NAVAL AVIATION NEWS

Jap Electronics
Integrated Program
Bomb Arming Wires

Feb. 1, 1945
RESTRICTED

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The GONG SOUNDED

HIGH OVER THE PACIFIC NEAR TRUK, WEATHER CONDITIONS CREATED A NATURAL ARENA WHICH SAW A FAR MORE SPECTACULAR DUEL THAN ANY CHAMPIONSHIP BOUT.

THE FIGHTERS WERE A NAVY PILOT WITH A LOCKHEED VENTURA AND THE JAP PILOT OF A TWIN-ENGINED BOMBER. FLYING SOUTH OF TRUK, THE NAVY FLIER ENCOUNTERED HIS OPPONENT JUST INSIDE THE NATURAL ARENA WHICH HAD BEEN FORMED BY A TROPICAL FRONT ON ONE SIDE AND A TOWERING STORM CLOUD FORMATION ON THE OTHER.

SPARRING AROUND, IT WAS APPARENT THE JAP WANTED TO AVOID A CLINCH. HE DUCKED AND TURNED TAIL, BUT THE NAVY PILOT WAS CLOSE ON HIS HEELS. HAVING A SLIGHT ADVANTAGE IN SPEED, THE VENTURA ATTEMPTED TO DRIVE THE NIP INTO A CORNER, BUT THE RISING SUN OUTMANEUVERED HIM ONCE – THEN TWICE.

SWINGING AROUND TO COME IN FOR A SECOND ROUND, THE NAVY FLYER DODGED BACK AND FORTH TO AVOID THE DIRECT FIRE OF THE JAP'S TAIL GUNS. SLOWLY AND SURELY, HE CROWDED THE NIP INTO THE CORNER OF THE AIRBORNE ARENA. THEN WITH UNFALTERING ACCURACY, **B.E. BIGGS AOM 2/c** CUT LOOSE AND DELIVERED THE SUNDAY PUNCH FOR A KNOCKOUT.

THE JAP PLANE FLARED BRIGHTLY, PLUNGED EARTHWARD, AND THEN CARTWHEELED OVER THE WAVES SHROUDED IN FLAMES.

MOMENTS LATER, THE NATURAL ARENA NATURE HAD CREATED FOR THE BIG EVENT WAS JUST ANOTHER VACANT SPOT UNDER THE SKY.

Aircrewmen have what it takes

JAP ELECTRONICS

BOMBING a Japanese radio station, direction finder or power plant is a swift method of crippling the enemy. The Japs are improving many types of their electronics equipment, and with the westward advance of war and capture of enemy bases, much has been discovered about the appearance and function of these installations. Although the Japanese have not standardized their equipment nearly as much as the Germans, many of their electronics devices can now be positively identified from the air. Information collected from various Pacific islands has been assembled in a book, "Japanese Electronics," which will be published soon by the Navy Photographic Interpretation Center. It describes and illustrates types of equipment which the Japs are using and tells how to analyze them on photographs or recognize them from a plane. The Japanese may be using certain types of German electronics devices, so a special section on German installations is included to give added clues.

ELECTRONICS devices of all types are of unprecedented value in this war. Both Allies and Axis have put great effort into developing better equipment. Through reconnaissance and ground photos taken at captured islands the U.S. has learned about many Jap installations. The Navy airman's job is to smash all Jap electronics equipment he can recognize, depending on information supplied by photographer and interpreter.

Plane sweeps past old-style Japanese radar of the *Guadalcanal* type. This Jap radar is of simple construction and can detect approaching aircraft as far as 50 to 60 miles away. The upper part of the antenna is used for receiving and the lower part for transmitting

RADAR UNITS

FINDING the location of radar is an essential job when attacking an enemy base. If this position is known, it may be possible for attacking planes to get over the target without being detected, and bombers can eventually hit the radar itself and knock it out of commission.

A good many Japanese radar units have been captured and studied by experts. Since the size and shape of the principal types of enemy radar screens vary, shadows cast by radar screens provide the best means for the interpreter to identify them. Sometimes a pair of radars is found together, one being used for search and the other for tracking.

Occasionally the installation is surrounded by a blast wall, and a generator building may be found nearby. In a mountainous area the Japs usually set up their radar on high points. A white scar on a mountainside will make the interpreter suspect the presence of radar. In low islands the Japs install units on a high concrete base or on top of a building. By doing this the enemy gives his instrument a clear field for air and sea search.

Besides their land-based units, the Japs have installed radar on ships and an increasing number of aircraft. Another job of the interpreter is spotting fire control radar with gun batteries. Valuable information about this specialized radar equipment is being obtained from reconnaissance.

Captured *Guadalcanal* type radar at Kwajalein is mounted on high concrete base. Antenna rotates with shack to which it is attached

Destroyed Japanese radar of *Attu* type at Tarawa. Attached to a concrete base, it has a box screen and rotates on steel turntable

Jap radar installation first seen at Wewak is known as *Wewak-Yagi* type. Antenna has two rows of horizontally aligned rods

Shadows cast by radar screens are a useful means of identification. Radars in this vertical photo are protected by revetments

Among the best known early warning type Japanese land radars are the following:

1. Guadalcanal Type:—This was the first enemy radar seen. Its antenna is in two sections, with the upper part being used for receiving and the lower for transmitting. The screen is backed with chicken-wire-type mesh. The primary function of this radar is for early warning of aircraft approach. It gives the range and bearing of approaching planes as far as 50 to 60 miles away. The antenna rotates with the motor-driven shack to which it is attached. The framework of the screen is of wood, and the shack is also of wood construction.

2. Attu Type—This is similar to the *Guadalcanal* type radar, representing an improvement on it. It has a box screen, which is visible from the air and on photographs. Screen and control shack rotate on a steel turntable, affording complete search coverage.

3. Mobile Mattress Type—This radar has a box screen which is much smaller than that of the *Attu* type. It is mounted on a standard Japanese army trailer. Photographic evidence indicates that it is being employed more and more by the enemy for land-based search. Sometimes it is used alone, and in other instances it is found in joint use with older types. The Japanese frequently mount the Mobile Mattress radar in emplacements, giving it a permanent location and appearance of a fixed installation.

4. Wewak-Yagi Type—The antenna consists of two horizontally aligned rows of rods mounted on top of a 25-foot pole. The whole antenna rotates in azimuth. This installation was spotted first near Japanese bases in New Guinea.

Mobile Mattress-type of enemy radar is mounted on Japanese army trailer. It has box screen, is used widely for land-based search and is frequently given permanent mount in earthen emplacement. Screen is much smaller than *Attu*-type installation

RADIO STATIONS

Japanese radio station rises above rocky crags of Chichi Jima in the Bonin Islands. Two types of mast are in use at this station

This was formerly the radio station building in the town of Tinian. Note three typical platforms on steel lattice mast at right

Radio station at Kwajalein housed transmitter, generator, communications offices and living quarters for Jap radio personnel

RADIO communications are of great importance in the sprawling island empire the Japs have been struggling to maintain. The enemy has been constructing an elaborate network for years. In general, photographic coverage reveals many duplicate installations and locations which have units operating at several different frequencies. A typical coral atoll developed by the Japanese may contain three or four large stations which have a range of hundreds of miles, and numerous small stations with a lesser range. Small stations are difficult to pick out on aerial photos. Ship and airplane radio, and hand-held "walkie-talkies" also form an integral part of the Jap communications pattern.

In photos, shadows cast by masts furnish the best clue to a station's capacity. From shadows the interpreter is usually able to determine the number, height and type of masts and thereby estimate frequency and range of a station. Careful observation of mast location will often reveal whether or not a station's waves can be beamed in a given direction. Considering the difficulties of supporting antennae in long spans, it is logical to believe that the longer the span (distance between masts) the higher the masts and the more powerful the transmitter will be. Most Jap steel lattice masts seen thus far are less than 300 feet high. Wooden stick masts used by the enemy are from 65 to 100 feet. Lattice masts frequently have one or more platforms at or near the top, which helps identify them.

The transmitter is the most vital point in the enemy's communications set-up. It is almost always found within 300 feet of the masts.

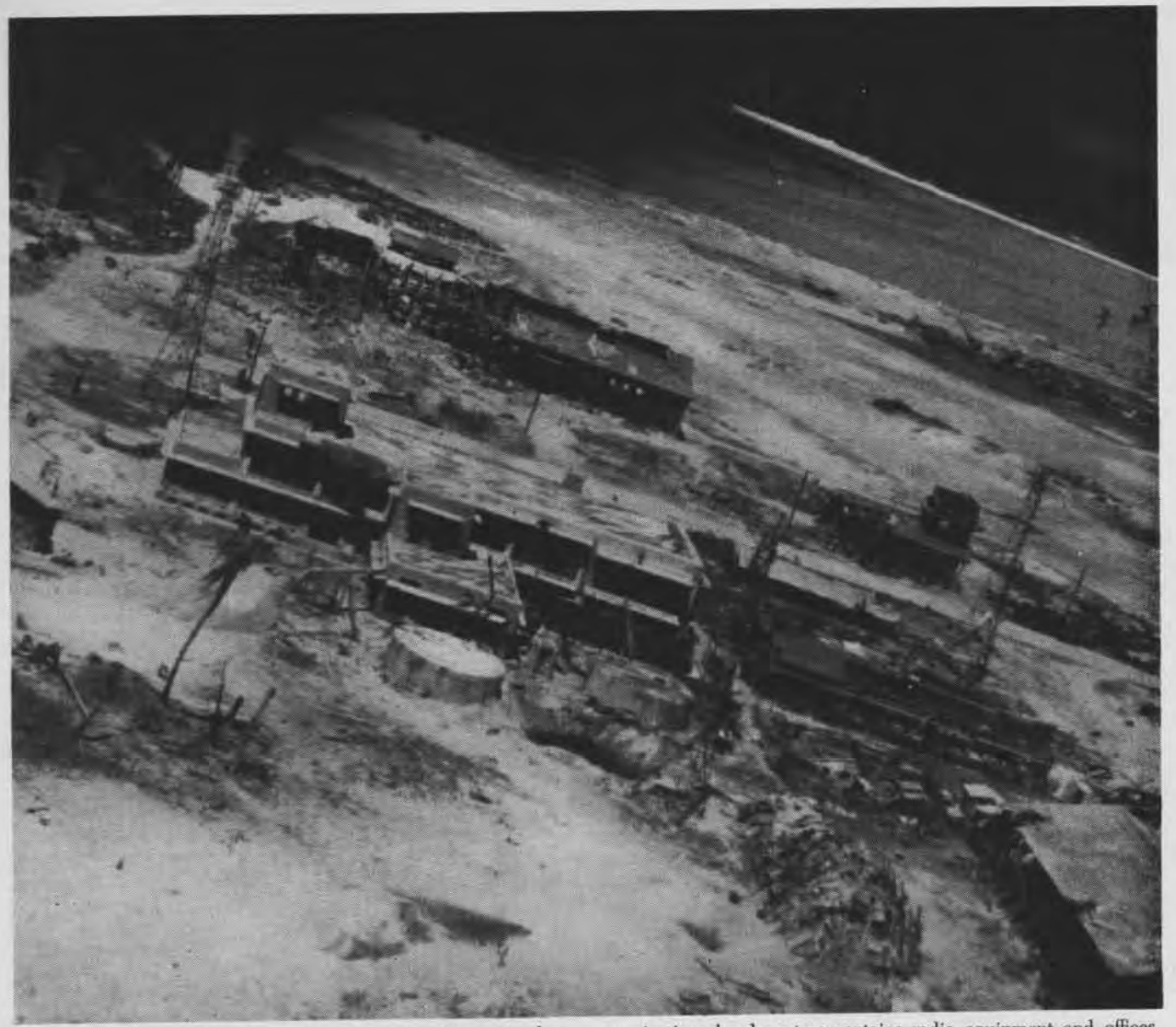
Most Jap communications stations are in the medium frequency band. A more or less standard type of medium frequency communications center has been found in at least 15 different Jap-held areas. It has three lattice masts, from 60 to 75 feet high, arranged in an equilateral triangular pattern around a large concrete communications building in the center. This is two stories high and houses transmitter, generators, storage batteries, communications offices, living quarters and storage. Round cisterns are placed close to this structure to collect the water which runs off the roof. These cisterns appear on islands where the enemy has found difficulty in digging wells.

