet, the speaker screams, "You forgot to lower your gear".

This method of training is not new. Psychologists refer to it as the "Stimulus-Response" method. It is based on elaborate tests proving that by "mental association", animals, as well as humans, can be trained to respond in a specific manner to a particular stimulus. In this case the loud speaker reminds the pilot to lower his landing gear each time he is stimulated by being slapped or prodded. After going through this a sufficient number of times, the number depending on the individual, he learns to lower the gear even though the loud speaker is turned off. When he reaches the point where his "motor reflexes" consistently cause him to lower the gear merely upon being slapped, he is said to be properly "conditioned" and is considered ready for actual flight in an airplane in which this equipment is installed.

As you can see, there is a lot of research back of this project. A little thought on the subject suddenly opens up an entirely new vista for aviation, the possibilities of which are limited only by the number of *different* stimulating devices that can be



mounted in an airplane. I can see the day when these devices will be so numerous and complete that the properly "conditioned" pilot can just sit back and let them take charge of him—from take-off to landing. He will receive the proper stimulus whenever it is necessary for him to do anything and his "motor reflexes" will automatically accomplish the correct action without it being necessary for him to think about the matter at all. This will usher in the "Golden Age" of aviation. It will probably be known as the "Era of the Automatic Pilot". Until this Utopia arrives, however, flight safety will continue to be assured in only one way—"by the sweat of thy brow."

GRAMPAW'S SAFETY QUIZ

ALL AVIATORS *should know the answers to these questions. In the air, the penalty for not knowing may prove fatal. If you miss an answer on the ground, penalize yourself by looking up reference.*

1. Are check-off lists required in all Navy airplanes?
2. An expert pilot can fly by "feel" in the overcast; is this true or false?
3. In naval aircraft, whose responsibility is it to see that abandon-ship signal and procedure, and the location and operation of emergency exits are known and understood by all personnel aboard?
4. In an emergency parachute jump what should be your first consideration after leaving cockpit?
5. Is it permissible to join in formation with other aircraft in the air if not specifically ordered to do so?

Answers on Page 40

Three-Way Responsibility

Occasionally an accident occurs which a number of people could have prevented if they had been on their toes. *Here is one example which easily could have ended differently:*

A group of fighter planes came in for a landing during limited visibility just before sunrise. The first aircraft landed short on the starboard side of the runway and slowed down before reaching the prescribed turn-off area. The second pilot, thinking the plane ahead had landed to port, made a normal landing and run-out—also on the starboard side of the runway. About two-thirds through his landing run, he overran the first aircraft. The pilot of the lead plane was killed. The tower had the field under positive radio control, but gave no warning of imminent danger to either pilot.

Comment—Obviously, the responsibility for this accident rests mainly with the overtaking pilot, for failing to keep the lead plane in sight and for neglecting to insure a clear landing area.

As the Aircraft Accident Board pointed out, however, the pilot of the lead plane and the tower personnel also were interested parties who might have prevented this accident. The former should have followed standard flight discipline regarding landing and taxi doctrine for group operations; the latter should have been alert to the existing danger, and warned the pilots when the danger became apparent.

DID YOU KNOW?

Navy Trains Ship Fire Fighters

400 Students Combat Oil Blazes Daily

Although the Fire Fighter's Training Unit at NTC SAMPSON, has been in existence considerably less than a year, already it has graduated its 50,000th recruit. The unit trains 400 recruits daily in the use of Navy fire-fighting

50,000TH STUDENT FINISHES THE COURSE

equipment with emphasis on extinguishing gasoline and oil blazes.

Dozens of roaring fires are kindled daily in 13 fire-resistant buildings on the school grounds under a program designed to simulate actual fire conditions aboard ship. Blazes are extinguished through the use of the Navy's fog nozzle, a device which smothers flame.

Instructors at the school are highly trained men selected especially for their jobs from fire departments in all parts of the country. Importance of the program is indicated in the fact that the fire fighting school has been made a *must* activity for all recruits of the training center.

Aviation Observer Course Opens

Men Who Failed in Flight May Qualify

Training of naval aviation observers (navigation) has been re-established on an expanded basis and consists of a 12-week basic course of ground and flight instruction in aerial navigation at the NAVAL AIR NAVIGATION SCHOOL, Clinton, Okla. Students who have not previously received navigation training given student aviators will take a six-week preparatory course.

Students who successfully complete the training and are designated naval aviation observers (navigation) will be assigned further training to multi-engine squadrons, night torpedo squadrons, NATS, or to instructor duty.

Effective immediately [31 March 1945], all officers training in grade as student naval aviators, aviation cadets, and other enlisted personnel separated from flight training at the primary or intermediate stage by reason of flight failure only, may request and volunteer for further training as naval aviation observers (navigation), provided they are recommended by their commanding officers, based upon specific recommendations of the Aviation Training Department Advisory Board that they have the necessary aptitude for navigational training and duties. Final selections of aviation cadets and other enlisted personnel will be made by the naval air primary and intermediate training commands. Final selections of all officers training in grade will be made in BUPERS.

Naval aviators and naval aviation pilots who fail to meet required flight standards may be recommended for training as naval aviation observers (navigation). Officers, former aviation cadets and other enlisted personnel who have in the past been separated from the standard flight training program in the primary, intermediate or operational stage for reason of flight failure only, who are less than 27 and meet other qualifications may be accepted. All other commissioned officers of the Navy and Naval Reserve who are less than 27 and meet other qualifications also may apply.

Full details concerning qualifications and methods of making application are contained in BUPERS C. L. NO. 84-45 issued March 31, 1945 and published in the Navy Dept. *Semimonthly Bulletin* of that date

Navy Forms Editorial Association

Weekly S.E.A. Service to Be Available

Ship and station newspapers soon will have available, on a voluntary basis, the services of Ships Editorial Association. A weekly clip sheet, *S.E.A. Clipper*, contains spot features, columns, fillers, feature articles, cartoon panels and strips, and other appropriate editorial material.

A semi-monthly house-organ pamphlet, the *S.E.A. Watch*, is devoted to methods of improving editorial content and production technique. Mats will be furnished to letterpress publications and pre-cut stencils will be available to mimeographed newspapers. Glossy prints will be furnished to offset publications as required.

Commanding officers interested in the S.E.A. services may request BUPERS to enroll their papers as members. A questionnaire to determine types of material required for the various ship and station newspapers will be forwarded to interested commanding officers. The *S.E.A. Clipper* will be produced to meet needs indicated by answers listed.

There will be no compulsion on the part of any member paper to use material provided by this news service.

BRAZILIAN *President Getulio Vargas expresses the enthusiasm of his country for* BUAER *devices being used by the Brazilian Air Force to train its aircrewmen. Here President Vargas uses the Panoramic Gunnery Trainer, or "battle in a box." Others in the picture include the* BUAER *Special Devices officer who supervised installation of the devices in Brazil, the Brazilian minister of aeronautics, and the chief, general staff of aeronautics*

BEST ANSWERS

The Stars Above

PICK THE BEST *choice to complete the statements below, then check your answers on page* 40.

1. One of the navigational stars that is reddish in color is—

- ☐ *a*–Arcturus
- ☐ *b*–Antares
- ☐ *c*–Vega
- ☐ *d*–Capella

2. The constellation of Cassiopeia appears as a—

- ☐ *a*–square
- ☐ *b*–triangle
- ☐ *c*–"W"
- ☐ *d*–"X"

3. The brightest star in the sky is—

- ☐ *a*–Venus
- ☐ *b*–Sirius
- ☐ *c*–Polaris
- ☐ *d*–Canopus

4. Another name for the Big Dipper is—

- ☐ *a*–Canis Major
- ☐ *b*–Hydra
- ☐ *c*–Ursa Major
- ☐ *d*–Corona Borealis

5. Each night the stars rise and set approximately—

- ☐ *a*–4 minutes later
- ☐ *b*–4 minutes earlier
- ☐ *c*–15 minutes earlier
- ☐ *d*–15 minutes later

6. The square group of stars is identified by the "great square" of the constellation—

- ☐ *a*–Cassiopeia
- ☐ *b*–Orion
- ☐ *c*–Leo
- ☐ *d*–Pegasus

7. The most conspicuous constellation near the South Pole is—

- ☐ *a*–Southern Triangle
- ☐ *b*–False Cross
- ☐ *c*–Southern Cross
- ☐ *d*–Argo

Navy Sets Bond Mark in March

Month Sales Highest Without Campaign

Three War Bond records were established by Navy personnel during March. With bond purchases by military and civilian personnel of $66,281,106, March was the largest non-campaign month in the history of the Navy bond program, and topped the March 1944, total by 44 per cent. March purchases also raised the total for the first quarter of the year to $140,108,025, as figure 31.7 percent above the corresponding period last year. In addition, the grand total since the start of the War Bond program has now reached the all time high for the Navy of $1,122,701,039.

Naval Air Stations, with an efficiency index of 107.6 percent, closely followed Navy yards, which led the program in March with an index of 107.8. NAS, CORPUS CHRISTI again led air stations.

Of the $66,281,106 of bonds purchased in March, $43,516,181.25 were by military personnel, with allotments broken down as follows:

Navy, $36,921,431.25; Marine Corps, $4,565,193.75; Coast Guard, $2,029,556.25.

Yank Ingenuity Saves Wounded

Life Jackets Support Injured On Cots

American ingenuity saved the lives of many injured men when the USS *Ommaney Bay* went down. Injured members of the escort carrier's crew were strapped to cots, and the cots were made buoyant by attaching life jackets to them. In these improvised rafts the wounded men floated about until picked up by other ships. Not a man put into the water in that manner was lost.

The *Ommaney Bay* took hits on the flight deck from a Jap bomber, and fires broke out. The ship was so badly damaged that she was subsequently sunk by our own forces.

With less than 100 casualties, the *Ommaney Bay* crew secured all wounded to buoyant cots. After they had been picked up, uninjured members of the crew were taken aboard other ships of the task force, and helped man their guns. The whole operation went along on schedule. This happened during the Lingayen Gulf invasion.

AAF Controls Norfolk Traffic

Planes Arriving Must Forward Position

The Norfolk, Va. AAF airport traffic control tower assumed control on April 15 of all airway traffic operating on IFR flight plans or under IFR weather conditions within the Norfolk-Langley control area with approach control procedures becoming effective concurrently with the establishment of the area. The control area extends 25 miles in all directions from the southernmost tip of Newport News, Va. Radio fixes within the area are as follows:

1. BUCKROE BEACH (Int. E leg Langley and N leg Norfolk Navy)
2. WHITEHURST (Int. E leg Norfolk Navy and NE leg Norfolk)
3. HAMPTON ROADS (Int. S leg Langley and W leg Norfolk Navy)
4. ECLIPSE FAN OR (W leg Norfolk Navy and SE leg Richmond)
5. BACONS CASTLE (W leg Langley and SE leg Richmond)
6. DEEP CREEK (SW leg Norfolk and S leg Langley)

Aircraft going to a destination within the area or proceeding through to a destination beyond the area, are allowed to do so only upon receipt of a traffic clearance. Before entering the area, aircraft are required to forward their position with the estimated time over the nearest one of the above-mentioned fixes. Hours of operation will be 0600 to 2400 till further notice.

COCKPIT CHECKOUT *recordings, developed by BuAer's Special Devices Division, assist flight personnel to check out in various types of aircraft in Cockpitrainers or in the operational aircraft itself. A shelf is hung over side of cockpit to hold album and phonograph. A headset is provided for individual instruction. A loudspeaker may be used for large groups. Recordings have been prepared for almost all types of naval aircraft.*

Navy Establishes Test Station

NAAS Chincoteague To Prove Ordnance

Chincoteague, Va., is the location of a new naval aviation ordnance test station established by order of the Secretary of Navy on 22 March 1945. Designated U. S. NAVAL AVIATION ORDNANCE TEST STATION, the activity will function primarily for proving aviation ordnance developed and manufactured by civilian contractors, Naval Gun Factory, National Defense Research Committee, and BuOrd.

The station is an activity of the Fifth Naval district under the cognizance of BuOrd, and under the Commanding Officer, NAAS CHINCOTEAGUE for purposes of administration and logistic support.

BuPers Approves New Insignia

Observers (Navigation) To Wear Wings

Officers designated by BuPers as naval aviation observers (navigation) are now authorized to wear a new

OBSERVERS (NAVIGATION) RECEIVE WINGS

wing insignia. The insignia, authorized by BuPers. c. l. no. 88-45, consists of gold wings with a silver compass rose set on crossed anchors.

A total of 618 naval officers, including 6 WAVES, who have graduated from previous Naval Air Navigation Schools, are eligible to receive the new wings. All are assigned to duty involving flying. Naval aviators and naval aviation observers will not wear the aviation observer (navigation) insignia.

Concurrent with the authorization of wings the Navy announced the establishment of a Naval Air Navigation School at Clinton, Okla. This school will graduate approximately 300 men monthly.

Navy Approves New Designation

Battle For Leyte Gulf Is Now Adopted

Naval combat operations off the Philippine Islands during the period October 24-26, 1944, have been officially designated the Battle for Leyte Gulf. This new name supersedes the popularly used designation, Second Battle of the Philippine Sea. The Battle for Leyte Gulf is subdivided into three separate operations: Battle of Surigao Strait, Battle off Samar and Battle off Cape Engano. All were U.S. victories.

FLIGHT SAFETY

"Inexcusable"

ON 20 MARCH a division of four F6F's from a newly-formed squadron took off on an oxygen hop. During the two previous days this particular hop had been cancelled for the same division because of weather. Before taking off, the division leader was questioned by one of his group as to the advisability of carrying out the exercise because of present weather conditions.

The flight leader was noted to have remarked in this vein, "Hell, you'll fly in worse weather than this in combat, let's go." The division took off at 0830 climbing on a somewhat southerly heading around and through several layers of apparently thin clouds to 25,000 feet. At about 0930 the flight started down through and around several layers of clouds, flying on various headings in so doing. The flight, still intact, came through a hole in the lower layer, finding itself over a body of water which, in the course of a few minutes of flight, was noticed to be landlocked.

One pilot of the group is said to have notified the section leader of the lake's name and a course to steer, 120°. The flight progressed down to the end of the lake, back through the valley and between several mountain peaks. The flight leader then pulled up into a thick cloud, and in attempting to follow him, all planes of the division became separated.

The stories of the accounted-for planes are as follows:

1. The flight leader climbed above the overcast, contacted the base and reported himself as completely lost. The base instructed him to orbit while a radar net was set up to locate him. Location was unsuccessful. The base was able to receive the section leader but he couldn't receive the base. Strength of his transmissions gradually faded. The section leader jumped at 1210 and his parachute was seen to blossom and descent to be normal by civilian personnel. He was killed landing in a small clearing, the back of his skull being crushed.

2. The second section leader flew a straight course and came out at 5,000 feet. He called his division leader on the operating frequency but could not raise him. The wingman of the second section heard these calls. Up to this time the second section leader's ZB was on but not receiving. This pilot continued to climb on a westerly course, finally picking up ZB at about 6,000 feet. In another 20 minutes he was on a good homing heading. He then saw mountain peaks through the overcast, followed by a break through which a valley and landing strip could be seen. He dove through this break and landed on the strip.

3. The wingman of the second section took a 210° heading in an attempt to find a clear area. He then headed on a seaward course, letting down after he figured he had cleared the coast. He broke through the ceiling at 50 feet, reversed his course to intercept the coast successfully, landing at 1145. This pilot did not try the use of ZB, nor to call his base.

The flight leader's wingman is unaccounted for.