Other smaller auxiliary buildings include water cooling tanks (probably for the water-cooled Diesel engines used to generate power) and a concrete structure for storing oil. This type communications center has been thoroughly bombed out of business on islands captured by U.S. troops.

JAPANESE weather stations also follow a typical pattern. A 50 or 60 foot steel or wood tower is built to house the wind instruments. Occasionally these are put on a low wooden platform or on the roof of a building. A prominent feature of enemy weather stations is the group of three small white-painted instrument houses. These are ordinarily in a row and stand out clearly on photographs and from the air. If the station is near water, it may have a tide gauge house. Two spliced wood stick masts usually support the antennae for the radio transmitting station.

A few former U.S. radio stations, notably in the Philippine Islands, are believed to be in use by the Japanese. These have masts considerably higher than any the enemy is known to have built in conquered areas.

As American airmen press closer to the Japanese home islands, they encounter more and more powerful enemy radio stations of the large pre-war, civil type, targets for bombs.



Standard Japanese medium frequency communications center has three lattice masts surrounding main building. Two-story communications headquarters contains radio equipment and offices. Pipes carry rain water off the roof into big cisterns for storage

Underground barrel-vaulted concrete structures found near Agana airfield on Guam were used by Japanese to store radio equipment

Photographs of Jap weather stations usually show three small instrument houses, painted white. Tower is another standard feature

Housed high frequency Japanese direction finder is situated near two open Adcock-type medium frequency installations at Rabaul

Shadows of medium frequency direction finder's poles show clearly against snow in night photograph of Jap positions on Paramushiro

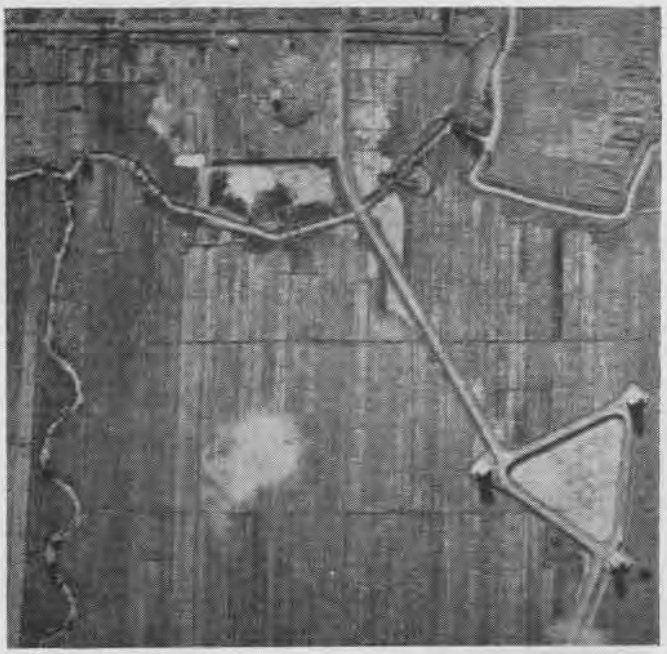
D. F. STATIONS

JAPANESE direction finding stations have a similarity of construction which simplifies recognition from the air. Most Jap land-based D.F's photographed to date operate on the Adcock system. In its simplest form this consists of four vertical members, with a receiver in the center diagonally connected to them. The installation may be completely housed, or vertical members may be exposed. Normally, housed types are high frequency stations, while large open types are medium frequency. Both types often are seen.

The Japs build D.F. stations near airfields on sites which are well cleared, fairly level and high. A pattern of paths and roads surrounds the installation, and a radio communications station is always nearby. The enemy often sets up duplicate D.F. installations, of the same frequency in the same area. A high frequency D.F. is usually built near each medium frequency D.F., but Jap high frequency stations are also often found alone.

THESE D.F. stations can pick up one of our planes if it breaks radio silence and chart its exact position. The Japanese also use D.F. as an aid to aerial navigation. A Jap pilot needing his bearing sends a continuous signal on which the D.F. operator takes azimuth reading. The bearing is then transmitted via a nearby radio station.

Enemy D.F. center includes radio communications station, generator, barracks and conspicuous cisterns which collect rain water



This three-building high frequency D.F. is at Soerabaja in Java. Typical "cross" pattern of medium frequency D.F. appears above

Jap military power plants are built to withstand heavy pounding. This one on an island captured by U.S. troops shows strong reinforced concrete construction. Walls and roof are from two to four feet thick, and the roof is covered over with a blanket of earth

POWER PLANTS

THE ENEMY'S military power plants in the Pacific Islands usually consist of three main structures. The standard Jap military generator building is very strongly constructed, with walls two feet thick and roof four feet thick. The roof is covered with earth up to the top of the parapets. Six heavy reinforced concrete columns, four feet square, are used to support the roof slab. The enemy realizes that the generator building is of vital importance and is a sure target for bombing attack. The water cooling tank building is merely a covering for the water tanks. It is made of wood, with a monitor roof, and stands about 15 feet high. The oil storage building is made of heavy concrete and has a flat roof which is sometimes covered with a thick layer of earth.

A GOOD many Japanese transformers and transmission lines have been photographed by Navy cameramen. From the air it is possible to mistake a large lattice-type transmission line tower for a radio station mast, since their vertical appearance and shadows they cast are similar.

As Navy fliers begin a steady pounding of Japan proper, they will be searching for large power plants which are the nerve centers of the Japs' industrial and civil life. As in the European war, these will be sought out on aerial photographs and then struck until they are fully destroyed.

Camouflaged Japanese power station on Saipan took thorough naval and artillery shelling before it was captured by American Marines

Jap transformer is set on platform near the beach on one of the Marshall islands. This is in plain view for the aerial cameraman

GRAMPAW PETTIBONE

Lure of the Water Witch

Grampaw Pettibone says:

Why is it so many of our young aviators can fly along the countryside for hours, seemingly intent on their work, and yet become bewitched the moment they see a stretch of open water?

The size of the body of water apparently has little bearing in the matter. Anything from a large river or lake to a pond no bigger than a tablecloth seems to have the same effect. It lures them down, and before they regain their senses they are jazzing it.

While thus enthralled, many a good pilot has come to grief; kissed the water, hooked a wing or squashed in from a dive. Also, numerous of these jazz-happy pilots have been cut down in their prime by the wires which are strung across these bodies of water, seemingly just for this purpose. These wires are so thin that they can seldom be seen in time to take avoiding action.

Not everyone who succumbs to this lure gets hurt, but any pleasure which they get out of it is dearly paid for by those of their friends who are not so lucky. This is too high a price to pay for fun. We cannot afford to lose our pilots and planes in such a senseless manner. Hence, strong measures are necessary to prevent weak-willed pilots from yielding to the enchantment of this dangerous water witch.

Quiz Kids

While coming in for a landing after a familiarization hop, a pilot's engine cut out completely at 650 feet. The aviator said that he immediately put on the electric fuel pump, switched to the "reserve" fuel tank and noted that the

fuel gauge showed 45 gallons. However, the engine failed to catch again and the plane crashed in a small wooded area. The pilot received serious injuries.

Crash investigators found the fuel selector switch was on "main" despite the pilot's statement that he had switched to "reserve." The Trouble Board held that the pilot switched back

to the main tank before the engine could establish suction again.

The board recommended that any pilot checking out in a new type of aircraft should be given either a written or an oral examination to ascertain that he was fully acquainted with all operating characteristics of that model. This board considered that the examination should stress especially the fuel system and engine operating data.

Grampaw Pettibone says:

Any pilot who will take off in a new type plane before he is thoroughly familiar with every switch, lever, button, line and gadget, doesn't rate his wings.

Evidently there are some such, however. That's why the squadron commander holds the bag; to wit: BuAer Manual, art. 13-103(b) and par. 8(a) of Sec. Nav (Ltr. serial 61134 dated 19 July, 1944 (p. 14 of Av. Circ. Ltr. 111-44) both state: "Commanding Officers shall permit only those persons to pilot aircraft whom they consider competent to do so."

To insure such competence, efficient organizations give exams, including a cockpit blindfold test, and checkout in the air.

Haphazard Safety

An SB2C pilot had to make a forced landing at sea when his engine quit. The landing was easy, but this was only the beginning of his troubles.

The following discrepancies in certain of his survival equipment were culled from the pilot's report:

a. He couldn't inflate his raft because he was unable to remove the pin from the CO_2 bottle. Luckily, his wingman saw his predicament and dropped him another raft which was readily inflated.

b. One side of the second raft was, however, full of small holes, too numerous to be patched. It was necessary to use the hand pump every few minutes to keep the raft inflated.

c. The pump was found to have a fractured cylinder. In order to make it work at all, the pilot had to hold his hand over the crack whenever he pumped.

d. Upon checking the equipment of this raft, the pilot found that it contained *no provisions, no water and no first aid kit.*

Fortunately for this pilot, he was picked up on the second day.

Comment—**The reason for not being able to remove the pin is not clear. The holes in the raft may have been caused by chafing; all metallic parts of the raft should be covered with cloth to prevent this, as directed in the various T.O.'s and T.N.'s covering inspection and maintenance of the several type rafts. If the pump was in contact with some other hard object, the cylinder may have been cracked when the raft was dropped. Thus, both these latter defects were probably due to improper packing.**

The complete lack of provisions, water and first aid kit is inexplicable. It is surprising how many reports of discrepancies in survival equipment are received. They show an unbelievable lack of interest in personal safety and wholesale disregard of Aviation Circular Letter 17-44.

Taxi Responsibilities

After completing his practice landings at night, a pilot was taxiing to the line when he hit another aircraft which had stopped on the taxi strip because of a flat tire.

The investigating board made the following observations on this accident:

a. Assignment of a signal man astern of the stalled plane to direct traffic would have prevented the collision.

b. The tower could have averted the accident if it had notified the incoming pilot by radio or had closed that particular taxi strip until the aircraft had been moved.

c. No matter what the extenuating circumstances, the pilot *always* has final responsibility for the taxiing of his plane.

Central Pacific thunderheads silhouette a trim *Hellcat* on patrol for Jap bogeys reported in the area. Constantly in action, the F6F is proving to be a Navy workhorse in this war

GRAMPAW'S SAFETY QUIZ

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

1. After engaging in an oxygen familiarization flight, is it O. K. to come right on in and land?
2. Unless specific instructions to the contrary are in effect, in which direction shall aircraft circle an airport before landing, and for how long?
3. Aircraft in contact flight within three miles of the center of an airport or other landing area shall conform to the traffic circle rule referred to in question two, unless above what altitude?
4. Why is it that you can withstand only a relatively small amount of "g" during pull-outs and banks in aircraft?
5. What is the minimum practice in instrument flying, actual or simulated, required of the holder of a restricted instrument card in order that he may maintain his card?

Answers on Page 48

Uncomplicated

FROM THE PILOT'S STATEMENT: "While in the taxi lane, I received a stop signal from the signalman. I hit the brakes too hard, causing the TBM-3 to nose up on its propeller."

FROM THE AIRCRAFT ACCIDENT REPORT: "In the opinion of the Board, this is an uncomplicated case of pure pilot error on the part of an experienced pilot (823 hrs.). Disciplinary action is, therefore, recomended."

FROM THE SQUADRON COMMANDER'S ENDORSEMENT: "Disciplinary action has been taken."

Life Savers

While engaged in a low-level bombing flight over water at night, a TBF flew into the water while in a shallow glide.