THE costly mistakes made from the inception of this flight are inexcusable. Upon investigation by the local Safety Board the following errors were established as having been committed by these pilots:

1. This flight was not properly briefed on weather conditions in the area.

2. Confusion existed in the squadron as to the availability of weather reports.

3. Definite written instructions "to fly inland on a southeasterly heading, in the event of ever becoming caught above the overcast in that area" were not given to the pilots.

4. The division leader broke a squadron regulation when he climbed through the overcast, and in so doing committed an irredeemable blunder when the nature of the rugged surrounding terrain is considered.

5. The fact that there was but one landlocked body of water in such a large area, and the failure on the part of most of the pilots to recognize such a landmark, indicates a need for better knowledge of the training area, including inland airfields.

6. The tragic ending of the flight leader in having the back of his skull crushed is considered to be caused by his landing in a direction of drift opposite to that in which he was facing. The terrain was muddy and rocky. Change of direction of facing may be accomplished by tugging the opposite risers of the chute, and drift controlled by spilling, as explained in the pamphlet, *Parachute Sense.*

7. The two surviving pilots' actions are considered to be more lucky than sensible. One took a chance on letting down when the position, to begin with, was not known and then let down over the ocean which is an undesirable procedure. The other pilot was very fortunate in finding the break in the overcast and diving through to the valley below, despite the mountain peaks surrounding it in close proximity.

Medical Officer's REPORT of Aircraft Accident

NAVAER-339B

MEDICAL OFFICER'S REPORT OF AIRCRAFT ACCIDENT

GENERAL INSTRUCTIONS

1. This report shall be filed in the event of any and all aircraft accidents resulting in injuries to plane occupants which require medical treatment, ***regardless of extent or type.*** (Negative examinations for injury are not considered treatment.)

2. Completion of the form shall be the responsibility of the flight surgeon serving as ex officio member of the Aircraft Accident Board. He shall be assisted by the medical officer first reporting to the scene of the accident, or in the event no such officer reports to the scene, by the officer supervising treatment of the injured.

3. This form shall be prepared in duplicate, with the copy being turned over to the Aircraft Accident Board and the original mailed direct to Chief of Naval Operations (Op-34-1), Navy Department, Washington 25, D. C., within 96 hours following first examination of the injured. Where more than one aircraft is involved, separate forms must be completed for each craft wherein occupants were injured. (Squadron flight surgeons and other interested individuals may prepare additional copies for their own use as desired.)

PART I.—ACCIDENT IDENTIFICATION

1. Report from: (Ship or Station) U.S. Naval Air Station Canberra Date 11 November, 1944

2. Accident occurred: (Geographic location) N.W. corner of Banner Field
Time 1450 Date 11 November, 1944

3. Planes involved: Bureau No. 123456 Type TBM-1 Assigned to VTB - OTU - NAS Canberra
Bureau No. Type Assigned to

4. Report filed by: (Name) A. B. Montgomery Rank Lt. Cdr. (MC), USN

PART IV.—INJURY CORRELATIONS

1. Were any special precautions taken in an attempt to prevent, or lessen degree of, injuries? If so, outline briefly (e. g., passengers assumed prone position on deck prior to crash landing with only minor injuries resulting).

None

2. Can the degree of injury be directly correlated with the use, or failure to utilize, safety devices? If so, outline briefly (e. g., facial injuries No. 2 doubtless would have been far more severe had shoulder harness not been utilized).

Tight safety belt probably lessened degree of injury but facial injury would probably have been prevented entirely if shoulder straps had been fastened.

3. Can any of the personnel injuries be directly correlated with specific structural details of the aircraft? If so, outline briefly (e. g., skull fracture No. 1 caused by striking head on gun sight).

Struck head against torpedo director sight.

4. In the event injuries were apparently received following emergency bail-out rather than while in plane, outline briefly (e. g., No. 3 fractured arm upon striking tree during parachute descent).

None

PART V.—PILOT DATA

1. If information can be obtained, indicate in how many, if any, previous accidents the pilot has been involved while in actual control of aircraft.

They serve the cause of safety in aviation

A MEDICAL Officer's Report of Aircraft Accident, Form NavAer 339B, must be filled out for every accident in which plane occupants receive injuries that require medical treatment. The unit flight surgeon, who is an ex-officio member of the Aircraft Accident Board, is responsible for completing the report.

The purpose of this report is to provide information on medical factors in the cause of an accident as well as information on all injuries to personnel.

The flight surgeon often can determine accident causes. He can describe injuries and how they were received. Frequently he can suggest ways of avoiding similar accidents and injuries.

Every medical officer's report adds to the fund of information on aircraft accidents and injuries. Thus, each of these aids materially in development of the Navy's safety program.

25 YEARS AGO THIS MONTH

Naval Aviation During May 1920

May 3–Distinguished Japanese visitors witnessed one of the best flying exhibitions aviators at Mitchell Field have shown this spring. Lt. Gen. Gaishi Nagaokia of the Japanese army was taken up in a DE HAVILLAND 4B during demonstrations. He expressed delight with the show.

May 5–The eclipse of the moon was observed by two lieutenants from NAS ROCKAWAY at a height of nearly 3½ miles. The two officers ascended in a naval hydro-airplane N-9 and remained in the air 1½ hours.

Prof. David Todd of Amherst College assisted in observations made at the direction of the Navy. All reports were satisfactory and will be embodied in an account prepared by Todd for the Navy.

May 6–A new type torpedo plane, designed for the Navy, emerged from the Glenn L. Martin factory this month, and was tested at McCook Field this morning for the benefit of both Army and Navy officials. Although carrying a gross weight of 11,910 lbs. and a useful load of 4,950 lbs. (crew of three, 1650 lb. torpedo, 450 lbs. of bombs, two Lewis machine guns, radio set, complete set of instruments and accessories and fuel for four hours operation), the new plane attained a flying speed of 107 miles per hour, and climbed from sea level to an altitude of 5,100 feet in ten minutes.

Forerunner of a new phase of naval warfare, its high speed, comparatively small dimensions and unusual maneuverability give it numerous advantages over the present-day torpedo boat destroyer. Although it is not equipped with floats, it has, in addition to its specially designed landing chassis, emergency flotation bags which are inflated by compressed air. Thus it may operate either with a fleet or directly from shore stations. From an economical consideration, 20 Martin Navy torpedo planes can be built for the cost of one torpedo boat destroyer, and can be manned by less than one-third of the personnel required to operate one torpedo boat destroyer.

May 8–Arrangements have been completed with the Army that will permit erection of a rigid hangar on North Island, if sufficient funds can be appropriated.

May 17–Experiments were conducted by the Air Service Engineering Division at Dayton to determine the course taken by a parachutist from a JN-4H plane in a tailspin. Since a number of accidents can be attributed directly to the inability of gaining a safe exit from a plane in a tailspin, satisfactory results will be of great value to aviation. Tests were first conducted with flags of lengths corresponding to that of the service type parachute. Later a 7-foot diameter model parachute with weights was used. All tests pointed toward a successful solution.

May 17–NAS LAKEHURST witnessed erection of the first truss of the new R-38 hangar today. It is expected that the remaining trusses will be erected at the rate of one a week.

May 17–A Mark VII, Modification 5, torpedo was launched from the Martin bomber at NAS ANACOSTIA today. The torpedo was dropped from a height estimated at eighteen feet with plane speed of approximately one hundred miles per hour. It made a perfect drop and good entry into the water. The torpedo now is being inspected at the Naval Gun Factory to determine damage.

May 27–The Air Detachment of the Atlantic Fleet has returned to northern waters from winter maneuvers. The six F-5-L seaplanes, main battle planes of the detachment, have been in continuous service for the past six months, but still are in good condition despite their hard service.

The record of these planes demonstrates the practicability of large seaplanes for commercial use. From the time the planes left the Naval Aircraft Factory last October, they have not had hangar or flying station service, but have been cared for on the water or on the beach. No hull failures were experienced, and wings have been rebuilt and recovered completely without removal from the area. Planes were exposed to rain and sun without protection.

PILOTS STUDY TAILSPIN PARACHUTE JUMPS FROM A JN-4H PLANE

NEW MARTIN BOMBER IS DESIGNED TO REPLACE TORPEDO BOAT

CORSAIR WING SHOWS DAMAGE DONE BY OVERHEATED GUNS WHICH THREW BULLETS OUT BLAST TUBE, CAUSING EXPLOSION IN WING

LET 'EM UP FOR AIR

Firing of Long Bursts Can Ruin Machine Gun Barrels on Planes

INVESTIGATION of fixed gun cooling and heating factors being made by many different agencies is not complete. A good deal of progress has been made, however, and some of the findings are well worth the careful consideration of any one who depends on the .50 cal. machine gun for protection or to do a job.

There is a "critical barrel temperature" which, when reached, stops all effective use of the gun. Briefly, what happens is that expansion of the bore lifts the rifling bands away from the projectile and it does not receive sufficient spin for stabilization, and the expanded bore lets the gases past the projectile resulting in loss of muzzle velocity.

When the critical temperature is exceeded, the projectile tumbles or keyholes, and any effective range or accuracy of fire is impossible. Tests have been made to show the effects of operating guns at too high a barrel temperature. At approximately 1460° F. the barrel is red hot and becomes relatively soft and malleable. *Rifling disappears, rounds have come out of the side of the barrel, and there have been cases where pilots have flown into their own stream of projectiles.*

Worn Barrels Cannot Stand Heat

The "critical barrel temperature" for a new barrel is approximately 900° F. and for barrels worn .020 inches it is only 600° F.

Some interesting results of tests are summarized as follows:

1. The temperature of a cold barrel increased 120° per second (8° per round) during firing. As the barrel temperature rises to 900° F. the rate of temperature increase gradually decreases to 5° per round.

2. At the present time there is no practical way to cool the gun barrel appreciably during actual firing because the heat input is so rapid and the firing time interval so short.

3. Gun cooling provisions can only increase the effective fire power by increasing the rate of cooling between bursts, thereby making it possible to fire longer bursts or bursts at shorter intervals without exceeding the critical barrel temperature. In a test airplane containing an efficient air cooling system on two fuselage guns and no special cooling on the other two fuselage guns it was found that the barrel temperatures for all guns while firing was approximately the same; however, the special air cooled guns cooled at a much more rapid rate after firing ceased.

4. Ammunition fired from a gun that has reached the critical temperature is ineffective, for, in most cases the projectiles will not even reach the target; the ammunition is wasted and the gun barrel wears excessively.

5. Barrel wear at temperatures below the critical temperature is very slow, above the critical temperature it is very rapid.

6. Starting with a cold barrel and firing

a continuous or nearly continuous burst *only the first 125 rounds constitute good effective fire power.*

The loss of good effective fire power and occurrence of actual tumbling which can be observed in tracers when firing, does not occur at the same instant. The barrel temperature has to rise to a higher degree to cause observable tumbling which accounts for certain test figures showing, for example, 150 rounds fired before tumbling occurred.

Barrel Cools Off Slowly

When a gun is mounted in open air with no special cooling provisions the cooling rate varies from zero when the barrel is the same temperature as the air to a maximum of about 1.7° F. per second. At 700° F. the rate of cooling is .85° F./sec. or 51° per minute. This condition is approximately the same as found in the average wing gun installation where no special cooling device is installed.

Therefore, it can readily be seen that if a long initial burst of, say, 125 rounds is made, one or two minutes later the barrel would only have cooled approximately 100° and a second burst of approximately 15 rounds would again have the barrel heated to the critical temperature.

A good, efficient cooling device might increase this rate as much as three times. One result of such cooling would be as follows: It is estimated that with cooling provisions a 30-round burst could be fired every minute almost indefintely without exceeding the critical temperature for a new barrel, while without cooling a 30-round burst each minute could be fired only 5 times.

Bullet Bursts Out of Tube

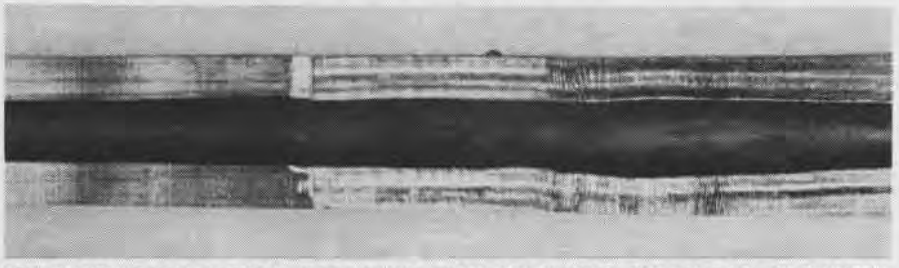
In a recent test the "critical barrel temperature" was exceeded and a projectile tumbled into and through the blast tube within 14 inches of the end of the barrel. It is felt that this is the cause of most of the blast tube trouble and wing explosions being reported, especially on airplanes being used extensively for strafing.

The best means of cooling fixed guns which is presently at hand is to charge the bolt back and retain it in that position between runs. This condition automatically exists in the 20mm gun installations.

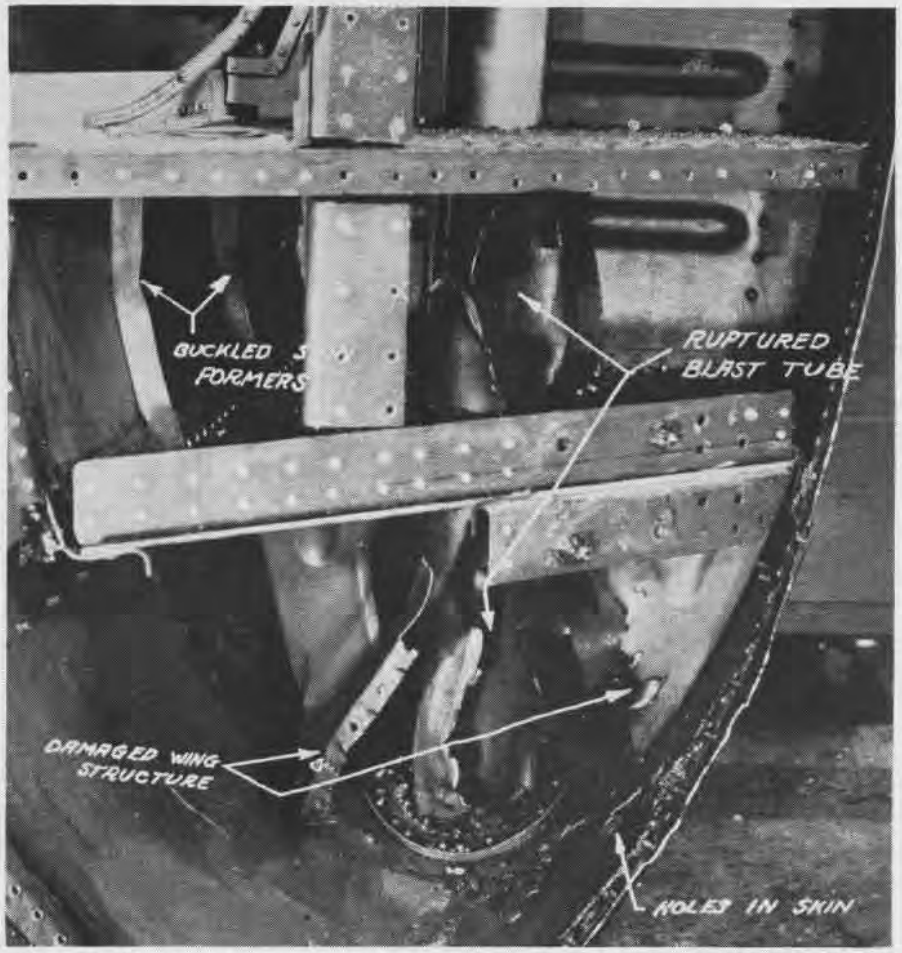
The above discussion applies primarily to fixed guns with standard barrels; however, certain facts are applicable also to free guns. New barrels lined with certain alloys show great promise in alleviating the present situation but they also will be subject to limitations that will be made known at a later date and should be studied carefully by all those persons concerned.

.50 CAL. GUN BARREL IS SO DEFORMED BY OVERHEATING THAT BULLETS GO OUT SIDE

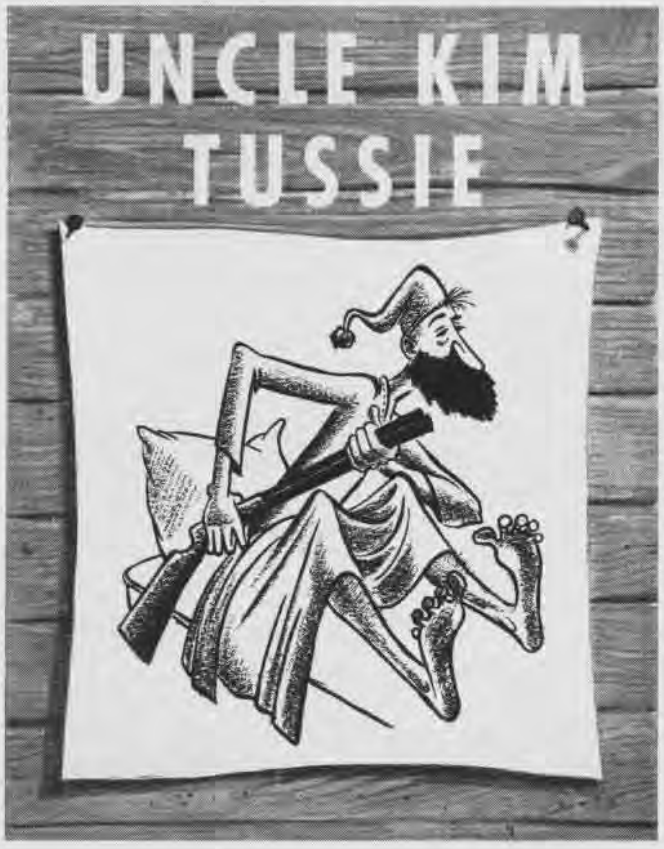
OVERHEATING OF BARREL CAUSES IT TO BULGE: FIRST 125 ROUNDS ARE MOST ACCURATE



NEW BARRELS CAN BE FIRED MORE TIMES THAN WORN ONES; 900 DEGREES IS CRITICAL



CROSS SECTION OF WING SHOWS RUPTURED BLAST TUBE CAUSED BY TUMBLING BULLETS



FROM THE FLEET: **Much unnecessary alerting of personnel is still caused by our own planes who do not turn on IFF, whose IFF is defective, or who show the wrong IFF Code. This is an annoyance and burden upon ship's companies which should be eradicated without further delay. A resultant deleterious effect is the tendency to dull alertness by the frequent "false alarms."**

This thing o' shooting yer own fr'ends by mistake becaze they don't i-den-ti-fy tharselves aint a bit funny. Hit aint a healthy thing fer us to have our fr'ends a-taking pot shots at us becaze they fail to re-cog-nize. And the mistakes made by our men who fly the airyplanes about aint no different than mistakes made by our own Tussies a-workin at this still and our fr'ends who come to git thar jugs filled. They keep a-fergettin our signals and we keep on a-shootin at 'em. Sometimes they git thar signals mixed and we hold our fire fer a spell, but not until we can see th' whites of thar eyes. We've had so much o' this trouble a-trying to tell our fr'ends from our en'mys that hit's jist about give all of us around th' still the nervus heebie-jeebies.

ACTION REPORT: **An SBD pilot was headed toward an American task force, apparently in difficulty and looking for a place to ditch his plane. A companion plane, knowing his plight, radioed the task force: "Friendly plane; do not fire!" By the time the word had been passed from ship to ship, as in the childhood game of "telephone," "fren'ly" had become "en'my", and the gun crew on the nearest ship shot down the plane. As a result of this incident the terms "friendly" and "enemy" have been eliminated from the fire control vocabulary of this ship. In their stead the terms "own plane" and "bandit" respectively have been submitted. Pilots are similarly cautioned not to use terms that may be easily misinterpreted, as for example: "Six or seven" which might come through as "sixty-seven."**

Reminds me o' th' night when Nando and Possum fit in Still Holler. I's a-dippin broth frum the mash barrels and a-carryin hit to the still when the fight started.

"What's the matter boys?" I ast as I run in and grabbed Possum. "What are you boys a-fightin over?"

"I don't know," Nando said. "Possum just went atter me."

"Ye called me a bad name," Possum said. "When ye called me that name ye know what ye's a-callin poor old Ma! And, I won't let Ma take that offen nobody!"

"I didn't call ye a bad name," Nando said. "Ye jist think I did! Ye misunderstood me, Possum! I said awhile ago 'ye aint done nothin which . . .' and ye thought I said . . . 'ye dumb son o' —"

"That'll do boys," I said. "Don't go any futter with yer argu-ment. Hit's all a mistake becaze ye didn't understand one another!"

ACTION REPORT: **Sighted plane crossing over ship from starboard to port, intentions undetermined. Commenced firing with 5" and 40 mm. batteries on plane making an evident hostile approach on the ship, altitude 4000 feet. Ceased firing at 2051. Expended 23 rounds ACC flashless, 8 rounds AAC special, 247 rounds 40 mm. Several bursts 5" and tracer streams of 40 mm. were observed as being close to the plane, which took evasive action after firing was opened. Plane was later identified as British *Mosquito*, and proper recognition flares were dropped after firing had ceased.**

"Hit's a Van Horn shore as as we're at our still," Cousin Treecy whispered.

"He may be one of our fr'ends a-comin to fill his jug," Cousin Fred said.

"If he's one of our fr'ends he'd know our signals," Cousin Wash grunted.

Cousin Wash leveled his double-barrel and turned loose both barrels. Th'man let out an awful scream as he took

off a-jumpin over the greenbriar stools like a wild buck rabbit.

"Good medicine fer a Van Horn spy," Cousin Wash said. "That'll larn 'im somethin."

Hit wuzn't three minutes until Nando come a-runnin up the holler to the still.

"That wuz Poodi Troxler ye sprinkled," he said. "He passed me like a shot outten a gun with his jug in one hand and his hat in t'other! What made ye shoot our fr'end?"

"We didn't know he's our fr'end," Cousin Wash said. "He wuz a-comin straight at us and he didn't signal."

Right thar I told Nando and the rest o' th' boys, if one of our fren'ly customers wuz a-comin toward us and he didn't signal, he'd git a load o' something heavier than a jug of our best moonshine.

AERIAL VIEW FINDER

A NEW vertical viewfinder which enables the pilot to see accurately the area being photographed from his normal flying position has just been produced and now is being used on photographic missions in the Fleet. The new installation, developed by Photographic Division of BUAER, is being made in F6F-5P aircraft.

The Curtis Vertical Viewfinder, as the instrument is known, forms an image that is reflected to the pilot by means of a viewing mirror placed in the lower part of the cockpit between the pilot's legs. This is accomplished through a series of lenses and mirror assemblies under the pilot's seat.

The objective lens assembly that forms the image of the area being photographed is made up of four lens elements mounted in a tube. Three of these, two positive and one negative, are mounted together while the fourth element, a plano-convex field flattener, is mounted in an individual cell at the back of the lens tube. The lens system fits into a carrier assembly.

Within the carrier tube are two additional lenses that pick up the image formed by the objective lens and forms a second image approximately at the mirror assembly at the upper end of the carrier tube. Here the light rays are deflected 90 degrees by a plate glass, first-surface mirror.

Fitted into the mirror box is a cone assembly at right angles to the carrier tube. The cone contains one carrier lens, one field lens, and the reticule. This system picks up the deflected light rays from the mirror and forms the image which is reflected to the pilot from the viewing mirror in the lower part of the cockpit.

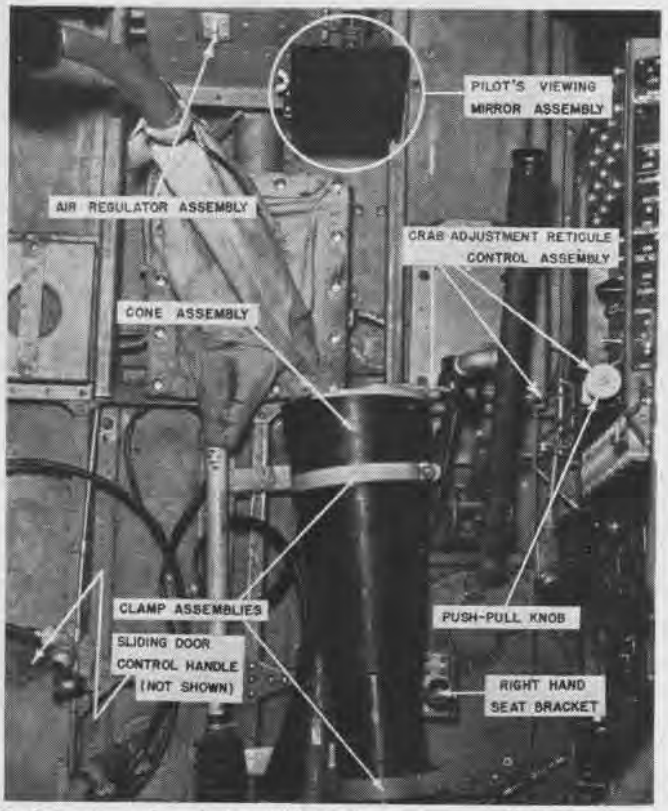
Corrections can be made for drift by means of the Crab Adjustment Reticule Assembly. The reticule is marked with drift lines that appear over the reflected image and are visible to the pilot in the image obtained from the viewing mirror. The reticule rotates 15 degrees from either side of center.

Within practical limitations, the viewfinder is sealed so that air can enter only through a silica gel dehydrating plug, although air is allowed to circulate within the finder by means of air vents. This acts as a preventative to condensation of moisture, due to changes in temperature and altitude, on the lens and mirror assemblies.

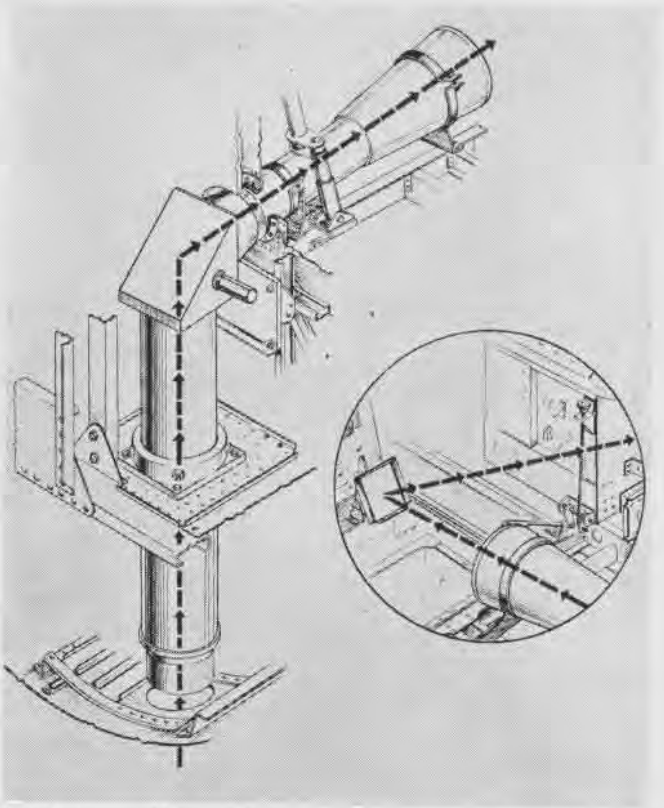
The entire optical system, with the exception of the first-surface mirrors and the protective cover glass over the lens, are made from plastics. This is one of the few instances where lenses have been ground from this material.

Pilots will be materially assisted in maintaining a flight line over a desired area when using this new installation. Since the real image of the area being photographed is formed in the retina of the pilot's eye, the necessity for a ground glass is eliminated, which provides for a much more brilliant image. The image viewed also moves in the same direction as the ground being photographed, which is less confusing than the standard viewfinder where it is reversed. The angle of view is 52 degrees and allows sufficient lead to see the approach of the target.

A handbook of instructions for operation and maintenance of the viewfinder now is being distributed to all major photographic activities. This publication is NAVAER 10-1-524 and additional copies may be received, upon request, from BUAER, Publications Section. (Use form NAVAER 140 to order them.)



Vertical view of cockpit with pilot's seat removed shows location of pilot's viewing mirror and cone assembly next to stick



Three lens assemblies and two mirrors in this aerial view finder bring an image of the ground directly below to pilot's mirror

TECHNICIANS

THERE is more to naval aviation than flying as these drawings of scenes in the A&R shop and on the apron at NAS San Diego indicate. Mechs in the shops and on the line, civilian engineers, and test pilots all have a vital part in readying naval aircraft for combat. Whether the job is bore-sighting a *Hellcat* headed for action or overhauling an older plane for training, their job must be done quickly, and above all, done with accuracy.

TEST PILOT AND CIVILIAN ENGINEERS WORK TOGETHER TO ELIMINATE BU

IT'S ALL ONE WORLD TO MEN IN THE A & R SHOPS WHO FOLLOW PROGRESS OF THE WAR ON MAPS POSTED ABOUT ON THE BULKHEADS

J. D. Eglevsen

AN ENGINE ON ITS WAY TO THE MAIN ASS
BLY FLOOR FOR INSTALLATION IS ADJUS
ON THE HOIST BY AN ALERT OVERHAUL M

WITH THE BIG FLYING BOAT'S IN AND THE WORK DONE THE MECHS RELAX IN A BULL SESSION ON THE APRON AT NORTH ISLAND. A CORONADO CAN BE SEEN WELL IN THE BACKGROUND

BORESIGHTING ACCURACY PAYS OFF WHEN A ZERO IS IN THE PILOT'S SIGHTS. HERE CASU MECHS LINE UP THE GUNS ON A HELLCAT TO INSURE THE ACCURACY OF DISPERSION PATTERN

TOKYO TALKS

To The Japanese Empire

The enemy is boasting that he is using 1,400 ships in the prosecution of Okinawa operations. We may say that this is the maximum strength the enemy is able to mass for the Pacific operation. Should we succeed in crippling the main force of the enemy, he apparently will be forced to make a fundamental change in operational plans. Such a result will be obtainable only through liberal mobilization of planes, which are the most essential elements for the prosecution of the war. Should we wish to deal a blow upon the head of the enemy, we must connect the homeland and the fighting fronts with an unceasing stream of airplanes.

To Japan

On the same day as the abrupt death of Roosevelt was reported, enemy planes again raided the capital city and dared to hit the Imperial Palace and the Meiji Shrine. We feel a fresh surge of anger, and we renew our pledge to crush this enemy.

To The Orient

Hardship saves people in the Orient. The monsoon season, as well as the repeated bombings by the enemy, has brought death and disaster to the people of Japan. But the psychological effect has not been great. Should Japan become an isolated island the people can always fall back on the barren contour of the land. Our people fought well in the two invasions of the enemy from China. The national trait of Japan, which makes favorable use of disasters, enables us to adjust ourselves to this new situation.