After interviewing the pilot, the accident board was of the opinion that the pilot misread his radio altimeter. It was actually set for low range when the pilot thought it was set for high, thus causing him to misinterpret 50 feet as 500 feet.

Neither the pilot nor aircrewmen wore life jackets. The pilot managed to stay afloat until rescued by a crash boat at daybreak. The aircrewmen were not rescued, although the pilot saw one of them clinging to part of the wreckage immediately after the crash.

Grampaw Pettibone says:

There may be some alibi for misreading a radio altimeter, but darned if I can figure out one for not wearing life jackets on such a flight.

As far as I'm concerned, such complete disregard of safety regulations is a direct reflection on squadron discipline.

Shiftless

The pilot of a TBF took off on a night familiarization flight and flew one hour and forty-five minutes, using fuel from the center main tank. While making touch-and-go landings, his engine cut out on the downwind leg of an approach, resulting in a very serious crash. Investigation disclosed that fuel exhaustion from the center main tank was the cause of engine failure. During the entire flight the pilot had not shifted to either of the wing tanks, both of which were full.

Grampaw Pettibone says:

Just because we haven't been yelling about this type of accident recently doesn't mean there haven't been any. They still occur and they still kill flight personnel and destroy aircraft. Also, they still occur for the same reasons: pilots forget to shift tanks or they shift improperly. All of which still adds up to pilot negligence.

Barney Google's friend, Snuffy Smith, has a good name for such pilots: "Shiftless Skonks."

No Suction

It has been noted repeatedly in ditching reports that pilots expressed surprise that no suction was encountered when their aircraft sank. Flying personnel are advised that airplanes create no appreciable suction when they sink. Misunderstanding on this point might result in personnel clearing the vicinity of a ditched airplane prematurely, without waiting to retrieve important survival equipment and gear.

The suction when a ship sinks rapidly is caused mainly by the great volume of water rushing in behind the sinking ship. Aircraft do not have enough volume to make this serious.

There are, however, certain dangers to avoid when a plane sinks, whether you are in the water or in a raft: *1.* Don't get caught under the wing or tail surfaces, *2.* stay clear of jagged or torn surfaces, and *3.* be sure you are not attached to the plane by any line.

Carrier Landing Accidents

Grampaw Pettibone says:

I'm amazed every now and then to read about a certain type of plane crash. I refer to those carrier accidents in which comments such as the following appear: "The pilot took an automatic wave-off after having cut his gun, on signal, to land aboard," or "The pilot bounced on landing and attempted to take off again."

For a pilot to attempt to take off after once having cut his gun to land aboard used to be the one unpardonable sin in naval aviation. There were no possible exceptions to this rule.

What's the matter? Don't they teach it that way any more? The fact that the above quotes appear in aircraft accident reports would indicate that these violations are as dangerous today as they ever were.

Help Us Help You

AIRCRAFT Accident Reports are valuable or worthless according to the thoroughness with which they are prepared. If they are handled in a superficial manner, chances are they will be of little value to anyone.

An accident board which recognizes the importance of its findings will study each accident thoroughly. All crew members and witnesses will be questioned, wreckage will be carefully inspected, surrounding circumstances fully considered and the entire case analyzed for the main and underlying causes. The comments and recommendations of such a board will benefit not only the squadron concerned but in many cases the entire naval aeronautical organization.

In order that intelligent corrective action can be taken on material failures, it is necessary that full and complete information be submitted. For example, numerous recent accident reports have mentioned that cockpit enclosures "slammed" or "jammed" shut on impact of a hard landing or crash, but gave no details. To aid in correcting such difficulties, information of the following nature is needed:

a. Position of enclosure prior to deck contact
b. Violence of the crash, using formula for deceleration contained in Aviation Circular Letter 48-44
c. Description of difficulty in opening the enclosure
d. Identification, by part number or description, of bent, broken or sheared parts
e. If lockpin sheared, inspect track for evidence indicating at which notch pin was sheared; describe
f. Metallurgical description of failed parts (or at least retain parts, in event Bureau or contractor requires same for further investigation)
g. Steps taken or recommended to correct trouble or prevent recurrence

Don't neglect "personnel error" accidents. Investigate and report them fully. You may have only one of a type in your squadron, but added to a number of similar accidents in other squadrons, it becomes of increased importance. As a result of such cumulative reports, changes in training are often initiated, appropriate safety instructions are issued and even changes in design are made.

So, make your Aircraft Accident Reports complete.

Help Make Your Aircraft Safer.

DID YOU KNOW?

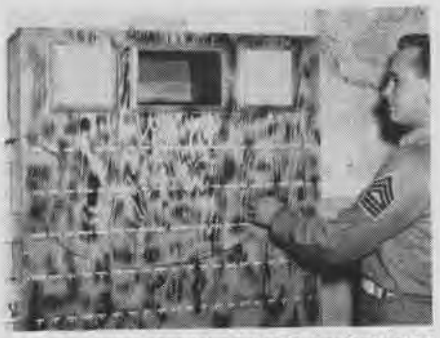
Ship Recognition Made Easy

Marines Devise A New Game Machine

MCAS MOJAVE—Teaching of ship recognition is often a dull process, but the Group Intelligence section here hit upon a device which has brightened up the subject.

SHIP-REC, which became known as the "Ship-Wreck Machine" almost as soon as it made its appearance, was built by the Group carpenter from a design supplied by Intelligence. It provides an illuminated display case into which the operator puts one or more of the regular Navy miniature ship models.

The face of the SHIP-REC contains a number of contact points, each labeled with the name of a ship. Principal U.S., British and Jap combat types are included in the line-up. The electrical hook-up in the back is so arranged that when the student or "contestant" touches the correct contact point with the flexible lead wire, the circuit is completed and the answer "Right!" is flashed in the right hand panel. If the wrong contact is touched, the SHIP-REC flashes "The Axis Needs You!" Connections are easily changed with each substitution of a ship model.



ILLUMINATED DISPLAY TEACHES RECOGNITION

Navy Releases 'Fighting Lady'

Movie Full of Carrier Battle Action

The Navy has released the first feature-length color movie of naval aviation in combat action—*The Fighting Lady*, the story of an aircraft carrier fighting the Japanese from Marcus Island to the Philippines.

Filmed entirely by Navy cameramen in planes and aboard seven different *Essex*-class carriers, the movie contains a complete picture of carrier life, plus dozens of action shots from gun cameras showing Jap planes being shot down and ships sunk. No professional actors were used. All original pictures were taken on 16 mm. Kodachrome and reproduced in Technicolor.

The movie shows everything from cooks in the galleys to crewmen arming machine guns and uncrating torpedoes. Action stretches from the time the carrier receives its crew and goes through the Panama Canal until it hits the combat zone. Attacks on Marcus, Kwajalein, Truk, Guam, Saipan, Tinian and the Philippine Sea battle are featured.

The idea of the film was conceived by Artemus L. Gates, Assistant Secretary of the Navy for Air, and produced under guidance of the Photographic Unit of the Training Literature Section. It will show in movie theaters over the nation to give the public a ringside seat in naval aviation at war with the Japs in the Pacific.

In a telegram to CINCPAC, the Secretary of the Navy declared, "We need more pictures like *Fighting Lady*. The officers and men under your command deserve, by virtue of their achievements, to live in the memory of Americans as long as our country endures. Let us insure the making of a continuing photographic record to that end."

MOVIE SCENE SHOWS BETTY GOING DOWN

ACI Corner Educates VC-19 Pilots

Recognition, Blinker Key Are Provided

VC 19—An unusual pilots' ready room that offers a combination of attractions including a chance for a certain amount of serious reading—an ACI-Recognition Corner—is in use here.

Within a space not 20 feet square, pilots have at their finger tips: latest word on aviation activities in a special Air Combat Intelligence confidential reading rack, two recognition machines, automatic and manual; a blinker key for practicing code, latest recognition posters, coffee mess, sofa and easy chairs.

The ACI reading rack is on the left in the picture, the recognition machine in the center, with the blinker key directly above it. The blinker light flashes from a height of seven feet on the port bulkhead. A safe is provided for secret material. The ACI rack is locked when no officers are on hand to use it. A small screen for viewing recognition pictures is part of the rack.

[DESIGNED BY LT. JAMES REID, ACIO]

ACI ROOM PROVIDES MANY TRAINING AIDS

New Cooling System Saves Water

Rodd NAAS Installation Brings Economies

NATB CORPUS CHRISTI—Three wooden cooling tower systems, that save more than 43,000 gallons of water daily, have been constructed and installed at RODD NAAS.

The towers re-circulate water used for refrigeration purposes at cadet mess, BOQ mess and general mess. Heretofore, water was passed through equipment only once, then down the drain. The new system uses only 10 gallons of make-up water per unit daily.

Other advantages of the installations have been noted. Efficiency and economy of refrigeration units have been increased, and consumption of electricity, because of changed head pressure, is reduced. The re-circulating system also permits use of flushing chemicals to remove scale and rust.

BEST ANSWERS

The Philippines

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

1. The pre-war (1940) population of the Philippine Islands was about—

- ☐ *a*–16,000,000
- ☐ *b*–22,000,000
- ☐ *c*–38,000,000
- ☐ *d*–70,000,000

2. That pre-war (1940) population of the Philippines included about—

- ☐ *a*–500,000 Americans, 300,000 Japanese and 150,000 Chinese
- ☐ *b*–1,000,000 Japanese, 750,000 Americans and 600,000 Chinese
- ☐ *c*–3,000,000 Chinese, 500,000 Japanese and 5,000 Americans
- ☐ *d*–120,000 Chinese, 30,000 Japanese and 10,000 Americans

3. The land of the Philippines is about—

- ☐ *a*–60 percent crop land, 25 percent forest and 5 percent grassland
- ☐ *b*–60 percent forest, 15 percent grassland and 15 percent crop land
- ☐ *c*–30 percent crop land, 30 percent forest and 30 percent grassland
- ☐ *d*–50 percent grassland, 35 percent forest and 5 percent crop land

4. Before this war, the Philippines produced—

- ☐ *a*–more cotton than Texas
- ☐ *b*–more sugar than Cuba
- ☐ *c*–more gold than Alaska
- ☐ *d*–more cheese than Wisconsin

5. The Philippine Islands extend over a distance as great as that from—

- ☐ *a*–Boston to Baltimore
- ☐ *b*–Kansas City to Fort Worth
- ☐ *c*–Seattle to Mexico City
- ☐ *d*–Minneapolis to New Orleans

6. Most of the Filipinos are—

- ☐ *a*–Roman Catholic
- ☐ *b*–Mohammedan
- ☐ *c*–Buddhist
- ☐ *d*–Pagan

7. In peacetime, the United States imported much coconut oil from the Philippines and used it principally in the manufacture of—

- ☐ *a*–soap and margarine
- ☐ *b*–paint and lubricants
- ☐ *c*–medicines and marmalade
- ☐ *d*–plastics and cosmetics

Pensacola Gets Camera School

Movie Unit Transfers from Anacostia

NATB, PENSACOLA—The naval training school for motion picture cameramen has been moved here from NAS, ANACOSTIA, and has begun operations.

Assignment to the school is made by BuPers from among the graduates of the photo school who show exceptional proficiency. Two classes are conducted on a staggered schedule so that one class completes the two-month course each month.

Navy Increases Pilot Program

Former Students May Receive Training

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 cut-back since June, 1944, would be given a chance to reenter the program. Reassignment will commence this spring or summer.

The men were dropped from the program when the pilot quotas were reduced. Many would-be pilots went into aircrew training and others into various Navy programs. Their records showed that they were retired in good standing.

Reasons given for the speed-up include a faster rotation of fliers who are in combat, giving them more time for rehabilitation and refresher training in new equipment. The upward revision was not caused by an unexpected increase in attrition rate, it was announced.