To German Forces In Italy

A Japanese parachutist, when taken prisoner of war asked to be killed, since it was dishonorable to be made a prisoner. When told Japan would have to give up one Japanese isle after another, he replied, "Americans may win battles, but Japan will win the war."

To The United States

The fact that we have allowed the enemy to invade a part of our land, which had been kept sacred for the past several thousand years, is just because of the enemy's material strength. In short, we must frankly admit that it was because our production was lower than that of the enemy. Even today, our aircraft, warships, shells, tanks and all other military equipment is probably not numerically superior to the enemy's.

To The United States

The death of Franklin Delano Roosevelt was described by the president of Keio University as resulting from a complication of worries and the critical turn in the Pacific war situation. Dr. Shinzo Koizumi recalled that the late American President once remarked that no worry is the best medicine for long life. The war situation at Iwo Jima and Okinawa must have been a headache, for reports of the conduct of the special-attack force practically sealed all hope for Roosevelt. Desperate raids over Tokyo were indicative of the frantic effort to bolster morale on both the home and fighting fronts.

To The Japanese Empire

Commenting on President Truman's first speech before the U. S. Congress, the Foreign Office spokesman said Truman simply had read off the late President Roosevelt's stereotyped speech. "He must follow blindly the footsteps of Roosevelt without realizing that America is fighting against the Constitution and democracy. Evidently America is dreaming of Japan's unconditional surrender without realizing America's national bankruptcy. Japan is determined to fight to the end to show the Americans that there is no defeat for Japan."

SHOW ME THE WAY TO GO HOME

Kaneohe to Midway, The Scenic Route

As navigator of a PB2Y, you leave NAS KANEOHE and take departure at flight altitude at 2040 GCT from Kahuku Pt., Lat. 21° 43′ N, Long. 157° 58′ W, for Midway, Lat. 28° 12′ N, Long. 177° 23′ W, going the scenic route via Necker Island, Lat. 23° 26′ N, Long. 164° 43′ W. CAS 135 k; alt. 8000 ft.; T + 15° C; var. 11° E; wind from 250°, force 25 k.

1. What are some of the landmarks that will be visible along this route on clear days?

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____

2. What is the MH to Necker Island? _____
3. What is the ETA at Necker Island? _____
4. What is the MH at Midway? _____
5. What is the ETA at Midway? _____

(Answers on page 40)

To Japan

By having various organizations announce what they advocate in dealing with Japan, scheming Americans intend to offer plausibly liberal peace terms the minute they recognize the slightest psychological disturbance within the home front of Japan. Japan is not suffering from any disunity whatsoever. And the Japanese must not be fooled by these glib tactics. They must fight on with full realization that the enemy is juggling his tongue to fulfill his ulterior designs.

To Japan

The fact that personnel losses of the enemy's own nation are mounting rapidly, no matter what one may say, is proving to be most painful to American warmaking criminals, and as for the American people who are dreaming of attaining victory by waging the easiest war possible, these personnel losses are proving to be a most hateful and distressing phenomenon.

To Japanese Overseas

An inventor in Kyoto has developed a "tunnel-digging machine" to speed the program for evacuating bomb-threatened Japanese factories to underground sites. The machine, which is built in the shape of a tank with four seats for mechanics and workers, is also useful for digging trenches and mining coal.

To Japan

Chu Funada, member of the Japanese House of Representatives, has been prodding the government on the question of aircraft production. Endo, chief of the Aircraft Ordnance General Bureau, admitted that plane output was "insufficient," but claimed the government was doing everything it could. He alluded to superior American plant facilities, mentioned "shortages of material" in Japan, declared Japan was hampered by the necessity of dispersing planes over "wide areas" and added that "dissipation of planes is unusually fast."

To Occupied Asia

The Shimonoseki-Moji tunnel which runs below the Kanmon strait and connects the main Japanese home island of Honshu with the island of Kyushu to the south, was to have been fully completed by December 30, Domei reported.

Shimonoseki, on the southern tip of Honshu, and Moji, on northern Kyushu, are separated by the Kanmon strait and are approximately a mile apart. The tunnel was opened to railway traffic on September 9, according to a previous Domei report.

To The Japanese Defense Corps

American B-29 *Superfortress* flights over Japan are costing too many lost manhours of work. Air raid wardens are forcing civilians to take shelter for long hours, when two or three minutes would do just as well. "Some of the members speak so as to indicate that if people act to the contrary, they are committing a crime."

CVE
AIR DEPARTMENT

THE ESCORT carrier, most numerous of the Navy's big fleet of flattops, is making an outstanding war record as a protector of convoys and invasions, a scourge of enemy shipping and installations, and a transport to ferry aircraft to battle zones.

"Jeep" carriers, a product of World War II, were the answer to the battle of the Atlantic. Their fighters and torpedo bombers took heavy toll of German U-boat packs. In the Pacific zone they fought the Japs from the Aleutians to the South Pacific. Their biggest triumph probably was the battle of Leyte Gulf where a group of CVE's and small escort vessels fought off a heavy Jap attack force.

These useful little flattops came off the ways every few days in West Coast shipyards. Today dozens are operating with task forces, supporting strikes and keeping the fleet supplied with fighting planes.

Training men to operate the jeep carriers, from air officer down to deck crewmen, was a task assigned to ComFairWestCoast. A high-geared program turned out crews in short order under pressure of earlier days of the war. Under the fleet air command's training division, a CVE Shakedown Detail was created to whip these crews into line. "Alumni" of the school are carrying the battle to the Japs, helping pilots to pile up the 5 to 1 ratio of superiority over the Jap in three years of war. Pictures to illustrate much of this article were taken for NANEWS by photo lab of U.S.S. *Takanis Bay*.

TAKANIS BAY PLANE DIRECTOR SIGNALS PILOT DURING LINE-UP; CHOCKMEN CROUCH READY TO REMOVE BLOCKS WHEN HE SIGNALS

AIR OFFICERS RECEIVE SPECIAL CVE TRAINING

SEVERAL weeks before the escort carrier is ready to be commissioned, officers of the air department are already at NAS SAN DIEGO for instruction in their duties. The composite squadron that will fly from the carrier is training at an auxiliary air station nearby, with its Combat Aircraft Service Detachment maintaining its planes.

The air department officers join a skeleton crew of their men when the ship is ready, bring it to Alameda for spares and stores, then down to San Diego for shakedown training. After it arrives there, the squadron and CASD come aboard and the job of making it a fighting ship begins.

Newly-commissioned carriers, when they leave the shipyard, have aboard only about 40 men of the air department, a small fraction of the enlisted complement. While air department officers are undergoing an indoctrination course supervised by the Shakedown Detail, enlisted personnel attached to the squadron train with the squadron. They maintain the planes, keep equipment in operating condition and absorb mechanics of squadron operations. At the same time, pilots complete final training preparatory to going aboard ship.

Officers Learn To Operate Their Carrier

One of the most satisfactory training methods, it has been found, is to place the air department officers on a training carrier like the *Takanis Bay* for a 10-day operational shakedown trip. Thus they are able to observe first hand the duties and problems they later will meet on their own vessel. These officers are the air officer, assistant air officer, flight deck officer, hangar deck officer, gasoline officer and flight deck boatswain, six key officers on the CVE. After this cruise they go north to go aboard their newly-completed carrier.

FLIGHT DECK BOATSWAIN SUPERINTENDS LOADING OF TBM ON CVE

HANGAR DECK OFFICER MAPS PLANE SPOTTING ON MODEL BOARD

ASSISTANT AIR OFFICER AND SQUADRON COMMANDER ON TAKANIS BAY KEEP AN EYE ON TORPEDO BOMBERS ABOUT TO CATAPULT

EXPERTS OF SHAKEDOWN DETAIL COACH JEEP CARRIER OFFICERS

To assist in training the six key officers for their carrier jobs, the Shakedown Detail has a landing signal officer supervisor, arresting gear expert, gasoline system expert, two catapult officers and three officers working on fighter director and combat information center training.

After they join their ship and pick up spares at Alameda, the officers and the new carrier go on a 10 to 15-day shakedown cruise with the squadrons and CASD aboard. The experts above also go aboard to assist in this operational period.

The most important man in the air department of a carrier, upon whom rests the job of keeping the planes flying and fighting, is the air officer. He is responsible only to the captain of the ship and has full control of all planes, pilots and enlisted personnel of the air department. He usually is a lieutenant commander.

Before he takes over his new billet on a CVE, the air officer is sent to Operational Training Command, Pacific, for indoctrination in combat information center and general administrative command.

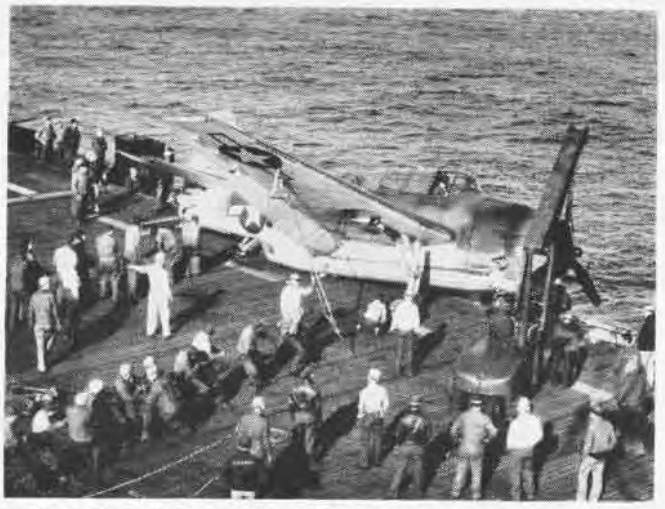
Assistant Air Officer Has Important Duties

His right hand man in the CVE air department is the assistant air officer, also called air plot officer. This man also gets specialized CIC training at San Clemente Island, near San Diego, for 10 days. Aboard ship he supplies navigational data to pilots, keeps flight records, handles information on recognition signals and communications used during operations. He makes up reports on aircraft and personnel, briefs pilots on their mission, handles classified dispatches and has numerous other confidential duties. At San Clemente he takes an intensive course in dead reckoning tracer operation, fighter direction, and chart board navigation.

AIR OFFICER AND HIS ASSISTANT WORK ON NAVIGATION PROBLEM

SQUADRON COMMANDER BRIEFS PILOTS FOR QUALIFICATION TESTS

GASOLINE OFFICER CHECKS REFUELING OPERATIONS ON CARRIER



FLIGHT DECK OFFICER SUPERVISES PLANE SALVAGE OPERATIONS

FLIGHT DECK OFFICER HAS IMPORTANT DUTIES

ANOTHER key man in the CVE combat team is the flight deck officer. His job includes organization of the flight deck, launching operations and spotting the planes fore and aft. As head of V-1 division, he makes out watch quarters, station and battle bills, organizes flight deck crews. Teamwork of his men is vital for efficient deck operations. He must know how deck and planes are prepared for launching or catapulting.

When planes are returning to the carrier he sees that the deck is ready for them and that they are respotted after landing. He has to know all about elevators, arrester gear, catapults, tractors and towing. He has to handle crashed plane salvage and clear the deck as soon as possible in an emergency. He has to know how to direct fire fighting in case of accidents and make repairs to the deck to get it operating again.

While he is king-pin of the flight deck, the hangar deck officer must know the ropes below, where planes are maintained and equipment and gasoline stowed. Before he gets aboard he spends a few days with a Combat Aircraft Service Unit to work with check and maintenance crews on engineering problems. He has to supervise repair of damaged planes and see that aircraft are ready to fly at all times.

Gasoline Officer Operates Complex Fueling System

Two other key officers of the CVE also polish up their training by taking shakedown cruises—the gasoline officer and flight deck boatswain. The former organizes gasoline refueling and defueling, must master the hydraulic gas system, tanks, pumps and other gear. He supervises refueling at sea.

LANDING SIGNAL OFFICER GIVES PILOT THE "ROGER"; TAIL HOOK AND DECK OBSERVERS STAND BELOW HIM. HIS ASSISTANT IN REAR

FLIGHT DECK OFFICER GIVES TURN-UP SIGNAL TO PILOT OF TBF

PLANE HANDLING CREWS STAND BY TO RESPOT PLANES ON DECK

OFFICERS OF CARRIER RECEIVE FIRE FIGHTING TRAINING AT NRB

THE FLIGHT deck boatswain, who acts as assistant to the flight deck officer, works closely with deck personnel, instructing them in their jobs. He must be an expert seaman. All six key officers take a two-day course in fire fighting at a special school at Naval Repair Base shortly after their arrival at San Diego for shakedown training.

While these officers are getting specialized training, the squadron is getting field carrier training at stations nearby. Squadron officers and men are shown motion pictures illustrating carrier deck operations, spotting, respotting, catapulting, launching, recovering and emergency work.

Enlisted men are assigned the jobs they will have on the carrier—plane handling crews, crew leaders, plane directors, hook releasemen, fire fighters, asbestos suit men, deck observers, planes inspectors and fueling crews. They are given field instruction in taxiing planes, wing folding and spreading and use of taxi signals. These men have definite jobs to do on the CVE and many wear distinctive headgear and sweaters so they will be easily picked out and recognized by their superiors or other crewmen.

When a squadron goes aboard a flattop to qualify, prospective air department officers are aboard to observe and actually carry on carrier operations. This qualification period usually lasts three days, under the watchful eye of the Shakedown Detail, which act as coaches all during the training.

The journey serves as a shakedown for the regular crew and following its return to San Diego, the carrier is taken out again for a thorough 10-day shakedown, the last before going into actual battle. During this final cruise, at least two CVE Shakedown Detail officers, plus an officer to inspect and supervise the combat information center set-up, go aboard to instruct air department officers for the last time.

Fewer Planes Make Early Training Period Simpler

They demonstrate use of new equipment. The normal complement of aircraft for an escort carrier is 12 to 16 fighters and nine to 12 torpedo bombers. However, the first two days are used exclusively for refresher landings and catapulting of planes, so only six bombers and eight fighters are taken aboard. After several days at sea, however, the crews are able to handle remaining planes and torpedo bombers fly back to San Diego with extra pilots who bring back the balance of carrier-based craft.

It is during these shakedown cruises that pilots get their first real taste of what it takes to bring a plane down on the heaving deck of a carrier in the open ocean. It is here that many accidents can occur until the fliers and the deck crews learn their jobs and do them often enough, under the critical eye of experts, so that they can be trusted to take over themselves and fight the ship the way it should be.

HANGAR DECK OFFICER CHECKS MECH'S WORK ON A MAGNETO

CARRIER OFFICERS FIGHT OIL BLAZE AT FIRE FIGHTER SCHOOL

SHIP'S COMPANY TRAINS AT NORTHWESTERN BASE

THE AIR department of a typical escort carrier, as illustrated by the chart on this page, is an organization that must work together fast and accurately. Carriers whose deck operations are too slow can be caught without their defending planes in the air. Just as any good football team needs plenty of scrimmage time before playing its first game, a carrier requires practice before its yellow, blue and brown-clad crewmen can operate with the best efficiency. Shakedown cruises take care of that.

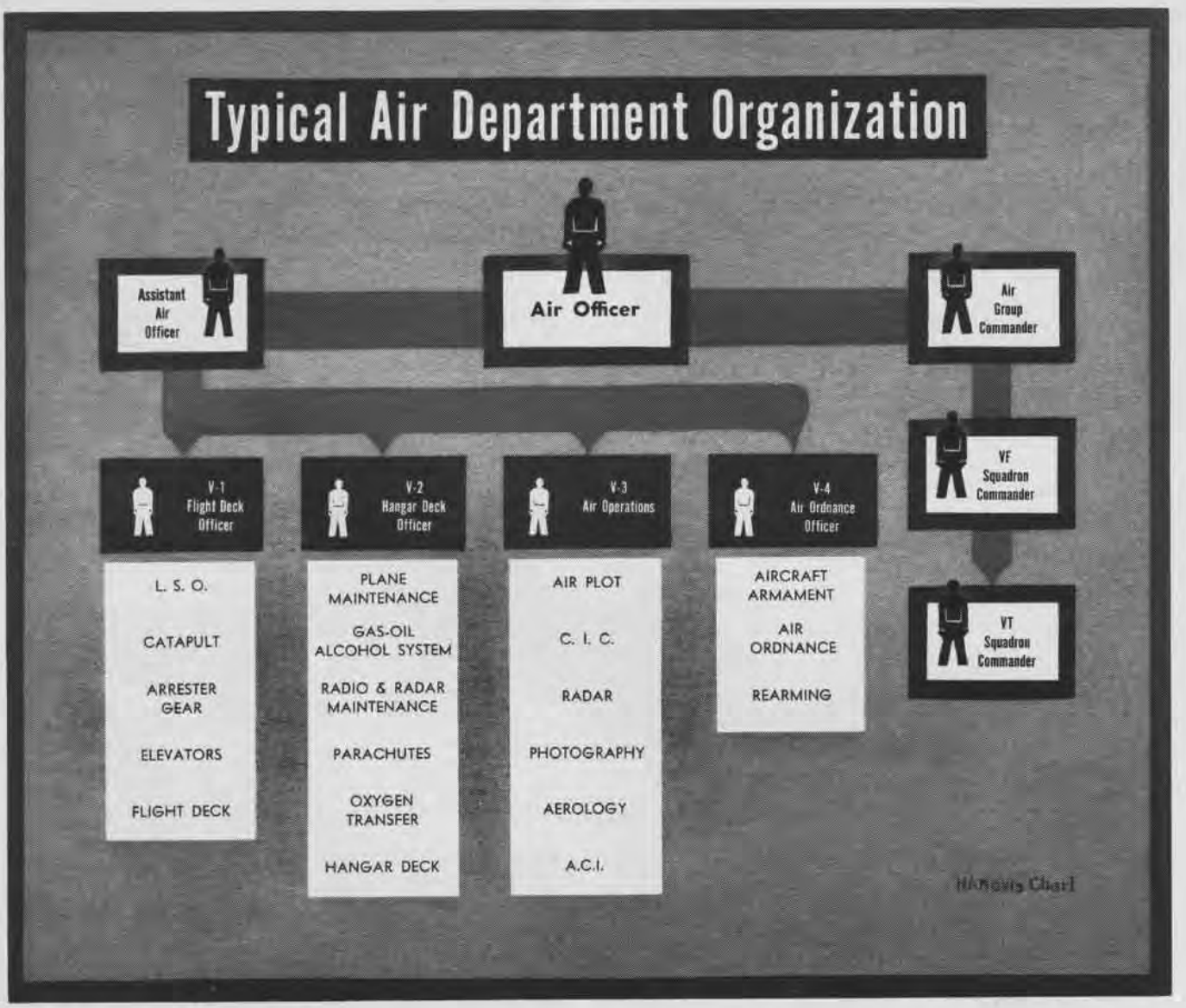
Directly under the air officer come his assistant and the air group commander. The air department is divided into four sections: V-1, under the flight deck officer; V-2, under the hangar deck officer; V-3, under the assistant air officer, and V-4, under the air ordnance officer.

The fighter and torpedo bomber squadrons of the carrier come under direction of the air group commander. Many larger carriers have different organizations, of necessity, than that illustrated in the chart, but this system is one used by many escort types. These have smaller complements of officers and men and perform somewhat different tasks than a fast CV or CVL doing combat duty.

Ship's Company of CVE Trains at Bremerton

Training of crews to operate engine rooms and other ship departments of the carrier other than the air department, is handled by the CVE Pre-Commissioning School at Bremerton Navy Yard. This training comes under the fleet operational training command. Like the ship's company, [see NANEWS, 1 June 1945] the CVE's Combat Aircraft Service Detachment remains aboard the carrier should the squadrons be transferred or fly off. Only a few mechanics and other specialists travel with the squadron because of transportation difficulties with air groups which like to travel light.

Shakedown Detail officers normally perform air department operations themselves, but after five or six days on the final cruise, the ship's officers and crew usually can do the work. The Detail flies back to shore. In this way, the air department officers and men develop faster than if carried along under supervision. A standard 10-day syllabus of training is provided by ComFairWestCoast, covering all operations to be conducted by the ship and squadron. The escort carrier now is ready to steam west on its own and take its place among the task forces fighting the Japs. CVE's going out usually carry a full deck-load of extra planes westward.



Jeep carriers wrote thrilling chapter into history during the battle of Leyte Gulf, fighting off heavy attacks by overwhelmingly-powerful Japanese fleet; enemy's shells splash around the *White Plains* as the *Kitkun Bay's* fighters (in the foreground) take off

Although hit by Jap bomber off Leyte, escort carrier was back in action 90 minutes later. Smoke pours through hole in flight deck and out of the side aperture while men race topside to extinguish fires. Heads of men may be seen in water alongside ship

THIS HUGE MASS IS CUMULONIMBUS WITH ANVIL TOP, TYPICAL THUNDERSTORM CLOUD

THUNDERSTORMS

Pilots Should Fly Around Thunderstorms but if Flight Is Above or Below, these Precautions Should not be Ignored

A FULLY developed thunderstorm is accompanied by heavy rain, lightning and usually hail.

Most conspicuous characteristic is the distinctive heavy, swelling cumulus cloud with a cauliflower appearance. Close observation reveals violent boiling air motion taking place inside the cloud.

The thunderstorm consists of "chimneys" of rapidly ascending air surrounded by downdrafts. The most violent updraft is encountered in the center or core of the storm. Between rising and descending air are regions of violent turbulence.

As air ascends within the thunderstorm, it expands and cools. At a definite level moisture begins to condense, thus forming WATER DROPLETS. The droplets remain suspended in the air until they grow to such a size that upward air currents no longer can sustain them, at which point they fall out as rain. Heaviest rainfall occurs beneath the center of the storm.

Hail forms in the chimney of thunderstorms at an altitude above the freezing level. As raindrops are carried aloft by ascending currents into freezing temperatures, they quickly congeal and gather a coat of SNOW and FROST. The HAILSTONE thus formed, finding a weaker updraft, falls back through a region of liquid drops where it gathers a layer of water, a portion of which is at once frozen by the lower temperature of the hailstones.

It again may be caught up by a strong updraft and carried back to freezing levels. This process may be repeated many times until the stone grows to large proportions. Size of the resulting hailstone will be, in general, proportionate to strength of the upward convective currents. (*See* TN 52-43.

These Are Storm Precautions

The heights to which a thunderstorm will build depends naturally on the locality and topography. In temperate latitudes, the average height is from 15,000 to 20,000 ft., while in the tropics, the average height is 30,000 to 40,000 ft. and in extreme cases, 60,000 ft. There also is some variation by season, maximum heights being reached in summer.

Thunderstorms occur over land usually between 1400 and 1600, over ocean areas between 0000 and 0400.

▸ *If at all possible, thunderstorms should be circumnavigated.*

Violent vertical air currents may result in loss of control or structural failure. Cases have been reported where large aircraft literally have been flipped over on their backs, or forced aloft at a rate of 1000 ft. a minute.

Large hailstones may cause a great deal of damage to all types of aircraft. In some cases, hail may be encountered outside the cloud where it literally is spilling out of the cloud.

As in any instability, CLOUD ICING may be encountered in a thunderstorm above the freezing level. Icing is most common between 0° and −10° C.

When at sea, or if contact conditions can be maintained, fly under the storm. However, it should be remembered that possible downdrafts and turbulence create a definite hazard. Flight under a thunderstorm also is dangerous in mountainous vicinities. In flying under, the higher the flight level, the rougher the trip. If possible, fly about one-third of the distance from the ground to the base of the cloud.

Be Careful if You Fly Over Storm

Don't fly over the storm unless your plane has sufficient ceiling and is equipped with the necessary de-icing and oxygen equipment.

Cold-front thunderstorms often stretch too far to fly around. The storm front is a series of individual storms backed by intervening clouds. If you have to go through, fly between the storm centers or over the saddle backs.

If all other methods of avoiding the storm are impossible, and you must go through, if possible determine the orientation of the storm front, then travel through it at a right angle. Once you have started in, don't turn around because of turbulence, rain or hail, as you will have to fly through the same conditions twice and may get lost.

▸ If the front of the storm is entered, there will be updrafts—so go in low; if the rear is entered, there will be downdrafts—so go in high.

▸ In flying through the storm, the upper one-third offers least severe vertical currents.

▸ Never land at an airport when a thunderstorm is advancing toward a field because of the shifting surface winds.

If you expect to try high level flight, get altitude before approaching the storm so that you are on top of the cloud shelf around the storm and can detect the storm line before selecting your course.

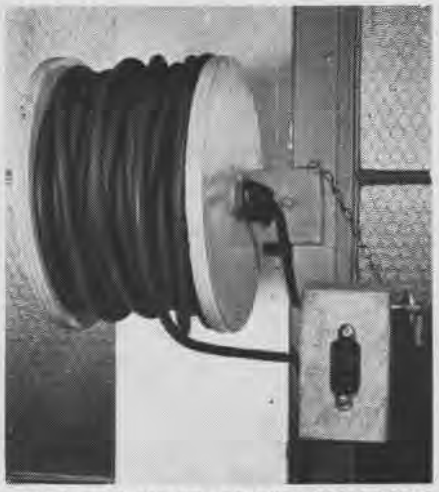
▸ Beware of warm front thunderstorms that may be hidden in stratified cloud layers of a warm front.

[FOR MORE INFORMATION ON DESTRUCTIVE STORMS, SEE ACL No. 27-44 AND TN No. 3-44]

TECHNICALLY SPEAKING

Reels Hold Extension Cords

HEDRON 9-1—Electric extension cord reels, using a detachable reel, have been installed throughout this squadron's hangars. Nine reels with double outlets on 100 ft. extension cords cover



REEL HOLDS 100 FT. OF EXTENSION CORD

the working space and provide ample lighting wherever maintenance work is underway.

The extension cord reel system has saved materials, wire and electrical fittings. Prior to installation, cords and fittings frequently were damaged and mashed on hangar decks.

When not in use the reel is secured with a standard padlock. Anyone desiring to use it draws a key from the central tool room and is responsible for its proper usage and stowage.

[Designed by Ens. Charles C. Kauffman]

▸ ***BuAer Comment*—Use of electric extension cord reels as developed by HEDRON 9-1 is a good suggestion. Electric reel is well suited for use by CASU's, HEDRON's and shore-based squadrons where a great variety of work takes place and airplanes are moved in and out of hangars at all times. The idea will be adaptable to certain divisions of A&R departments such as radio, radar, repair divisions, maintenance divisions, etc. Other departments of A&R's use cords constantly day and night and the reel would be of less value to them. Advisability of locking the box depends on local conditions. It is not considered advisable for ASO to stock the reel as a standard item since any joiner shop can manufacture it.**

Cover Protects Gyro Drift Sight

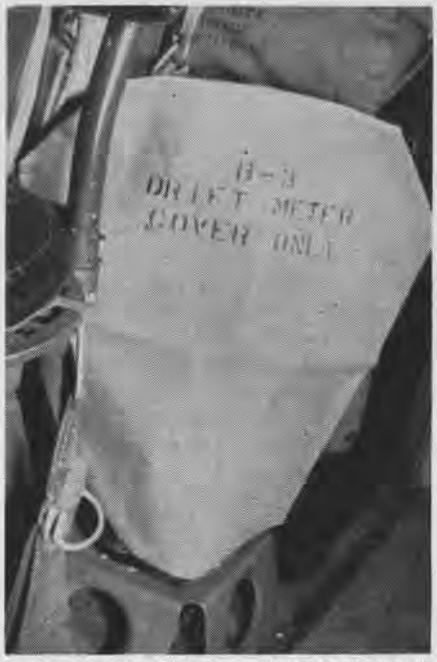
Service experience indicates that gyro-stabilized drift sights, stock number R88-S-872, in most installations need protection from damage when they are not in use. Damage is likely to result from any of the following causes:

▸ Rain, leaking in through the gun turret in PB4Y and PV-2 installations, runs down on sight causing corrosion and damage.

▸ Ejected shells from gun turret guns sometimes strike the drift sights with considerable force.

▸ Crew members frequently use the sight as a hand-hold.

BuAer has initiated production changes in PB4Y-2, PV-2, and PBM-5 airplanes to install a protective cover for the B-3 drift sight. It is not proposed to make these changes retroactive as construction of a suitable canvas cover can be and has been easily accomplished in



B-3 DRIFT METER COVER PROTECTS SIGHT

the field. The photograph illustrates a drift sight cover made for the PB4Y-1 installation by FAW-2.

The gyro-stabilized drift sight is extremely critical at the present time, and every effort should be made to preserve the operability of those units in service.

BuAer recommends:

1. When found desirable, water resistant canvas covers be made locally.
2. A slight amount of padding be added.
3. It be plainly marked "Drift Sight-Keep Covered When Not in Use."
4. It be secured in some manner on or near the sight mounting so that it may not be lost when the sight is in use.
5. Crew members be cautioned not to use the drift sight as a hand-hold and that only authorized personnel handle the sight.

Plug Prevents Cordage Breaks

Headquarters Squadron 14-2, Fleet Air Wing 14 reports two instances in the Martin 250CE-17 turret of the PB4Y-2 where the AN/AIA-2 interphone cordage has been broken by operating the tur-

JONES PLUG SERIES 300 IS RECOMMENDED

ret in one direction and winding up cordage until wire parted from the excessive strain.

The HEDRON recommends that a Jones plug, series 300 eight or ten prong assembly, be inserted in the C70/AIA-2 station box cordage to top turret.

Electronics Names to Be Listed

Airborne radio, radar and other electronic equipments used in naval aircraft are listed and briefly described in a confidential publication to be distributed shortly, *Nomenclature List for Bureau of Aeronautics Aircraft Electronic Equipment*, dated 1 April 1945. This publication supersedes an earlier electronic nomenclature list dated 1 February 1944.

Besides listing basic electronic equipment, the publication also describes associated test and training equipments. Types of nomenclature listed include Army-Navy system, older Navy model designations, and commercial designations.

The new list will be supplied to all naval activities concerned with airborne electronic equipment, and extra copies may be ordered if needed from the Navy Department, Bureau of Aeronautics, Publications Branch, Washington 25, D.C. Orders should include the number of the book, CO-NAVAER 08-5Q-227, and include the date, 1 April 1945.

PHOTOGRAPHY

New Bulletin Tells of Scoring Viewer

A Photography Technical Bulletin recently has been issued giving instructions for modification of the Mark I Film Scoring Viewer to a standard type projector. Interested activities may obtain copies, upon request, from BuAer's Publications Section.

Turn in the Jap Cameras You Capture

Photographic Science Laboratory currently is running a number of tests on captured Japanese photographic equipment. All activities coming into possession of such equipment are directed to forward it immediately through established channels for evaluation.

AN Gun Cameras Hit by Filter Shortage

Requirements for spare filter assemblies for type-AN gun cameras have been much higher than anticipated. According to BuAer Letter Aer-hp-16-wyc f41-10, Serial No. 37169, dated 5 March 1945, it has been directed that when gun cameras are forwarded to overhaul shops for repair the entire filter assembly should be included.