About 7,000 aviation cadets and students were affected by the June cutback. Men who have good-standing reports in their records will be eligible to reenter the program upon notification from BUPERS, after which they have to submit applications. Those accepted will reenter training at the point where they left. Former students who may have been assigned to reserve midshipman training will not be returned to flight training until they have completed the midshipman course and been commissioned. Those returning to flight training will undergo training as commissioned officers.

Navy Sets Up Reservation Offices

All Personnel On Orders Will Be Served

Government transportation reservation bureaus in 43 key municipalities throughout the United States are available for accommodation of naval personnel, including civilians, when traveling under orders, and naval military personnel on leave.

These bureaus include Navy reservation bureaus, and Army transportation offices in 14 cities where the Navy has no bureaus. In those cities, naval personnel may use the Army facilities.

Complete information concerning Navy reservation bureau facilities are set forth in BuPers CL No. 295-44 dated 30 Sept. 1944.

▸ Navy reservation bureaus have been established in the following cities: Atlanta, Baltimore, Boston, Charleston, S. C., Chicago, Cleveland, Corpus Christi, Dallas, Denver, Detroit, Houston, Jacksonville, Kansas City, Mo., Los Angeles, Louisville, Memphis, Miami, Minneapolis, New Orleans, New York, Norfolk, Norman, Philadelphia, St. Louis, Salt Lake City, San Diego, San Francisco, Seattle, and Washington.

▸ Army reservation bureaus are available to naval personnel in the following cities: Asheville, N. C., Cincinnati, Columbus, O., El Paso, Montgomery, Ala., Oklahoma City, Omaha, Orlando, Fla., Pittsburgh, Portland, Ore., San Antonio, Savannah, Spokane, Washington, and Tampa, Florida.

SEAGULLS FLYING *peaceably along above the waters of the Gulf of Mexico are startled out of a couple of years' growth when the apparition above lumbers by. Labeled the "W. C. Fields" for obvious reasons at* NAAS BOCA CHICA, *where it is used for training purposes, this P-boat probably is the least beautiful plane in naval aviation*

Navy Issues A Carrier Pamphlet

Night Vision Data Proves Valuable

Two new training pamphlets, one a *Sense* pamphlet and the other on night vision, have been issued and initial distribution made to the fleet and shore establishments.

A restricted pamphlet, *Carrier Sense*, is the 16th of the series devoted to problems of the aeronautical branch of the Navy. It is profusely illustrated and full of valuable advice to the pilot new to carrier operations. Some of the subjects covered in it include: life on a carrier, timing and teamwork, squadron duties, getting ready to take off, getting aboard, catapulting, using the ZB, radio discipline, mission procedure, deck landings, plane direction, forced landings and working with aircrewmen.

The second publication, called *Night Vision for Airmen*, tells in simplest words how the eyes function at night and how to get the most efficiency out of them. With the increase in night flight operations in naval aviation, such information is proving of vital importance to pilots and aircrewmen.

CARRIER, NIGHT VISION PAMPHLETS OUT

Model Base Used for Training

Night Familiarization Model Aids Pilots

MCAS EDENTON—Familiarization of the station for night operations has been facilitated by a landfall model of the surroundings which aids night fliers.

Sponge trees, wooden miniature buildings, sandy roads, and rubber runways lined with pin heads as markers creates a model base. It comes to life when a fluorescent lamp ray illuminates the phosphorous-topped markers that guide planes down the taxi-strip.

Navy Creates New Mech Rating

Specialists to Work on Gas Turbines

The Secretary of the Navy has authorized establishment of the aviation machinist's mate T (gas turbines) rating, in pay grades 4 to 1 inclusive. Men to work on such jet engines are receiving some training at present at the 87th & Anthony technical training school, where a four-weeks course is outlined. The same rating badge worn by AMM's will be used by these men.

FLIGHT SAFETY

INSOFAR as safety is concerned, it is to a large extent the duty of representatives of the Medical Department to see to it that "the man is the equal of his machine." For example, equipped with superchargers, planes are readily capable of flights high into the stratosphere. Because of their physical limitations, however, pilots and crew members can safely ascend to these altitudes only if provided with some mechanical means of obtaining supplemental oxygen.

Similarly, man's physical powers are such that he can safely meet certain conditions of flight, including those encountered in fog and clouds, only when provided with instruments which aid him in maintaining proper orientation.

In the event it becomes necessary to abandon aircraft in flight, a number of medical problems are encountered. For example, parachute harnesses must be so designed as to prevent injury to the body with the sudden opening of the canopy. Likewise, bailouts from high altitudes require instruction in techniques that make it possible safely to withstand the lowered atmospheric pressure and temperature in upper air.

Survival, in arctic or tropic on land or sea, following forced abandonment of a plane, also presents a number of medical problems of great import. For instance, a sound knowledge of the water requirements of the body, as well as of proper methods of preventing excessive bodily losses of this vital substance, is essential to life in the event of prolonged periods on rafts adrift on the sea. Then too, the prevention and treatment of ills resulting from exposure to extreme temperatures, constant wetting and similar environmental facilities are medical problems.

First aid, particularly for air crews in flight, is a safety factor of unusual importance. Prompt action aimed at the prevention of hemorrhage from combat injuries may save not just the life of one but of all members of the crew. Treatment of frostbite also may prove of equal value.

▸As related to aircraft accidents, the medical officer plays a dual role. In the first place, his specialized knowledge enables him to determine certain of the underlying causes of accidents, many of which are essentially medical in character. Possibly best known among these are those of a physiological nature, such as anoxia, "bends," "black-out" and "red-out."

▸Secondly, the doctors' activities are concerned with determining the exact type and extent of the injuries sustained by persons involved in aircraft accidents. Furthermore, insofar as possible, they are expected to determine the manner in which injuries are sustained and to offer suggestions as to possible means of reducing their frequency of occurrence as well as their degree of severity. For example, the medical officer who reports to the scene of an accident frequently notes that some specific injury can be directly correlated with one particular structural feature of the aircraft. He may see that a broken seat attachment allowed a pilot to be thrown forward far enough to strike his head on the instrument panel. Similarly, serious injuries of the lower extremities may be observed to be the direct result of poor rudder pedal design, or insufficient structural strength of the floor, or a combination of the two. Having thus actually seen the exact manner in which injuries are sustained, it is often possible to offer sound suggestions as to the steps to be taken to prevent future similar occurrences.

BECAUSE of the extreme importance of the medical aspects of flight safety above enumerated, it is obvious why those Aviation Safety Boards established in accordance with the provisions of Aviation Circular Letter 50-44 should include representatives of the Medical Department.

Similarly, since so many medical problems are encountered in the investigation of aircraft accidents, Aviation Circular Letter 48-44 directs that the unit Medical Officer's Report of Aircraft Accident (NavAer Form 339B) be filed in the event of any and all accidents resulting in death or injury to personnel within the craft.

The purpose of the medical accident reports is to provide information relating to the cause of the accidents and the injuries resulting therefrom. These data will be used in the development of a program aimed at the elimination of accidents and reduction of injuries.

THIS IS FIFTH IN SERIES OF REPORTS ON WHAT NAVY IS DOING IN AVIATION SAFETY

BOTH THE CREW AND THE MAN WHO INSTALLED ARMING WIRE DETERMINE WHETHER THIS BOMB, OR ONE LIKE IT, CAN BLAST ENEMY

BOMB ARMING WIRES

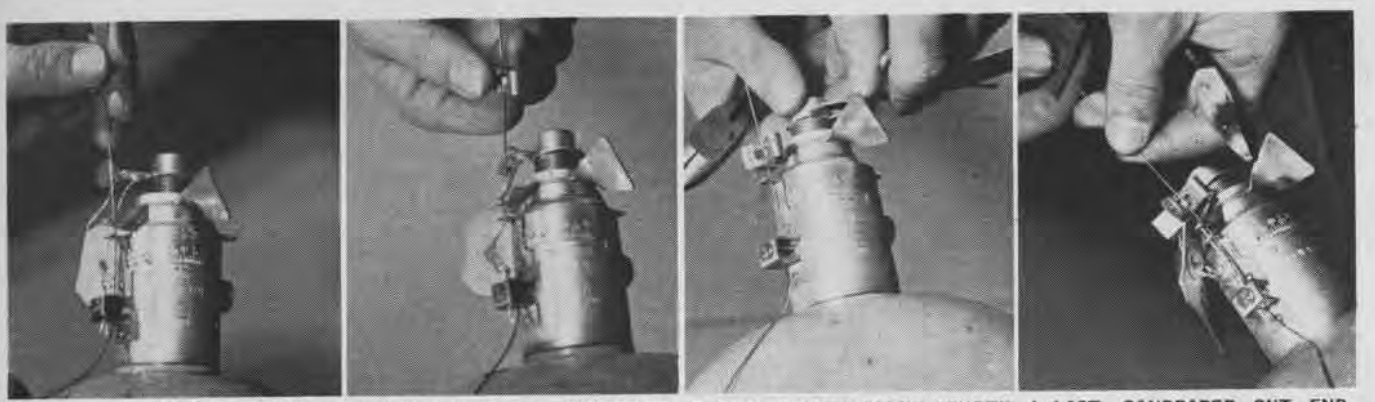
Shortly after the turn of the year, the Navy began supplying new standard arming wires for all bombs now in naval use. In a number of ways these wires possess distinct advantages over types used heretofore. There had been little standardization previously. Some wires came coiled up in the bomb tail assembly. Some were coiled in a container somewhat like a coffee can.

Replacing the confusing variety of wires, some of which came pre-cut, BuOrd has adopted universal types. There are only three kinds and these will fit any bomb up to and including 2,000 lbs. By using an arming wire extension which is a part of the new system, the new wires fit bombs up to 4,000 lbs.

The new wires come straight and packed in hermetically sealed metal tubes, protecting them from corrosion. Depending on type, the tubes contain from 50 to 100 wires, including their clips and extra clips. The wires are cut when installed to fit the bomb.

The Mk 1 arming wire is a single strand 57″ long of bronze wire .064″ in diameter, joined to a swivel and loop. The carton contains 100 Mk 1 assemblies comprising the wire and 300 safety clips including an extra for each wire.

The Mk 2 wire is the same type, size and length but is double rather than a single strand. There are 50 with 300 clips to a carton. Mk 3 is a single steel wire, .033″ in diameter and 57″ long. There are 100 and 100 clips to a carton. Mk 1 arming wire extension is 16″ long, .0625″ diameter, 7x7 construction and is a flexible steel cable with swivel loop arrangement and a brass spring clip forms the assembly.



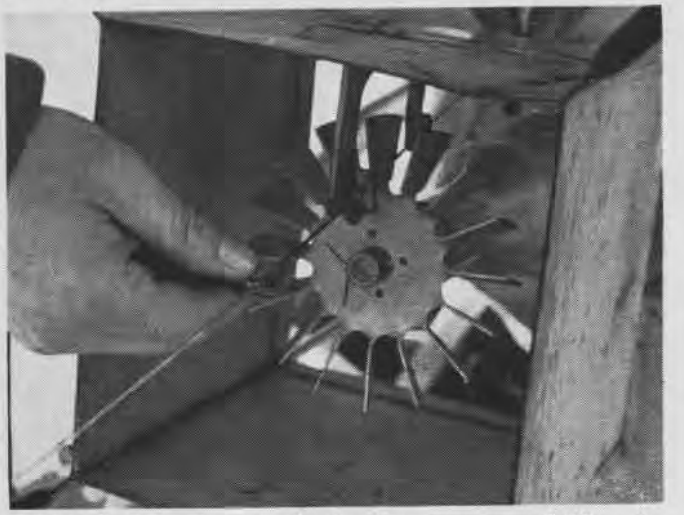
1. PASS WIRE THROUGH BRACKET 2. NEXT, CLIP IS INSTALLED 3. CUT WIRE TO RIGHT LENGTH 4. LAST, SANDPAPER CUT END

Arming wire assembly Mk 1 can be used on all bombs expended with a single fuze. BuOrd recommends using two of these Mk 1 assemblies to rig out the athwartships hydrostatic fuzes of depth bombs. Two of them may be used also in conjunction with Mk 1 extension wire to install arming for a 4,000 lb. GP bomb. The Mk 2 arming wire assembly fits all bombs having both a tail and a noze fuze, up to 2,000 lbs.