The filter assembly is readily repaired by renewing the glass insert. Heretofore when the glass became pitted or scratched the entire assembly was discarded as no replacement parts were available. The glass insert and the retaining ring are now being supplied separately, and only the glass need be renewed when the filter retaining ring is undamaged.

Photographic activities are also cautioned that under no circumstances should gun cameras be operated without the filter assembly as serious damage may result to the lens.

A-7 Abrams Printer Field Modification

Photographic Squadron Four has made the following suggestions for field modification of A-7 Abrams printer:

1. That top plates of the platen be replaced with one piece of plywood or that present top plates be bound together with a strip of metal. The split head of the A-7 printer is often the cause of poor contact.

2. That the present platen be replaced with a solid sheet of foam-type rubber which has been gridded with a series of shallow grooves, the individual grooves being approximately ¾" apart.

3. That when the springs which lift the top plates become weak or broken a bungee cord be used for the purpose.

4. That a bar be installed to connect the two top handles for faster and more efficient operation.

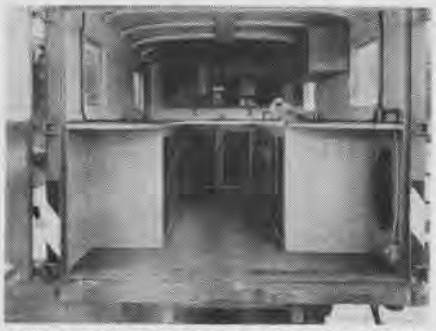
5. That the light source wires for the printer be led into a single contact switch.

BuAer has realized for some time that the A-7 printer has definite shortcomings and is not entirely satisfactory, especially for volume work. Tests have been conducted on other printers and it is anticipated that the Army-type A-11 printer will be procured when the manufacturer is able to supply them for general Navy usage.

Mobile Unit Maintains The Links

NAS San Diego—A mobile maintenance unit, designed by the Link instrument training department, has remedied a previously acute Link instrument spare part shortage at 11th Naval District air bases.

A 1½-ton Chevrolet truck chassis rigged with a van-type body carries three spares for each part of a Link trainer and its automatic device attachments. The van is also equipped with



TRUCK VAN CONTAINS A LINK WORKSHOP

a work shop complete with electrical attachments operated off a 110-volt AC extension. This shop is used for repair work in the field.

The mobile unit maintains a monthly schedule visiting each air station in the district, that possesses Link trainers. Good parts are given in exchange for broken or defective ones. The replaced parts are later returned to the main shop at North Island for repair and eventual re-issue. Three trained maintenance men with the mobile unit give technical assistance or install new parts when required.

The centralized repair unit makes possible the maintenance of a complete stock of spare parts. Prior to installation of this system no one airfield within the district was able to build up a sufficient stock of commonly needed Link trainer spare parts.

▸ *BuAer Comment*—The A.A.F. has had 11 Link maintenance trailers in commission for two years. The Navy has a contract with the A.A.F. for maintenance and major overhaul of device 1-AA-1. The contract will go into effect as soon as the specifications are completed.

Tech. Note Gives Word On Jams

BuAer recently has received many reports from service activities concerning link jams occurring in ERCO 250TH and MPC250CH series aircraft gun turrets. A belief that the jams occur as a result of poor link chute design or improper installation in the turrets is expressed.

Armament Test at NAS Patuxent River exhaustively tested the McCord link chute installation in each of the turrets and fired thousands of rounds of ammunition without occurrence of any link jams. During the tests it was discovered that through faulty manufacture and inspection there is considerable variance in dimensions in the opening of link heads.

Dimension of the opening of the link head is a highly critical factor. Inside dimension between the link stripper and forward guide, measured at the tip of the forward guide must be not less than 1⅞" or more than 2". Tech. Note 60-44 contains information and instructions concerning installation and maintenance of link chutes. If these instructions are properly executed, it is believed link chute jams in the ERCO 250TH and MPC250CH series aircraft gun turrets will not occur.

CincPac Issues New Photo Rules

A new set of instructions on forwarding reconnaissance and news photographs has been issued to units operating in Pacific Ocean Areas, according to CincPac Letter A2-11/A7-4/A7-5, Serial 10L-45, dated 31 January 1945. These instructions are as follows:

1. Mapping, reconnaissance and intelligence photographs, with negatives, are to be forwarded by air as rapidly as possible. Except when otherwise directed by dispatch or operations order, they will be marked — CincPac-CincPOA Advance Headquarters (Advance Intelligence Center).

2. News photographs are to be forwarded unprocessed, in the interest of speed, *direct* to CincPac marked—CincPac-CincPOA Advance Headquarters (Public Relations), *Expedite Fastest Possible Delivery Via Air.* If necessary to process the film, original negatives are required, marked as above. Caption information must accompany film. At no time will aerial sortie negatives be cut for possible news release. Aerial negatives will be screened for their news value upon arrival at the forward intelligence unit.

3. All other photographs, including crash, training and technical, will be forwarded by air with original negatives either processed or unprocessed. This includes both black and white or color. They shall be marked—CincPac-CincPOA Advanced Headquarters (Public Relations).

4. All motion pictures, including automatic and gun camera color film, will be forwarded, preferably unprocessed, as fast as possible via air marked—CincPac-CincPOA Advanced Headquarters (Fleet Motion Picture Officer), *Expedite Fastest Possible Delivery Via Air.*

5. Public relations photographs in the Alaskan-Aleutian area will be forwarded direct to Secretary of the Navy (Office of Public Relations), the letter states.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Aerial Target Changes Are Announced

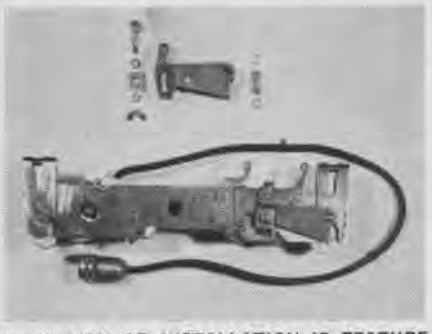
Flotation pads no longer are included in the fabrication of Mk 20 Mods 1 and 2 and Mk 7 types of aerial targets, and the radar wires formerly incorporated in the Mk 7 Mods 6 and 7, the Mk 19 and Mods and the Mk 20 Mods 1 and 2 have been eliminated. The only radar reactive sleeve target now under procurement is the Mk 22 Mods 0, 1 and 2.

Displacing Bracket for Bomb Shackle

The bomb lug displacing brackets, discussed in NAVORD OMI V19-44, for improving the bomb release characteristics of Bomb Shackles, Mark 4 and Mods, now are available. Release failures and excessive release lags are being encountered when bomb lugs bear against forward stops of bomb shackle at the instant of release.

This bracket provides a means for positioning bomb lugs close to the after stops of the shackle at all times. The lugs thus are located close to the open sides of the suspension hooks, thereby obtaining greatest possible hook-opening moment and effecting bomb release before the extension of the forward hook has rotated sufficiently to strike the bomb body. Tests show that with the use of the bracket, positive release is obtained at dive angles up to 70° rather than at the maximum angle of 30°, for which the shackles were designed.

Activities using Mark 4 type shackles are requested to obtain the brackets and



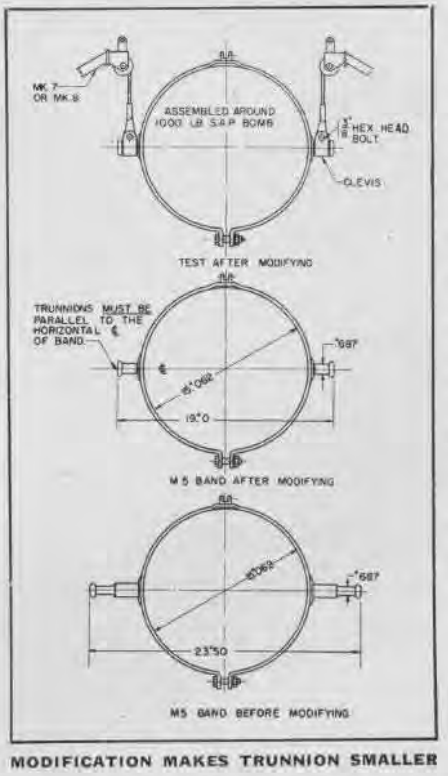
SIMPLICITY OF INSTALLATION IS FEATURE

install them as soon as practicable. Installation is quite simple and requires only a few minutes for each shackle. They are available at all major supply points under stock No. 3-B-2625-250, and each bracket is packaged complete with all necessary parts for assembly to the shackle.

SB2C Trunnion Band, M5, Modification

By modifying the standard trunnion band, M5, for the 1000-lb. SAP bomb, AN-M59 or AN-M59A1, two of these bombs may be carried in the bomb bay of SB2C type aircraft.

At present, the distance between the ends of the trunnions on this band is 23".5, which permits engagement with displacing gears having forks with a similar distance between them. SB2C type aircraft are equipped to provide either one displacing gear that will engage trunnions having 23".5 spacing or two displacing gears having forks designed to engage trunnions of 19".0 spacing. By modifying the trunnion band, M5, so that distance between the ends of the trunnions is reduced from 23".5 to 19".0, it is possible to install two 1000-lb. SAP bombs in the SB2C.



MODIFICATION MAKES TRUNNION SMALLER

No work should be attempted on the trunnion band, M5, until the band has been removed from the bomb. Using a hack saw, cut trunnion from band as close as possible to the weld, then grind or file smooth the surfaces of the band where trunnions were cut off. Machine or grind the base of each trunnion until its overall length is reduced to 1".718. Then shorten trunnions by butt-welding to the trunnion band, making sure they are in correct alignment and that distance between ends of the trunnions does not exceed 19".0. Check band for proper fit in displacing gear forks.

This modified trunnion band, M5, then should be placed on a 1000-lb. SAP bomb and each trunnion given a 500-lb. load test. Utilizing two hoists of the AN-Mk 7 or Mk 8 type, fasten each cable to especially constructed clevises that fit around the shortened trunnions (*see drawing*) and then raise the bomb several inches.

When loading two 1000-lb. SAP bombs in the bomb bay of the SB2C, with modified trunnion bands positioned, the starboard rack should be loaded first. The port rack then may be loaded without working under the starboard bomb. Check bands to see that the port and starboard displacing gears are engaged properly on trunnions.

After both bombs are loaded, their tail assemblies should be adjusted by rotating to insure that outer edges of the fins will clear the bomb bay door hinges when the bombs are released. When the correct tail fin positions have been established, tail locknuts should be tightened securely.

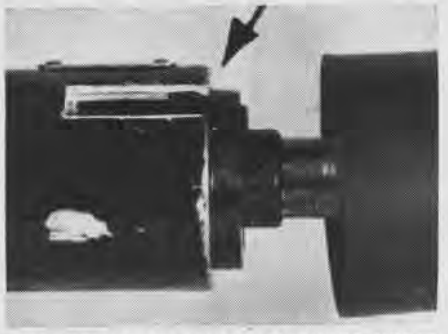
Modification to trunnion band, M5, if needed, may be accomplished by service activities having SB2C type aircraft and should be done according to instructions in NAVORD OMI V3-45.

A special band, M5A1, having 19".0 tip spacing, now is under procurement.

Some activities have reported use of the 500-lb. AN standard GP bomb trunnion band, M1A1, on these 1000-lb. SAP bombs. The distance between ends of the trunnions on the M1A1 is 19".0. The diameter, however, is only 14".2, which requires the use of two longer bolts in the flanges for clamping band on bomb. This results in the trunnions being slightly off center and not parallel to one another with consequent misalignment in the displacing gear forks. While the amount of misalignment of the trunnions does not appreciably affect the proper release and displacement of the bomb, it is recommended that the trunnion band, M5, be modified and used instead of the band, M1A1, until such time as the band, M5A1, is available.

Rusty 20mm Charger Valves Won't Work

Reports reaching BUORD indicate that some charger valves on 20mm guns installed in SB2C-3's fail to function properly, owing to an accumulation of rust. Inspection showed the charger valves were rusted so badly they could be actuated only with difficulty and would not "pop



CHECK VALVES REGULARLY, BUORD URGES

out" automatically. After cleaning and oiling, valves again functioned satisfactorily.

Such a condition indicated presence of water in this area, and upon inspection of the plane, it was revealed that water leaks through the opening of the armored access doors, just forward of the windshield, and falls on the valve at this point. It also was found that the rubber cap recently incorporated on the charger valves to protect this unit against dust and moisture is not adequate protection.

As a means of correcting this situation, all activities are urged to have the charger valves checked, cleaned and oiled at regular intervals. One squadron installed deflectors above these valves to turn aside any water leaking through to the gun.

Beginning May 31

This New MONTHLY REPORTING FORM

MUST BE SUBMITTED REGULARLY

NavAer 2124

MONTHLY REPORT OF OFFICERS ORDERED TO DUTY INVOLVING FLYING
OFFICERS OF THE U. S. NAVY AND NAVAL RESERVE
NAVAER-2124 (4-45)

(Submit as of 2400 local war time on the last day of calendar month VIA AIR MAIL. See instructions on reverse side).

CONFIDENTIAL (When filled in)

REPORTING ACTIVITY	LOCATION (Give continental location or Navy number, if assigned)	STATUS	DATE OF THIS REPORT	DATE OF PREVIOUS REPORT

RECONCILIATION

A	B	C	D	E
TOTAL REPORTED ON BOARD END PREVIOUS MONTH	NUMBER GAINED (Col. 10)	COL. A PLUS COL. B	NUMBER LOST (Col. 11)	TOTAL REPORTED ON BOARD END CURRENT MONTH

Original to: CNO, OP-31-R
Copies to: BuPERS 316

FILE NO.	NAME (Last name first and initials)	RANK	CLASSIFICATION: USN OR AI ETC.	CLASSIFICATION: SERV. GROUP (1, 2 or 3)	CLASSIFICATION: A, B OR C	CLASSIFICATION: TYPE (VF, VB etc.)	DUTY (See Instr. 4)	ASSIGNMENT STATUS (See Instr. 6)	*DATE OF GAIN	DATE OF LOSS	UNIT REPORTED FROM OR ORDERED TO	ESTIMATED DATE OF ARRIVAL AT NEW DUTY STATION	FOR CNO USE ONLY
1	2	3	4	5	6	7	8	9	10	11	12	13	14

THIS COPY OF ACL 35-45 WILL BE FOLLOWED BY AN ADDITIONAL MAILING ON OR ABOUT 25 APRIL 1945, ENCLOSING SUFFICIENT FORMS NAVAER-2124 TO ENABLE SUBMISSION OF FIRST REPORT DUE 31 MAY 1945. UNITS OUTSIDE THE NORTH AMERICAN CONTINENT UNDER COMAIRPAC SHOULD IMMEDIATELY ORDER A SUPPLY OF FORM NAVAER-2124 FROM AREA COMMANDERS. ALL OTHER UNITS SHOULD PLACE ORDERS IMMEDIATELY WITH BUREAU OF AERONAUTICS, PUBLICATIONS BRANCH, WASHINGTON, D. C.

WATCH FOR AVIATION CIRCULAR LETTER 35-45 READ THIS EXCERPT

• "The prompt and accurate execution of this form is required in order to administer and control rotation policies and develop the necessary planning bases for the administration of the Integrated Naval Personnel Program. It shall be the responsibility of each commanding officer to see that all subject officers under his command be reported each month, whether reported directly by him or, in the case of detached units, by the officer in charge. In general, reports are to be submitted at squadron or comparable level."

Rolling Rack Holds NavAer Data

NAS San Diego—Accessories division of the A&R Department has constructed several rolling book racks which are in use on the floor of the shops. The racks are designed to be rolled easily about the shop, holding technical books at a convenient height. Books are retained by a bar that secures them by passing through punched holes in the lower left corner.