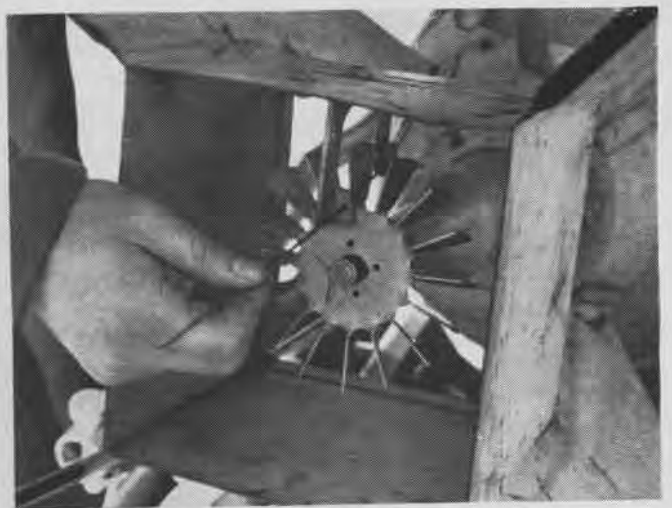
A Mk 3 arming wire can be used anywhere the .036″ diameter Navy-type wire was used and in addition can be used in all M111A2 jump-out-pin type fuzes in which a stronger wire is needed. The new standard assemblies do not replace special assemblies on any clusters, either fragmentation or incendiary but the Mk 1 wire extension is used with such clusters so that their wires which are too short for proper fitting can be connected.

Arming wires are subjected to considerable wear from vibration. For that reason, tubes are supplied to protect a wire at its point of maximum wear. Use of these tubes on all bombs equipped with arming wire brackets is mandatory. All old AN-type arming wires on hand and pre-cut to length for a bomb should be returned to the Army.

After installing Mk 2 wire in nose fuze, pass second strand of arming wire on back through aft bomb lug toward the tail fuze



This type of tail bracket now obsolete but serves as model for wire installation. Strand is held between arming vanes by brackets



Two clips are installed next on arming wire. This is a 500 lb. bomb and clips should be doubled on all of larger type bombs

Swiveled loop of the Mk 2 arming wire is hooked into arming holder of bomb shackle. Removal of safety cotter key comes last

NAVY PILOT HAS A BUSY DAY

A Navy dive bomber pilot has written his own story of what he calls "a rather full day." He took off from a carrier and raided Iwo Jima; his plane was struck by Jap antiaircraft fire; he made a crash landing at sea; and he floated about on a life raft with his aircrewman until rescued by a Navy ship shortly after. The story follows:

IT ALL started yesterday morning when at 0845, I was awakened gently but firmly out of my sack and told that I was going on the first strike. This all being a change from the planning of the day before, as I was not to take off until the second strike, which was at about 1400. After a quick briefing and a bite of breakfast, we manned our planes. Proceeding to kill some more time sitting in the cockpit, we finally took off at 1000. Getting on course and starting to climb steadily, we were off in a cloud of mouse milk. . . . After about an hour and twenty minutes the target came into view. It was a very innocent-looking little island somewhere west of Hawaii.

To make a long story short, we started in to attack, the ack-ack wasn't too bad to start with, but as we got closer, it got thicker, and I mean thick! It was a hell of a time to be thinking of a song, but that verse of *I Want To Go Home* that goes "Time says that ack-ack's a beatiful sight, Life paints a picture of tracers at night, But this stuff we hear is real, up close it loses appeal" kept running through my mind. Well, about the time I got to that line, it was push-over point. Lt. B. broke off to the left and I thought he was diving on the field, but right about then he turned right. I saw what looked like a *Betty* below me on the edge of the runway, so I aimed my bomb at it.

Right about then things started happening pretty fast. At about 6500 ft. a nice big black puff of smoke appeared right in front of me. I don't know whether it was 40 mm. or bigger but I didn't feel anything hit the plane. I released at about 2500 feet and started to get out of the local area, which about that time was getting rather crowded with especially those nice black puffs.

All this time, Harvey, who is my rear seat man and is the best as far as I'm concerned, was getting a rear view of this whole action. From his comments today, it was interesting to say the least. Especially when you can hear that stuff go off, which we could do.

Right quick I started hunting for Lt. B. He was right off my starboard wing about two miles so I started toward him to join up. Just about now Harvey said he was going to take some pictures of the damage we had done. (I think I hit something that burned, because there was quite a column of smoke when I glanced back.)

Harvey had no sooner mentioned the camera than all hell broke loose in the engine. Smoke started pouring from under the cowl and the engine started running very rough. . . . My cylinder head temperature had jumped to 290 degrees. About this time, I noticed my windshield was well covered with oil and my oil pressure had dropped to about 15 or 20 pounds. It suddenly dawned on me that we had been hit and that our chances of ending up in the briny deep were good. Just as I was telling Harvey to prepare for a water landing and to get the raft out, I saw one of our boys go in. When I saw him he was at about 1000 feet and going straight down. There was nothing but a big splash and explosion.

By this time we were still losing power and altitude. At about 300 ft. she began to hold her own at 110 knots, this was when I found time enough to call Lt. B. on the air and tell what was the matter. He said for me to join up on him, and me barely making 110 knots! I also noticed that two fighters were covering me by this time. Mighty nice of them. I had hoped she would keep flying. But just as I came into what I thought was the wind, she started to freeze up for good, so down we went. While all this was going on, I had managed to get out of my parachute harness and tighten my shoulder straps. There was quite a splash when we hit but not too much of a bump. . . .

By the time I got out, Harvey had the raft out and was starting to inflate it. A corking good job on his part. He was yelling at me to get in the raft by then but I was trying to get out the small raft in the front seat. I finally gave that up as a bad job and dove off the trailing edge of the port wing. By this time, the raft had drifted 30 or 40 ft. from the plane, and was moving fast. I reached it by swimming but was rather worn out.

With Harvey's help I got my gear off and into the raft, and managed to drag myself in too. Along about now both of us were pretty well worn out and the nervous reaction was beginning to take effect on us. This consisted mostly of what is commonly known as the 'dry heaves.'

We put a dye marker in the water immediately and waved at the planes circling us to let them know we were o.k. We then settled down to the routine of bailing water out of the raft and getting sick. This routine went on until we were picked up, which was about 1445. We had been in the water about three hours then. Harvey and I both must have dozed off as the time seemed to pass very quickly. Our chances of getting picked up were almost 100 per cent, so I guess we didn't worry too much, or maybe we were too tired.

Our first sign that we were about to be picked up came when some fighters started buzzing us. They dropped a couple of smoke lights to mark us and we threw dye marker around like mad, me getting most of it on myself. The rescue vessel came into view and what a beautiful sight it was. Harvey and I almost fell overboard trying to wave at it.

After a little trouble, we got aboard okay, and what a comfortable feeling that was! . . . Nothing is too good for you when you come aboard under our circumstances. We got a hot shower, clean dry clothes, cigarettes, coffee, hot soup, all you had to do was name it and you could have it. After being introduced all around and trying to put something in my stomach, which wouldn't stay, I hit the sack. . . .

When I woke up it was time for chow so I tried it again and it stayed down this time. . . . After having a little more bull session, I hit the sack for good that night . . . winding up what I would call a rather full day."

INTEGRATED AERONAUTIC PROGRAM

Navy gunners in the Pacific already are collecting dividends from Radford Board's Integrated Aeronautic Program

ROUTING NEW PLANES FROM FACTORIES SUCH AS THIS DIRECT INTO COMBAT IS A CENTRAL THEME OF RADFORD BOARD'S PROGRAM

WHY THE NAVY NEEDED AN INTEGRATED AERONAUTIC PROGRAM

When the United States was drawn into this world conflict the Navy found itself plunged into a war with hardly more than its normal peacetime strength. What had been accomplished by the naval expansion program, then hardly full-blown, had been blighted by the sneak attack on Pearl Harbor.

Awakened at last to its danger, America marshaled its vast resources in manpower and industry. While men and women by the thousands streamed out of the 48 states to join the assembly lines of mushrooming aircraft factories or took up welder's tools in coastal shipyards, the Navy itself launched a different sort of program.

Replacements were needed for the Navy pilots already out there in the Pacific flying too many hours. From coast to coast and throughout the peaceful midwestern plains sprawling air stations sprang up. And from the tarmac of these new stations new pilots began earning their wings and leaving in a steadily thickening stream for combat.

American industrial "know-how" provided them with the planes to fly—planes that swept from designers' boards to duty in the skies within a remarkably short time. But despite miracles of production the headache of the first two years was getting enough airplanes and keeping them flying as long as they could fly.

This shortage determined the kind of controls that were applied to the aeronautic program. They were largely controls of allocation: of types of aircraft to manufacturing plants based on production capacity, and of finished airplanes to the commands that needed them most.

Comprehensive Control Becomes Possible

By early 1944, however, with the total supply of planes climbing up toward a level expected to be sufficient for the conduct of the naval war, the time had come when a comprehensive program was possible: a control program which applied not merely to allocation of aircraft but to the use, repair, and distribution of planes throughout their entire lives in the Navy. At last finer points could be considered, such as assigning specific models to the kind of combat mission to which they were best suited and adjusting the various periods in the life of a plane to use requirements.

THROUGH A SERIES OF HEARINGS, BOARD REVIEWED EVERY PHASE OF NAVAL FUNCTIONS WHICH SERVE TO SUPPORT NAVAL AVIATION

HOW THIS INTEGRATED AERONAUTIC PROGRAM WAS LAUNCHED

To successfully prosecute this global war the Navy could ill afford to overlook any possible advantage. The aircraft factories were tossing more and more blue chips into its corner and the time had come to decide how these might be played for best results.

It was now April of 1944. On the twelfth of that month a precept was issued from the office of CNO. This created an informal board to submit an integrated aeronautical maintenance, material and supply program. Rear Admiral A. W. Radford, USN, was named senior member of the board. Other members were: Rear Admiral L. B. Richardson, USN, Col. A. D. Cooley, USMC, and Capt. C. W. Fox, (SC) USN. Lt. J. C. Geilfuss, USNR, was recorder.

On the day the precept was issued the Radford board held its first session. This launched a series of meetings which did not conclude until April 28. By that time the board had held 15 meetings. These included sessions in Washington with representatives of all interested offices and bureaus, at Norfolk with representatives of ComAirLant and East Coast activities and at Alameda with representatives of ComAirPac and with West Coast naval activities.

Assembling all of its findings of fact the board closed its hearings at Alameda. And there, in the NAS Administration building the board rolled up its sleeves to formulate its first report and its recommendations.

Directives Threw the New Plan into Gear

Returning to Washington the group May 4 directed its report to CNO. presenting a comprehensive cross-section of all the facts it had learned about the "support functions" of naval aviation ashore and afloat.

Following approval of the report, CNO issued directives to the Department and to the Fleet and these might be said to be the first step toward setting in motion the I-A-P.

In October a second meeting of the board was convened in order to review the progress which had been made in putting the new aeronautical program into effect. Representatives of the basic groups came in from the field and new material was added to the mass of facts already compiled. Upon the board's analysis rests the Integrated Aeronautic Program.