It was found that shop men hesitate to go to files in the front office to refer to

RACK MAKES PUBLICATIONS ACCESSIBLE

NavAer manuals. The racks were successful in encouraging use of NavAer overhaul instructions by making them easily available to the men they were written for, men with sleeves rolled up doing the work. The racks also proved to be a great time-saver.

New BuAer Specifications Index

BuAer has coordinated its *Index of Specifications* to form a part of the general list of specifications used by the Navy Department. The list of specifications used by the Bureau of Aeronautics now is contained in a separate pamphlet entitled *Index of Specifications Used by the Navy Department, Part III, (Restricted).*

The new printed pamphlet replaces the old mimeographed list entitled *Appendices 1 & 2 to Bureau of Aeronautics Specification SD-24.* The new index contains the same information as the former and still forms Appendices 1 & 2 to SD-24 *(General Specification for the Design and Construction of Airplanes for the United States Navy).*

In addition, there are included a list of the Joint-Army-Navy Specifications approved for aircraft use, and a list of specifications that have been cancelled or superseded by others with different numbers or titles since the last revision of the index.

The new index will be completely revised, reprinted and distributed to naval activities every three months. Any activity failing to receive a copy should address a request for same to BuAer (*Attention:* Specifications Distribution Section). Comments from the service will be appreciated on the new index.

SCREEN NEWS

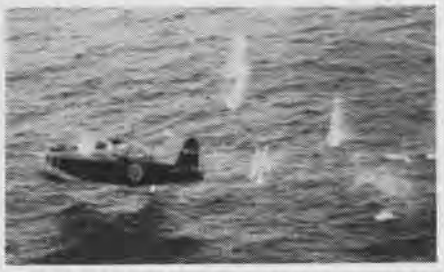
Flak Stopper. The human skin is a very wonderful mechanism and highly efficient, but it was never designed to stop fast-flying steel, such as flak. The flak suit, developed after much scientific talk and tests is a second skin dedicated to one purpose—protecting the vulnerable parts of the body: head, chest, abdomen. An Army motion picture tells how this body armor grew, what it is made of, and how to get in and out of it on the double:

MA-4974b *Body Armor (Flak Suit)* (Unclassified, 15 min.)

SYNOPSIS: In the quest for a suitable flak-stopper, researchers had to arrive at some middle ground between a 13th century suit of armor, which would be flak-proof but a trifle cumbersome, and a baseball umpire's outfit, which would be light but ineffective against anything above the caliber of a pop bottle. An effective compromise was found in a suit of 2-inch manganese plates assembled in a canvas body, and a chamois-lined helmet.

The suit is easy to put on and, when ditching, can be discarded in a hurry.

So Sorry is Too Late. Broadly speaking, there are two kinds of recognition—*1.* quick, and *2.* sorry. To help keep aviation personnel on the quick, or no-regrets, side of the



EMILY GETS RECOGNITION—WITH BULLETS

ledger, films are still in there pitching planes and ships at the men who will soon be slinging firepower at the real McCoy. Now being distributed:

MN-2596ai *Aircraft Recognition — Japanese Judy* (Restricted, 6 min.)
MN-2596m *Aircraft Recognition — Japanese Emily* (Restricted, 7 min.)
MN-2596i *Aircraft Recognition — Japanese Jack* (Restricted, 5 min.)
MB-1427ce *Aircraft Recognition — Tempest II* (Restricted, 5 min.)
MB-1427cf *Aircraft Recognition — Spitfire* (Restricted, 6 min.)
MN-3197f *Aircraft Recognition Tests — Test No. 6—U.S. Navy, Army and British Aircraft (40 selected Planes)* (Restricted, 18 min.)

Back to Normal. Up-to-date methods of mental therapy are working wonders for men whose minds temporarily have wandered from the norm of rational conduct as a result of combat fatigue or pressure of other severe strains induced by war conditions. High percentage of recoveries testifies to the soundness of the techniques employed. One part of the treatment—the important role of the skilled hospital corpsman in mending disordered minds—is dramatically illustrated in:

MN-1511r *Care of the Sick and Injured by Hospital Corpsmen—The Neuro-Psychiatric Patient* (Restricted, 27 min.)

CONTENT: Considerable emphasis is placed on the fact that the neuro-psychiatric patient is not insane but mentally ill, and must be cared for as intelligently and carefully as those physically sick.

Typical cases of emotional disturbance are studied: the depressed, dazed patient; the jittery, overactive victim of combat fatigue; other types. Various corpsmen illustrate right and wrong ways of handling the different categories of patients.

The film concludes on the note that the humane and helpful role of the corpsmen in these cases carries with it a deep sense of personal satisfaction.

No Time for Blunders. Serious injury and even death can result from mishandling of casualties on aircraft returning from combat. An Army film (including scenes of a B-24, B-17, and P-38) gives warning and advice for all hands in all services:

MA-5622 *Removal of Battle Casualties from Aircraft* (Restricted, 15 min)

SYNOPSIS: Crew members aboard a flak-shattered B-17 give the wounded proper treatment on the way home, but make two glaring blunders: *1.* they fail to drop a flare to notify the Flight Surgeon of wounded aboard, and *2.* they handle injured men so inexpertly that one case takes a bad turn for the worse. The wrong way is followed by an explanation of correct methods of removing casualties from various types of aircraft, the importance of care versus speed, improvisation of litters from handy material, the need for giving shock patients plasma before removal. Final warning from the Flight Surgeon: "Some day you may be the one who determines whether a pal will live or die. That's a terrific responsibility, but you must be prepared and equipped to face it."

Where to Get 'Em. Central Aviation Film Libraries and Sub-Libraries are located at:

Naval	
ABATU, NAS St. Louis	NAS Quonset
CASUs 2, 4, 23, 24, 31, 32	NAS San Diego
CASU ComDet., Port Hueneme	NAS Squantum
ComAirPac	NAS Willow Grove
FAW 15	NAS Navy #115
Hedrons 2, 4, 7 12, 16	NAS Navy #117
NAB Seattle	NAS Navy #720
NAB Navy #939	NATB Pensacola
NAC Navy #140	NATB Corpus Christi
NAC Navy #3205	NATEC Lakehurst
NAMC Philadelphia	Navy #3233
NAOTC Jacksonville	TAL Navy #116
NAS Alameda	*Marine*
NAS Atlanta	MarFair West Coast
NAS Brunswick	MCAD Miramar
NAS Clinton	MCAF Newport
NAS Kodiak	MCAS Cherry Point
NAS Moffett	MCAS Eagle Mt. Lake
NAS New York	MCAS El Centro
NAS Norfolk	MCAS El Toro
NAS Patuxent	MCAS Mojave
	MCAS Navy #61
	MCAS Parris Island
	MCAS Santa Barbara
	4th MAW

Check your nearest Library before ordering

Engine laboratories teardown at NATS line maintenance school teaches the students nomenclature and proper usage of tools

In the instrument laboratory, civilian instructors teach care and maintenance of instruments, how to install and interpret them

NATS LINE MAINTENANCE SCHOOL

MECHANICS trained to maintain the big landplane and seaplane transports flown by Naval Air Transport Service are being turned out at the rate of 256 every four months at the Navy's only Line Maintenance School for such specialists at NAAS OAKLAND.

Almost all of the men being given training on R4D's, R5D's, and PB2Y's have seen active service with CASU's, PATSU's, carriers or other fleet activities in war zones and are sent back to Oakland under the rotation program. Men going through the school learn everything a technician needs to know about the big transports flying the world-wide lines of NATS. The Navy has operated the school the past 20 months, with civilian instructors.

School Gives Thorough Training

Before the war the school was operated by United Air Lines to train its line mechanics. Today it takes in a group of 32 men every two weeks and gives them thorough training in basic and aircraft mechanic tools, hydraulic systems, aircraft structures, instruments, engines, electrical accessories, induction and fuel systems, propellers, engine operations, tests and changes, inspection and actual line repair work.

Upon completion of the course the men are assigned to NATS for placement with their transport squadrons at various spots on the globe. Fifteen more experienced students a month are selected from the school to go to Douglas aircraft factory at Santa Monica for specialized training in R5D's, then join squadrons to teach other technicians.

Jobs Have Post-War Future

Since they are working with aircraft that are used by commercial airlines, students at the school have a post-war incentive to spur them on at the school. Establishment of new squadrons to fly injured men to rear area hospitals, using the type of planes in NATS service, created another "market" for aviation machinist's mates trained to handle such aircraft.

Engine test stand gives students chance to trouble shoot, and perform engine run-ins

Students disassemble and adjust Hamilton hydromatic propeller, and work on electrics

Hydraulic shop gives full training in all phases of system; cutaway helps in work

Worn Plane Tires Go On Autos

NAS ALAMEDA—In line with the Navy's conservation policy, more than 6,000 tires from naval aircraft have been recapped or re-issued for use on naval ground equipment at this base. Airplane tires carry wheel loads up to six or eight thousand pounds while motor vehicle loads normally are within the range of 2,000 pounds per wheel.

Many airplane tires, unsafe for the wheel load of a landing impact, are serviceable for many miles of highway and street driving. In addition, airplane tires are of greatly superior construction, having nylon and rayon cords, while the usual automotive tire today is made with cotton.

▸ ***BuAer Comment*—This is representative of the over-all Navy program to utilize aircraft tires. Those tires not used by stations themselves will be offered to all other Navy activities through district tire warehouses.**

New Tool Installs Lock Rings

Previous methods of installing lock rings with screw drivers or pliers were unsatisfactory as there was danger of injury to fingers and damage to lock

INSTALLATION PROBLEMS ARE ELIMINATED

ring and shaft. These problems have been eliminated by a generator shaft, lock ring for installing P-2 and NEA-3 eclipse generators, and was a suggestion submitted under the Navy Employees' Suggestion Program.

The tool is composed of two parts—body and expander. The lock ring to be installed on generator shaft is placed on shank end of expander and forced partly over tapered portion of expander with fingers. The body is placed on expander so that it seats against the lock ring. Hold the assembly with self centering end of expander against end of generator shaft with one hand and tap end of body lightly with small mallet or palm of hand. This will force lock ring completely over tapered portion of expander which tends to expand lock ring sufficiently to move freely on generator shaft and into its grooved seat.

[DESIGNED BY L. A. WOODS]

Marines Simplify Motor Repairs

MCAS CHERRY POINT—Maintenance and repair of motor vehicles have been expedited by addition of a unit replacement shop and a 1,000-mile inspection shop.

At the unit replacement shop, rebuilt parts are kept in stock. When a vehicle is brought in, faulty parts are removed and necessary replacements taken from stock so that the vehicle can be returned to service with a minimum of delay.

Defective parts then are disassembled, cleaned, repaired, re-assembled and tested before being turned in to the stock room for further use.

The 1,000-mile inspection shop is housed in a 40′ x 100′ transteel, arch-roofed building with concrete floors. Special steel benches line the walls, and motor analyzers and other electrical testing devices have been installed.

Vehicles due for their 1,000-mile inspection now are delivered to an inspection shed near the main garage for road tests, after which they are run into the inspection shop. With the new facilities, as many as 160 vehicles can be tested in a 16-hour work day.

Salvaged Signal Light Rebuilt

NAS PEARL HARBOR—A useful hand light that may be constructed out of surveyed material was improvised by Inspection and Survey Department here. Recently large numbers of plastic Grimes 24-volt signal lights have been surveyed by this activity. (Navy Aeronautical Specification L-18, N.A.F. Part #1171-2, Order Number N2888-9527.)

In modifying this light for use on 110-volt current, the retaining ring and sealed beam bulb is removed. Two holes are bored in the back of the plastic case for 10-32 screws, and an ordinary wall-type screw socket secured into place. A new cord is rewired to the socket through the handle, and insulated cord of 25′ and 50′ lengths is installed according to usage of the light. G-E Mazda sealed beam projector flood bulbs of 150 watts will screw into the socket and fit the plastic case exactly. The finished product is excellent for close inspection work, and can be made easily by any activity surveying this type of light.

▸ ***BuAer Comment*—This useful hand light should prove beneficial to close inspection work inside large airframe sections where a large volume of light is necessary. Application of surveyed material to a useful purpose is particularly commendable.**

NATechTraCom

Cabinet-stand for Curtiss Test Panel

Since the ST-1300 test rig is a portable unit and was not designed for instructional purposes, instructors at NAVAL AIR TECHNICAL TRAINING CENTER, 87TH AND ANTHONY, CHICAGO, found it difficult to set up the rig for their shop instruction.

A combination cabinet and stand, constructed of angle iron and masonite with hand-wrought aluminum trimmings, was

DEVICE AIDS INSTRUCTION AND TESTING

built to accommodate various units such as the master motor, contactor, electrical conduits and fixtures necessary for testing.

To facilitate compact storage of the cabinet when not in use, a drop leaf is installed on each side of the cabinet, hinged to fold down along the side walls so that the whole unit requires storage space of only 18″ x 40″. Removable fixtures on each drop leaf provide for mounting the master motor on one side and the contactor on the other.

The contactor fixture is designed to hold this unit at the proper height and at any angle required for testing. The cannon plug was moved from the test panel to the bottom of the cabinet, since the panel is secured permanently to the stand. This convenient plug-in permits use of a long extension cord that facilitates employment of the unit anywhere in the shop area. The cabinet is mounted on four casters that make the unit easy to move to all parts of the shop. The entire set-up proved useful.

A & R Shops

LET NANEWS HEAR FROM YOU!