NAVAER 1872
CONFIDENTIAL
(WHEN FILLED IN)

MONTHLY REPORT OF OPERATING AIRCRAFT

TO BE SUBMITTED BY ALL UNITS HAVING OPERATING AIRCRAFT

(As of 2400 Local War Time on Last Day of Calendar Month)

AIR MAIL

PAGE ____ OF ____

REPORTING UNIT _____

DATE OF LAST REPORT _____ DATE OF THIS REPORT _____

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

RECONCILIATION (Aircraft Only)

TOTAL AIRCRAFT ON HAND AT DATE OF LAST REPORT	GAINS SINCE LAST REPORT	TOTAL NUMBER OF AIRCRAFT LISTED BELOW	LOSSES SINCE LAST REPORT	TOTAL AIRCRAFT ON HAND AT DATE OF THIS REPORT
BOX: A.	B	C=A+B	D	E=C-D

(THIS LINE FOR CNO USE ONLY)

AIRCRAFT

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

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

NAVY NEEDS PROMPT ACCURATE REPORTS

Only two essentials to operating this reporting system enter into the picture as far as the reporting officer is concerned. These musts are: *accuracy* and *promptness*. Enough late and inaccurate reports would throw planning of the entire Integrated program badly out of gear. Reports should be air-mailed by the fifth of the following month. A new form NAVAER 1872 (REV. 1-45) was being issued by BuAer Publications Branch toward the close of the month but all of the reporting officers should exhaust their supply of the old forms rather than discarding them since all of the changes are of a minor nature and are directed toward further simplification for the benefit of those making out the reports.

WHAT NEW PROGRAM CONTRIBUTES TO SUPPORT OF COMBAT MEN

BRIEFLY put, the Integrated Aeronautic Program has as its principal point, using the youth of a combat plane for fighting and retiring it at maturity to non-combatant duty ashore in the training program and forming squadrons. This is the popular conception of the program but it is an over-simplification. The Board's program is not that simple. ▸ Keynoting the program's concept are these findings: six major elements determining service life of a plane are design, materials, manufacturing, new military developments, use and maintenance; the last three affecting life of combat models needed more control than was available previously.

Only an over-all picture of the entire program can be given here but its more salient points fall into six general classifications. These are:

1. Continuing a planning program based on accurate reports so that future needs of naval aviation can be forecasted several months in advance.

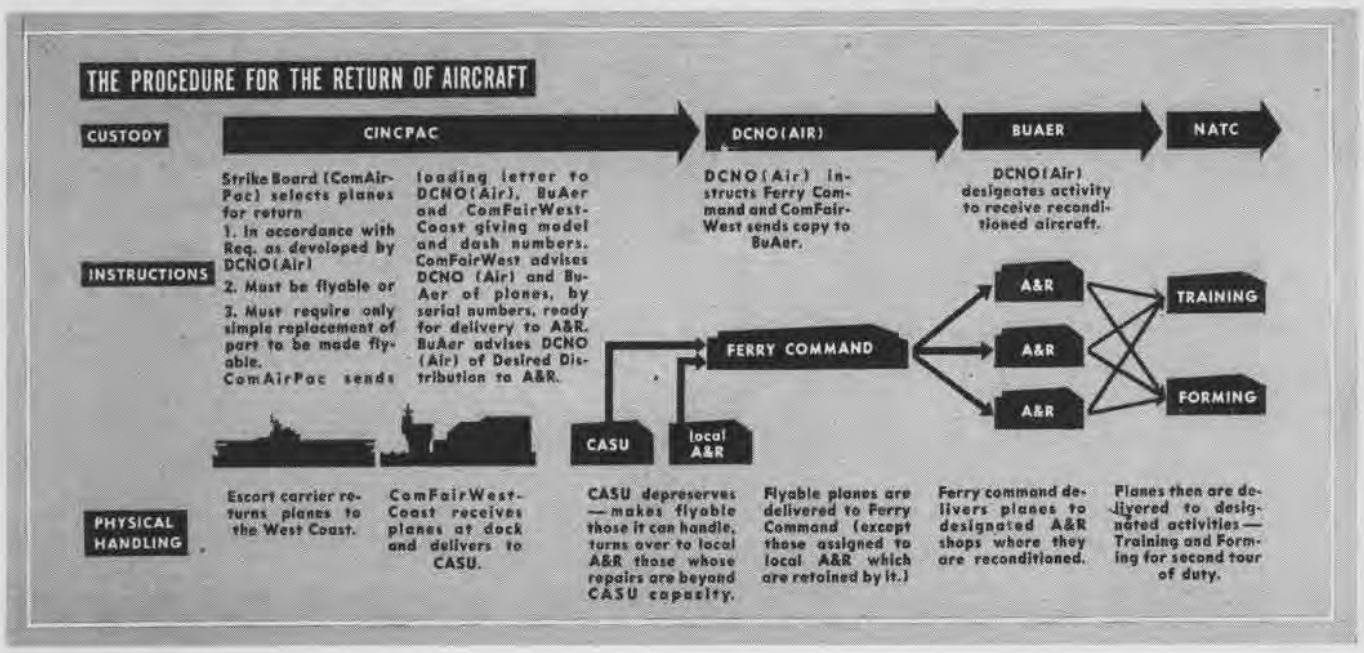
2. Using this forecast to keep enough planes on hand in pools available to the fleet so that losses can be covered immediately.

3. Keeping enough parts on hand at advance stations to make minor repairs on planes which do not yet require reconditioning.

4. Maintaining a constant check on flying hours and condition of every plane in combat so that it can be retired from battle before lack of major repairs and loss of military advantage, work a hardship on the pilot.

5. Returning planes ready for retirement to the States for reconditioning and further use in non-combat roles.

6. Cannibalizing at advance stations all planes not worth reconditioning so usable parts can be salvaged and can be used on other planes in making the minor repairs found to be necessary.



PLANNING IT PROVIDES FOR FUTURE NEEDS OF COMBAT MEN

In its very nature the Integrated Aeronautic Program is one that requires close coordination between the various naval activities charged with putting it into effect. And because it is such a far-reaching concept, the program directly or indirectly affects the entire Navy.

Somewhere it needed a nerve center or central intelligence. This guiding force is the DCNO Planning Division. In this division are received monthly summaries which have been meticulously prepared by OP-31-R. The summaries are based on Form 1872 which is the monthly report of operating aircraft airmailed by all operating units.

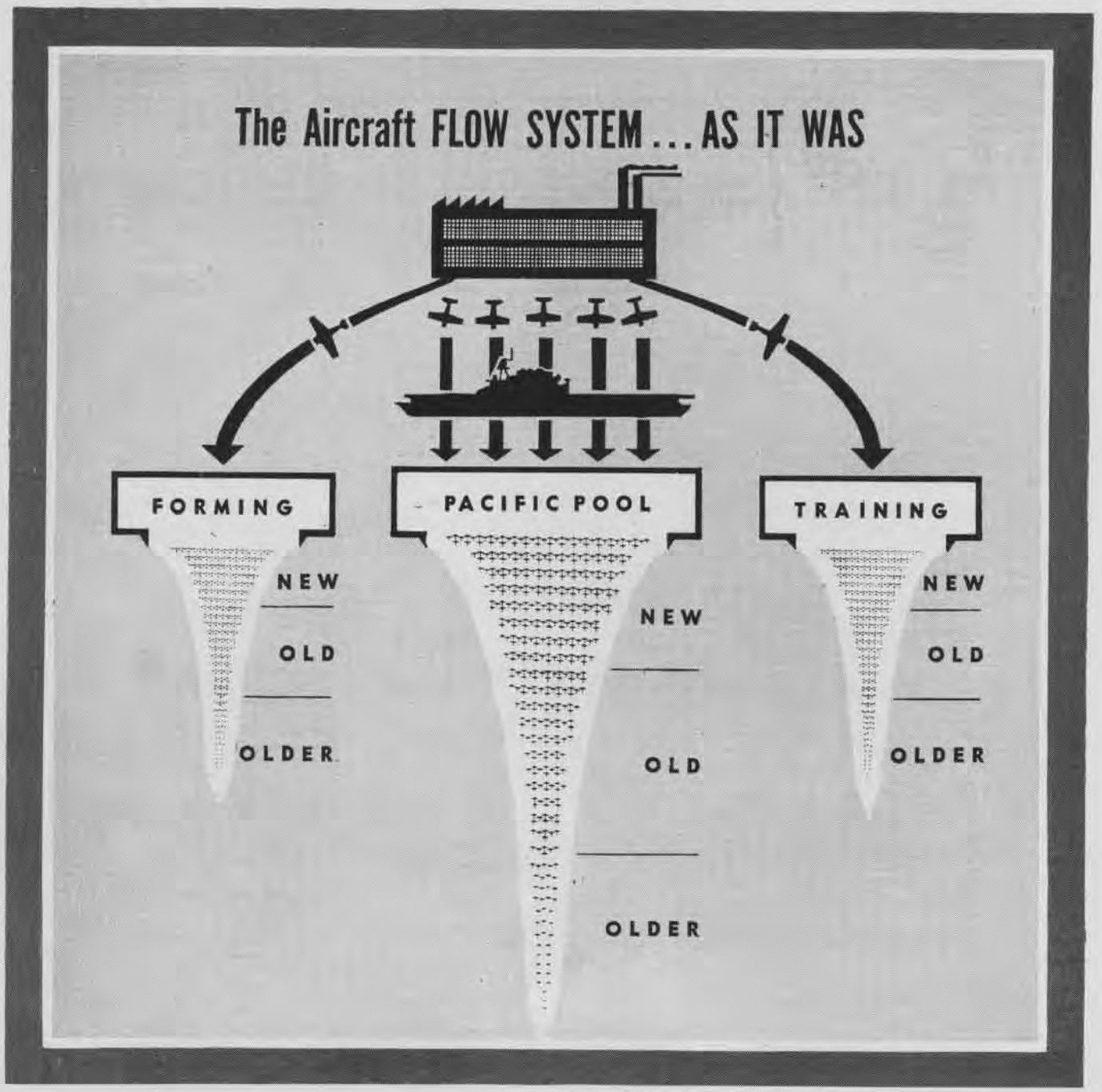
Each month the summary tells Planning Division how many planes were lost through combat or from other causes, and how many have reached combat retirement age and are ready to ship back to the States for a reconditioning.

Planning Division makes a detailed study of the new summary and adjusts its plan for airplane procurement as may be indicated.

Old Plan Split Distribution of New Planes

In general, the flow of aircraft follows two well defined channels. One is procurement of new planes and their flow to advanced reserve pools. The other is flow of planes back for reconditioning and re-assignment, a channel leading through A&R to training and reforming squadrons.

Graphically depicted by the NANEWS charts below is the change projected by the Integrated Aeronautic Program in flow of new planes procured by the Navy. However, neither



OLD SYSTEM POURED THE OUTPUT OF PLANES INTO THREE PIPELINES

chart purports to show actual percentages nor amounts of aircraft in a squadron or pool.

As depicted by chart at left, new airplanes came out of the factories under the old system and were routed to the fleet, to training and to forming squadrons. Under the old order an operating theater such as the Pacific might find itself one day supplied with combat planes which were in three different age categories.