LATEST BULLETINS ENGINE, AUXILIARY POWER PLANT, ACCESSORY, PROPELLER 19 April 1945

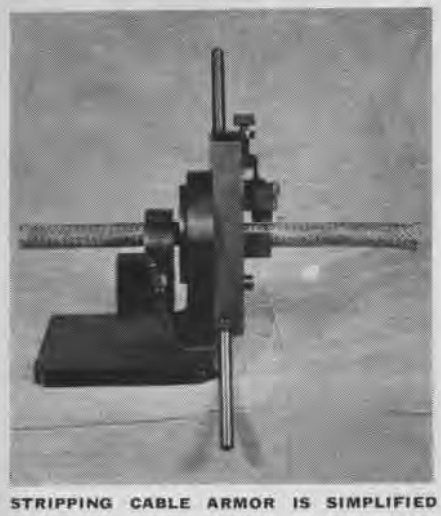
ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
PRATT & WHITNEY				
R-1340	0 (Rev. 1)	3-1-45	*Numerical Index of R-1340 Engine Bulletins*	Index on bulletins in effect.
	207	3-23-45	*Oil Seal—Generator Bearing Housing to Rear Crankcase Section*	Information of correct seal to be installed between generator bearing housing and rear crankcase section.
R-1830	377 (Supp. 2)	4-2-45	*Valve—Supercharger Fuel Drain*	To describe and authorize a change to facilitate removal of supercharger fuel drain valve.
	392 (Rev. 1)	4-3-45	*Counterweight Bolts—Flash Tin Plating of*	To change the application to include only those engines whose counterweight bolts are removed at every overhaul.
	399	3-22-45	*Magnetos—SF14R(L) N-8*	Improved method of checking compression of cross shaft oil seals.
R-2000	82 (Supp. 2)	4-2-45	*Valves—Supercharger Fuel Drain*	To describe and authorize a change to facilitate removal of supercharger fuel drain valve.
	93	4-3-45	*Counterweight Bolts—Flash Tin Plating of*	To change the application to include only those engines whose counterweight bolts are removed at every overhaul.
	98	3-22-45	*Magnetos—SF14R(L) N-8*	Improved method of checking compression of cross shaft oil seals.
	100	3-14-45	*Exhaust Stack Studs and Nuts—Checking of*	To require a regular check to prevent fires resulting from loosening of exhaust stack attaching studs and/or exhaust stack attaching stud nuts and pal nuts.
R-2800	73 (Rev. 1)	3-8-45	*Oil Flow to the Impeller Shaft Thrust Plates*	To improve lubrication of the impeller shaft thrust plates.
	119 (Supp. 1)	3-16-45	*Ignition Pressurizing Systems on R-2800-8 and -10 Engines*	To advise that Fitting, Part No. 80398, was omitted in error from Part Kit. No. 92944.
	155 (Supp. 2)	4-2-45	*Valves—Supercharger Fuel Drain*	To describe and authorize a change to facilitate removal of supercharger fuel drain valve.
	164 (Supp. 1)	3-31-45	*Propeller Shaft—Modification of*	To alter procurement of P&W Part No. 19361 Pin.
	175 (Rev. 1)	4-3-45	*Counterweight Bolts—Flash Tin Plating of*	To change the application to include only those engines whose counterweight bolts are removed at every overhaul.
	188	4-5-45	*Impeller Fuel Slinger and Split Rings—Rework of*	To inform activities of the new impeller shaft and fuel slinger which should eliminate galling of splines at fuel slinger and impeller shaft due to the axial movement.
	192	2-27-45	*Ignition Ventilating System on R-2800-27, -31, -43 and -51 Engines*	Improved ignition system ventilation by increasing diameter of piping within the system.
	207	4-2-45	*Crankshaft Bolts—Plating of*	Crankshaft bolt plating instructions.
	209	4-5-45	*Exhaust Pipe Shrouds and Attaching Screws—Interference Between*	To prevent interference between exhaust pipes and exhaust pipe shroud attaching screw heads.
	210	4-5-45	*Nuts, Exhaust Pipe Attaching—Replacement of*	To prevent loosening of exhaust pipe attaching nuts.
	213	4-3-45	*Stromberg PR-58E1 and PR-58E2—Injection Carburetors—Modification of to Include No. 51 (.1200) Drill Size Channel*	To incorporate a channel in subject carburetor as a safety measure to prevent the mixture leaning out in the event of a ruptured poppet valve diaphragm.
WRIGHT				
R-2600	155	3-20-45	*Limits for Engine Test After Overhaul of R-1820 and R-2600 Engines*	Overhaul engine test limits.
	154 (Rev. 1)	4-2-45	*Cylinder Hold Down Capscrews—Information on*	To include use of cylinder hold down capscrews, WAC Part No. 2045D23, on R-1820 engines of 1350 HP or less.
	161	4-5-45	*Impeller Drive Multi-Plate Clutch Adapter and Ring Assembly—Replacement of*	To install impeller drive multi-plate clutch adapter and ring assembly in 53 engines delivered with assemblies.
R-1820	374 (Rev. 1)	4-2-45	*Cylinder Hold Down Capscrews—Information on*	To include use of cylinder hold down capscrew, WAC Part No. 2045D23 on R-1820 engines of 1350 HP or less.
	375	3-20-45	*Limits for Engine Test after Overhaul of R-1820 and R-2600 Wright Engines*	Overhaul engine test limits.
	378 (Supp. 1)	4-3-45	*Driver Spool—Distributor Rotor, Edison Magneto Part No. B-3092—Replacement of*	Serial numbers of additional magnetos requiring replacement of defective driver spools.
	381	3-26-45	*High Tension Coils—Edison Part No. B-2296—Replacement of*	Information for replacement of defective high tension coils in Edison-Splitdorf magnetos.
	382	4-2-45	*Guide, Cam—Rework of*	Instructions for reworking of cam guides to prevent binding between the cam and cam guides.
General Engine				
	0 (Rev. 1)	4-3-45	*General Bulletin Index*	Index of Gen. Engine Bulletins.
	12 (Rev. 2)	3-5-45	*Classifications of Engines for Overhaul Purposes*	To reclassify engines for overhaul purpos
	38 (Rev. 1)	4-5-45	*Preservation of Aircraft Engines*	Preservation of Aircraft engines.
	51 (Supp. 1)	4-5-45	*Spark Plugs—Allocation, Issue and Use of*	To cancel para. 2 and 3 of original bulletin.
	57	3-27-45	*Grease, Magneto Lubricating*	To specify type of lubricating grease to be used in overhaul and maintenance of aircraft magnetos.
	64	3-5-45	*Special Identification Markings on Aircraft Engines & Primary Engine Accessories—Policy Concerning & List of those Currently in Use*	Policy on marking aircraft engines.
	65	4-3-45	*TAKK Model 41—High Voltage, Direct Current Ignition Insulation Tester—Instructions for Using*	Instructions for using subject tester.
	66	3-22-45	*Protection of Internal Steel Parts of Aircraft Engines with Permanent Resin Coating*	Protection for spare and disassembled parts against corrosion.
	67	3-27-45	*Ignition Cable Insulation—Failure of*	Information and instructions for inspection and rework of ignition harnesses.
Power Plant Accessory				
	1-45 (Rev. 1)	3-5-45	*Hydraulic Pumps, h-11*	To change temperature from 150° F to 180° F in subject bulletin.
	6-45	3-1-45	*Miscellaneous Accessories, j-15*	Information & instructions for testing intercoolers to determine leakage and to establish allowable limits on intercooler leakage.
	10-45	3-9-45	*Fuel Pumps, d-21*	

(*Continued on page 39*)

Bench Tool Prevents Injuries

Accidents to personnel prompted the suggestion of a bench tool for stripping armor from cable. Hacksaws or knifes were previously used. This consumed considerable time and resulted in cut hands at Washington Navy Yard.

The tool is well designed and of simple construction. In operation, the cable to be stripped is inserted from the front of the tool; the vise in the



STRIPPING CABLE ARMOR IS SIMPLIFIED

rear is clamped tight in the cable; the v block in front is adjusted to support the cable; then the cutter holder is screwed down until the blade penetrates the armor to the required depth where it is locked in position.

The cutter head is then revolved one complete revolution, completing a circular cut around the circumference of the cable. After this is done, the hold-down catch on the blade holder is released, and the blade is turned to parallel position to the cable. Again the knife is pressed down and locked in position. The vise is loosened to free the cable and the operator pulls out the cable, thus removing the armor.

The operation is reported to be four times faster than removal of the armor by hand. Accidents are eliminated, and a savings in the amount of $1,000 per year has been reported by the originating activity. The bench tool for stripping armor from cable was a suggestion submitted under the Navy Employees' Suggestion Program.

[Designed by C. W. Schwarz]

Clamping Device Reduces Time

NAS Alameda—The design of gyro horizon clamping device for vibration test stand is in keeping with the modern tendency of machine tool designers and designers of jigs and fixtures to reduce set up and "downtime". Principal features of this device are 3 locking pins for positioning the gyro horizon and a cam actuated clamping mechanism which permits speedy insertion and removal of the unit being tested.

In use, the gyro horizon unit is slipped in through the rear of bracket and 3 pins are placed in the original screw holes in the gyro, thus properly aligning the instrument and saving time by eliminating the use of screws for this purpose. With the gyro thus set the clamps are released by operation of cam lock, and the instrument is now locked in position for work or adjustment.

It is obvious that by substitution of locating pins in place of clamping screws and by the incorporation of a quick acting clamping mechanism that the time required for positioning and holding the gyro for test operations is

GYRO MAY BE FIXED WITHOUT REMOVING

reduced to a minimum. Perhaps the most outstanding advantage of this device is that the gyro may be adjusted without removing it from the test stand during the testing operations. This suggestion was submitted under the Navy Employees' Suggestion Program.

[Designed by M. Berger & D. Sutherland]

(Continued from page 38)

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
			Power Plant Accessory (Continued)	
	13-45	3-19-45	*Fuel System Accessories, f-10*	To increase effectiveness of the rubber "O" ring, Part No. 744108-4.
	14-45	3-21-45	*Starters, b-12*	To prevent improper installation of cylinder clamp ring.
	15-45	3-30-45	*Fuel Pumps, d-23*	Changes that have been incorporated in subject pumps.
	18-45	3-31-45	*Fuel Pumps, d-25*	To incorporate a double relief valve diaphragm arrangement offering a greater safety factor in prevention of pump failure because of diaphragm failures.
	19-45	4-3-45	*Turbo Supercharger, Model WT9-2—Hardness Testing of Turbine Wheel Hubs*	To insure that the manufacturer recommended hardness check is made at overhaul of affected turbo supercharger.
	21-45	4-5-45	*Fuel System Accessories*	It has been found that after a period of service the shaft seal of poppet type fuel selector valves leaks slightly.
	66-44	2-28-45	*Fuel Pumps, d-18*	To indicate that the diaphragm removed on disassembly should not be installed.
	68-44 (Supp. 2)	3-30-45	*Fuel Pumps, d-19*	Additional information regarding quantity of lubrication to be used in filling the gear head of fuel pump electric motors.
	77-44 (Supp. 1)	3-30-45	*Hydraulic Pumps, h-10*	To include the Model 1E-521 feathering pump in subject bulletin.
			Hamilton Standard	
	28	3-20-45	*Propeller Blades, Hamilton Standard—Anodic Treatment and Inspection of*	To stress use of anodic treatment of aluminum propeller blades as a means of inspecting for cracks and forging defects.
			General Propeller	
	10	3-26-45	*Gaskets; Distinction Between Governor Substituting Gaskets and Governor Mounting Gaskets*	Information on proper use and identification of subject gaskets.
			Jacobs	
	0	2-2-45	*Engine Bulletin Index*	Provide Index for Jacobs R-755 Engines.

LETTERS

SIRS:

I am writing on three questions which I am convinced that only you can answer.

Recently the "Naval Personnel Bulletin" *[Information Bulletin]* has permitted individual subscriptions to their publication. Is this true of NANEWS or not? I am certain that there are any number of aviation personnel who would be glad to be let in on this if it is true. There are so many of us who enjoy and profit from NANEWS and yet the circulation difficulties are such that we are lucky if we get a hand on one out of three issues.

Second, what significance is the aircraft designation R4D-6-10-DK? Of course, we

all savvy R4D-6 but what goes with the 10 and DK? Nobody seems to have the slightest idea around here.

Third, recently there have been many designations with an extra letter tacked on to the end, such as: TBM-1C, F4U-1G, PB2M-1R (*Mars*). There seem to be two distinctly different ideas of these. First some say that these letters designate the operational purpose of these craft: C—combat version, R—transport, N—training, etc. Others say that we have followed suit with the Army and these suffixes designate minor modifications such as B-25-A, B-25-B, B-25-C, etc. What's the word?

NAS Quonset Point AMM2/c

¶ NANEWS does not and cannot distribute copies on a subscription basis. Subscriptions to BuPers *Information Bulletin* are sold by Government Printing Office and are available to the general public as well as to service men, no classified editorial contents being involved. NANEWS' RESTRICTED category makes this arrangement impracticable, inasmuch as the right of each subscriber to receive classified material would have to be established.

Distribution log jams at stations, regrettable as they are, come under local cognizance, and the best NANEWS has been able to do is insert occasional page advertisements to urge loosening up of the distribution mechanism.

Second, R4D-6-10-DK is decoded as follows: R4D = transport; 6 = model designation (running from 1 to 6); 10 = small change in model (appearing in multiples of 5, *viz.* 5, 10, 15, etc.); DK = plant where plane was manufactured (in this case Oklahoma City). 10-DK is an Army designation not normally carried on planes procured for Navy.

Third, in TBM-1C, 1C = model designation (*addition:* wing guns). Modifications go to 1S. As to F4U-1G, VF Desk says there ain't no such. There are F4U-1E's & 1D's, in which 1E and 1D = models, as above. On PB2M-1R, there is now only one *Mars*, but it has various modifications, hence the 1R. F7F-2N = *Tigercat* night fighter (two-seat).

SIRS:

Will you please publish an answer to this question? Do naval air transport crewmen who have been taking blood, etc. to the various fields on the Philippines since the first field has been open rate the Philippine ribbon? Yours truly,

1500 HRS. PACIFIC TIME

¶ ALNAV #64 dated 5 April 1945, authorizing Navy, Marine and Coast Guard personnel to wear both Philippine Defense and Philippine Liberation ribbons, lists qualifications for eligibility (NANEWS 5/1/45). It includes [Par. (B) (3)] as eligible, personnel who "served in the Philippine islands or on ships in Philippine waters for not less than thirty days during the period from 17 October 1944 to a terminal date to be announced."

SIRS:

In perusing the 1 February 1945 issue of NAVAL AVIATION NEWS, I read an article on page 12 regarding an increase in the naval pilot program.

If you could inform me of the latest information on flight refresher training or officer flight training in grade, it would be greatly appreciated.

I hold a Civil Aeronautics Administration commercial pilot's certificate and was employed by the CAA prior to entering the service. It seems I could better serve the Navy in a capacity similar to my former occupation.

VR-11 LIEUTENANT (jg)

¶ NANEWS stated that "The Navy has shifted its pilot training program back into a higher gear by announcing that former aviation cadets and student aviation pilots who were separated from pre-flight stages in the cutback since June 1944 would be given a chance to reenter the program."

The writer is referred to A1NAV 139-44, dated 24 July 1944, and BUPERS Circular Letter 138-44, dated 15 May 1944, both on flight training.

NAVAL AVIATION NEWS

Published twice monthly by Chief of Naval Operations and Bureau of Aeronautics to disseminate safety, survival and technical information to the aeronautical organization. CONTRIBUTIONS INVITED. Air mail should be used where practicable to insure speediest delivery of material submitted for publication, addressed as follows: Chief of Naval Operations, Naval Aviation News, Navy Department, Washington 25, D. C.

CONTENTS

ANSWERS TO QUIZZES

● BEST ANSWERS (p. 12)

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

● NAVIGATION PROBLEM (p.22)

1. (a) Island of Kauai
   (b) Nihoa
   (c) French Frigate School and La Perouse Pinnacle
   (d) Gardner Pinnacles
   (e) Maro Reef
   (f) Layson I
   (g) Pearl and Hernes Reef
2. 270°
3. 2336 GCT
4. 275°
5. 0505 GCT, following day

(Tolerances on MH's: 2° in either direction; on ETA's 2 min. in either direction)

● GRAMPAW'S QUIZ (p. 10)

1. Yes. Ref: New BuAer Manual, art. 6-110.
2. False. Ref: Technical Note. No. 61-42.
3. The pilot in command. Ref: Aviation Circular Letter No. 16-45.
4. To be sure that you are clear of the aircraft before pulling the rip cord. Ref: *Parachute Sense*, pg. 12.
5. No. Ref: New BuAer Manual, art. 6-211.

Play your ace: Identify when approaching friendly ships

A CARRIER-BASED TBM SWEEPS IN OVER THE NAKASHIMA AIRCRAFT FACTORY NEAR TOKYO ON NAVY'S FIRST STRIKE AT THE JAP HOMELAND

OVER JAPAN

HIROHITO'S homeland for the first time felt the weight of Navy bombs dropped from carrier-based planes on Feb. 17. Pilots in the ready room of one of Vice Admiral Marc A. Mitscher's task force carriers received a last minute briefing before shoving off on their first Tokyo strike. Minutes later planes were streaking for their targets. Jap factories were rocked by bombs and left burning

THE TAIL ASSEMBLY OF AN ATTACKING PLANE FRAMES LANDSCAPE OF SMOKING JAP INDUSTRIAL AREA BLASTED BY BOMBS FROM NAVAL AIRCRAFT