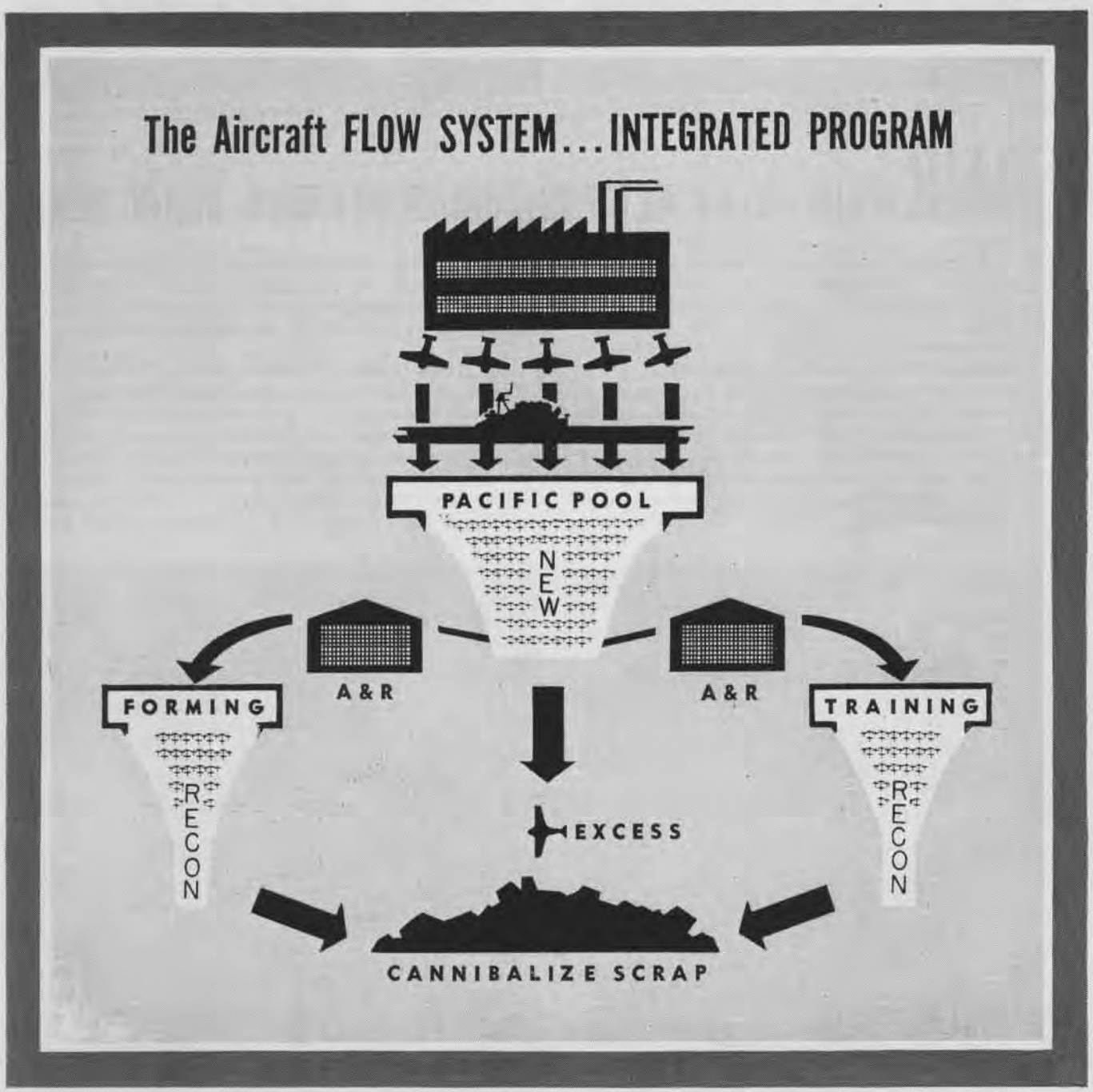
There was an upper stratum of new planes only lately out of the factory. These planes were fine indeed for our fighting pilots. They were not only newer but usually a lot faster and more maneuverable than older models. They had what is called "military advantage."

In everyday English, "military advantage" means that the planes had all of the latest improvements which might be more speed, heavier armament, and a lot of other items that kept them on a par or perhaps gave them a little edge over what the enemy had been doing in his aircraft plants.

I-A-P Program Allocates New Planes to Fleet

Below this stratum of shiny, new planes was a layer of planes not quite so new but not obsolete, either. They were perhaps not quite as good as a new plane but yet they were a lot better than the still-older layer. This last layer was made up of battle-scarred veterans which had lost much of their military advantage.

Under the new system the fleet has just one kind of an airplane—a new one equipped with every available advantage.



NO RECONDITIONING WILL BE DONE AT NAVY'S ADVANCE BASES

INTEGRATED PROGRAM IS ELIMINATING MAJOR REPAIR IN OPEN

REPAIR THIS HOLDS KEY POSITION IN RADFORD BOARD PLAN

BEFORE the Integrated Aeronautic Program entered the picture, naval aviation repair facilities ranged all the way from the best equipped A&R shop ashore to the so-called "shade tree" type of maintenance on some atoll of the Pacific. Unfortunately, Navy "mechs" frequently had to handle general overhaul jobs out in advance theaters which were a strain on their equipment, because at that stage many fighting squadrons still had planes that had been in combat so long they needed this kind of overhaul.

A lot of factors entered into the Board's decision to recommend that general reconditioning should be limited to the continental United States. There were extensive A&R repair facilities immediately available in this country. In addition a greater concentration of skilled labor could be had on the continent for repairing planes. Further, the general reconditioning of planes in advanced areas brought a strain that much greater on our shipping facilities.

Board Found an Answer to Upkeep Problem

Returning planes needing a general reconditioning to the States and replacing them with new ones which could be kept flying on minimum repairs was the logical answer. The Radford Board recommended material increases in A&R complements ashore, cannibalizing outworn planes in established overseas bases so that their usable parts would be available on the spot and could be used in lieu of new repair parts.

A FAR CRY FROM OPEN AIR REPAIR SHOP (ABOVE) IS THIS A&R

RECONDITIONING WILL BE DONE WHERE BEST FACILITIES EXIST

PLANES WHICH HAVE SERVED THEIR TIME IN COMBAT ARE SENT BACK TO A&R IN THE STATES. RECONDITIONED, THEY SERVE AGAIN

SUPPLY ASO FURNISHES NAVAL AVIATION THE WHEREWITHAL

TRYING to put the Integrated Program into effect without the help of the Aviation Supply Office would be a great deal like giving a duck dinner without applesauce. ASO buys the accessories for all Navy airplanes. Supply stores the new parts and the salvaged ones. It anticipated accurately future requirements and figuratively stands back of Mr. AMM while he is working on the plane handing him many of the parts he is using as fast as they are needed.

Behind this generalization lies a widespread and accurate system made up of close administration, careful warehouse management, constant touch with manufacturers and a great deal of sharp figuring to anticipate requirements.

In order to more closely knit Aviation Supply with the airplane and maintenance program, BUAER and BUSANDA recommended to SecNav that a revision be made in the status of mission, authority and responsibility of ASO. This was done with ASO being made agent of both bureaus.

ASO Estimates Requirements of Materials

Estimating requirements of aircraft materials other than complete engines and planes is an ASO function as is the purchase of such materials. Stock control of material at all Aviation Supply depot facilities and over-all administration of such storage space are ASO functions. Supplying catalogues of aeronautical material is the job of ASO and it also disposes of obsolete, excess material in the ASO system.

WHEN AIRPLANES ARE STRICKEN THE BUSINESS OF SALVAGE BEGINS. USABLE PARTS ARE SAVED TO REDUCE SUPPLY PROBLEM

I-A-P PLAN IS FELT ALREADY ABOARD CARRIERS OF FLEET

RECONDITIONED PLANES WILL BE VALUABLE TO PILOT TRAINING

RESULTS THE INFLUENCE OF I-A-P ALREADY IS BEING FELT

A STARRY-EYED columnist in reporting results of the Integrated Aeronautic Program might conjure up a picture very pleasing to home consumption. His pipe-dream probably would present a 1945 Navy in which the older planes with clock-like precision moved back toward the States passing in mid-ocean a ship with the same number of new ones going out to the replacement pool.

In the same vein your breakfast commentator might tell the home folks how Navy pilots, flying planes on which the paint was hardly dried, were chasing a bewildered, underpowered enemy back toward Tokyo.

Such a picture would give our fighting pilots who are out there mixing it up with an enemy that is very good indeed, nothing more than a laugh, tinged with disgust.

Any long-range program as comprehensive and basic as the one hammered out by the Radford Board, cannot be snapped into perfect operation overnight. When the Navy called this an "Integrated" program, it meant just that. No one section of the Navy can make the Integrated Aeronautic Program tick any more than one small gear of your Waterbury can keep the time.

Unlike the watch in this analogy, the Integrated Program is geared to run at varying speeds. Which is by way of saying that the program has a certain degree of elasticity. A change in tempo doesn't make the entire plan bog down. As one of its elements the program calls for a constant reserve of planes in advance area. This alone gives elasticity to the operation of naval aviation in combat. A reserve of new planes close at hand is a cushion against any unexpected demand from the fleet which might arise because of changing strategy in a war theater or for any other reason. Wars seldom follow the well ordered pattern of chess.

Integrated Program Already is Taking Shape

Giving a detailed and specific report on how much has been accomplished toward making the Integrated Aeronautic Program operate, does not fall within the province of a restricted publication. What percentage of our pilots are now flying new planes which have all the military advantage possible, is a confidential matter which the enemy would probably like to know.

However, this much can be said. There are fewer planes in the combat theaters today that need general overhauling by far than there were before the Integrated Aeronautic Program began operating. By the same token, there are more Navy pilots today who are going out to meet the enemy with planes that have all the late military advantage than there were before.

The Integrated Program is taking shape and the progress is sound. The reporting system which keys planning for future needs is operating, more new planes are going out to the fleet directly while others are being reconditioned for further duty in non-combat fields ashore. The program is not static and future prospects bode no good for our enemy.

Getting the best planes into combat where they will do the most good is the goal of the Radford Board's Integrated Program

PIX QUIZ WHAT DO YOU KNOW ABOUT FIGHTER TACTICS?

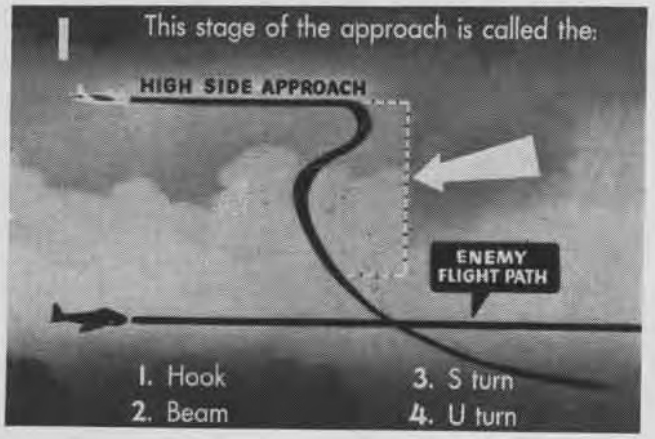
Recent Naval Aviation successes in the Pacific may be attributed largely to the Navy's pilot training program. Being expert in fighter tactics has enabled naval aviators to send many a Nip hurtling into the sea. Try these, then see answers on p. 48.

[QUESTIONS FROM BUAER SPECIAL DEVICES VISUAL QUIZZER FILM NO. 55, FIGHTER TACTICS]

Write your answers here

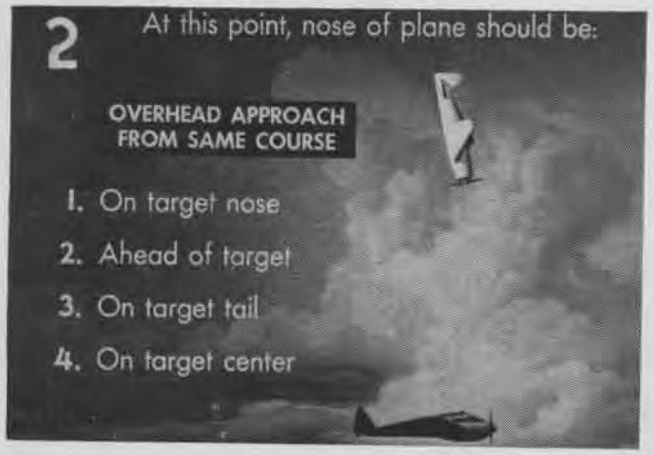
1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

1 This stage of the approach is called the:



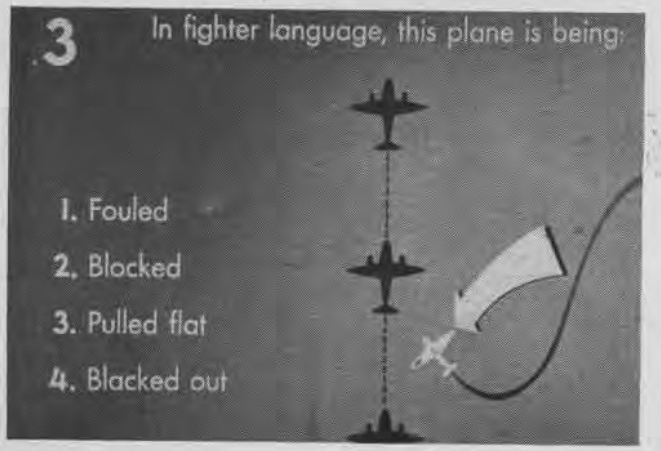
1. Hook
2. Beam
3. S turn
4. U turn

2 At this point, nose of plane should be:



1. On target nose
2. Ahead of target
3. On target tail
4. On target center

3 In fighter language, this plane is being:

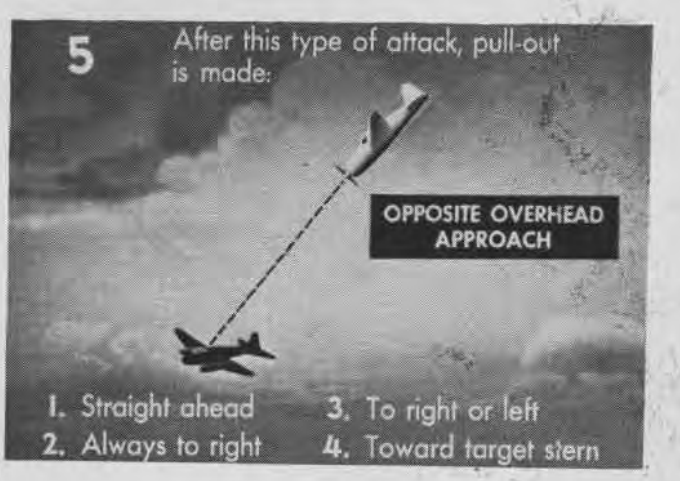


1. Fouled
2. Blocked
3. Pulled flat
4. Blacked out

4 Chief advantage of firing angle B over firing angle A in high side approach is:

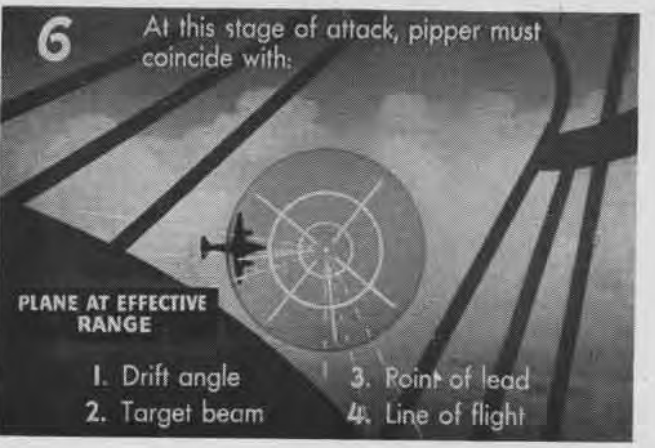
1. Safety
2. Lead easily held
3. More firing time
4. Enemy's "blind" angle

5 After this type of attack, pull-out is made:



1. Straight ahead
2. Always to right
3. To right or left
4. Toward target stern

6 At this stage of attack, pipper must coincide with:



1. Drift angle
2. Target beam
3. Point of lead
4. Line of flight

SHORE STATIONS

▸U.S.S. CHARGER—A Ck2c had finished whipping up a breakfast of fried eggs for the carrier's ship's company. Wearied by his Herculean efforts, he sat down, yawned, lit a black cigar and wrote a letter to his sweetheart. "Darling," he began, "for the past three hours shells have been bursting all around me."

▸NAS JACKSONVILLE—This is the story of a divebomber that operated at ceiling zero and carried away its target. It happened near the Senior BOQ. A hickory tree was alive with squirrels. The thick fog that had halted flying—or at least that's what everybody thought—boiled across the broad St. John's River.

Then with no advance notice a huge bald eagle swooped down on the squirrel-laden hickory. All the squirrels got away—but one. He was last seen going skyward clutched firmly in the talons of the eagle.

▸NAS MINNEAPOLIS—A saga of salvage was written not so long ago by the Service Department in the recovery of wreckage of two *Corsairs* from swampy and inaccessible areas in Wisconsin.

Two pilots ran out of gas on the way to NAS GLENVIEW and abandoned their planes. The pilots parachuted to safety. Salvage operations of a scope never before attempted by a unit from this station were undertaken the next day.

One plane had to be loaded on a huge truck and driven over a condemned bridge on a tributary of the Black River in Wisconsin. Railroad ties were crosslaid to provide a foundation for the hydraulic jacks which were used to brace the center of the span.

The second plane crashed about 200 miles from the station in swampy, jungle-like country. In an attempt to find easy access to the scene, members of the crew paired off and scouted the area. Two became separated from the main party and were lost in the dense undergrowth for five hours. Parts of the plane had to be cut away with a portable torch in order to transport it to trucks. It took a week.

▸MCAS EL CENTRO—Ten enlisted men of a night fighter squadron recently had a real fight on their hands when they tangled with local pests at this air station. The pests proved to be crickets. They were so numerous and difficult to remove from the squadron warehouse that a firehose finally was borrowed and put into use.

After a determined effort on the part of the men, some three bushels of crickets were subdued and killed. This is a new wrinkle in combat conditioning which, so far, has not been included in any manual. Perhaps some definite technique could be worked out against crickets, but the boys in this squadron say the water cure is the final answer.

▸NAS SAN DIEGO—When Jap shells tore into a *Ventura* plane in the Pacific, so much fluid leaked from the hydraulic system that the flaps refused to function. Frantically hunting for a liquid substitute, the Navy pilot and his crew hit upon the idea of pouring their coffee and orange juice rations into the system. The *Ventura* landed wheels down and flaps down.

▸NAS CLINTON—The western section of the station has become a reserve for coyotes who have made burrows in hay stacks around deserted buildings. From here they have raided the surrounding farms, molesting livestock.

Seriously annoyed by the culprits, farmers got permission to hold a coyote hunt, using specially trained greyhound dogs. About 25 Coast Guardsmen, farmers and men from the ordnance department drove through the western section of the station in jeeps, yelling and honking horns to awaken the coyotes and bring them out in the open. As soon as a coyote was sighted, the dogs were turned loose for the chase. Of the five coyotes killed, not one evaded the greyhounds for more than a minute and a half.

Another hunt is planned to destroy the remaining "varmints."

▸NATTC—NORMAN—Many have laughed at the soldier who, upon being asked why he had not accumulated some souvenirs of the war, replied that all he wanted of this one was a faint recollection.

The Navy version was expressed by a Southwest Pacific veteran. With an Arkansas drawl he allowed as how he didn't aim to even draw much water in his bathtub, when he once got home.

▸NAS MINNEAPOLIS—Liberty time is precious to the bluejacket and is not to be wasted in transit. Transportation to downtown Minneapolis by street car is slow going, and taxicabs do a land-office business. More than 200 cabs take on or discharge passengers at the main gate of the station between 1800 and 0600 daily.

Carriers
LET NANEWS
HEAR FROM YOU!

▸NAS JACKSONVILLE—An ultra-modern hospital for the exclusive use of dependents of naval personnel was opened here recently. Establishment of the 60-bed unit is expected to provide adequate comprehensive medical care for dependents at a cost far below that in any commercial hospital. A charge of $1.75 is made per day for hospitalization of dependents at naval infirmaries, well under the actual cost to the government—a real bargain!

▸MCAS EWA—Word has been received here that a rare sight greets the visitor's eye at X Island. After disembarking from a SCAT plane, the first thing he sees is a small shack decorated with the following sign:

Ladies only—Including:

Scaterettes	*Chetnikettes*
Waves	*Gashi*
Wacs	*Wasps*
Spars	*Wrens*
Marines	

Names of Russian and Chinese auxiliary units were also listed and appeared in foreign type. The man responsible for the shack is a Seabee officer, former head of a contracting firm in Minnesota.

▸NATB, PENSACOLA—Participation in intramural sports on the naval air training bases has increased to such an extent that more than 2,000 men now are taking an active part in the sports program here. Touch football is the most popular with the men, 820 taking part in play on 82 squads. Bowling is next with 82 teams providing competition for 574 men. There are 416 men participating in basketball leagues.

▸NAS BRUNSWICK—This station's pumper and its civilian fire-fighting crew helped to stop a fire that seriously threatened Brunswick business district recently. Members of the Shore Patrol assisted police in maintaining fire lines.

▸NAS ANACOSTIA—Fleet pilots reporting to this station are going through an exacting transitional training period before being assigned to transport duty. Beginning at NAS Atlanta, where they receive the basic Navy instrument flying and Link trainer course, the training continues at the PCA or American Airline School. There for a period of 4-8 weeks they study advanced airways procedure and technique under the most experienced instructors in the country. On completion of these two phases of training, the pilots report back to Anacostia where they fly as co-pilots for four or five months before being "checked out" on the left side. Average flight time before qualification as first pilot amounts to 2200 or 2400 hours.

▶NAS CLINTON—A Sk3c in Public Works is busy perfecting his stage talents. When his buddies can't go to the movies, he returns to the department, and acts the movie out for them.

▶MCAS EL CENTRO—A fighter pilot at this station recently has established quite an enviable record among his friends for his ability to remove pests. In five days, his score reads: 2095 Silvertails, 35 Black Widow spiders and 10 Scorpions all killed manually and singly in his B.O.Q. room. The pilot believes this record to be unequalled for this given time and offers to challenge anyone with a similar experience.

▶MCAD MIRAMAR—Ice cream and milk for luxury-starved stomachs are the commodities most desired by Marines returning from the Pacific, according to statistics compiled here.

Returning Marines consume more than 2000 large dishes of ice cream daily, plus an additional 2800 pint packages. They wash this down with 2500 pints of milk. And just to show there's nothing wrong with their appetites, they eat 6000 sandwiches daily.

▶MCAS CHERRY POINT—The feathered group has reported for the winter—namely the lowly sea-gulls. Arriving with precision timing of the more famed Capistrano swallows, the station's winter visitors sent in their advance echelons some weeks ago. Now the arrivals have pretty well filled out the "table of organization" for MAG —Marine Air Gulls.

With their advent, weather records have shown a consistent high precipitation, an aerological condition that apparently has a lot to do with their present assignment.

Their raucous cries and the sight of their inverted F4U wings in the air will now be a common occurrence until the return of good weather next spring calls them back to the open sea.

▶NAAS GREEN COVE SPRINGS—Two Metro-Goldwyn-Mayer officials accompanied by Marine and Navy advisors surveyed St. John's River to determine whether river frontage was suitable for shooting scenes in the forthcoming picturization of W. W. White's saga of PT boats, *They Were Expendable.*

▶NCAS MOJAVE—Approximately 480 doughnuts an hour can be produced on a new doughnut machine which recently has been added to the fountain in the Post Exchange on the station. The machine still is in the experimental stages, but mass production of plain, sugared and iced doughnuts is expected as soon as final arrangements can be made.

▶NAS SHAWNEE—After each flight, the navigation instructor turns in a complete report on the condition of all navigational instruments. This includes a notation of the astro-compass deviation check made on each heading flown. The deviation from this check is compared with that shown on a previously plotted compass curve. When there is a discrepancy of four degrees or more, the compass is reswung and a new graph and card manufactured.

TOKYO TALKS

To ASIA

The Tokyo newspaper *Asahi*, in an editorial comment on the German western front offensive, said the drive had been hailed in all quarters in Japan, but warned the Japanese they must not "sit back and relax" or become "too elated over the German success."

To AMERICA

The Tokyo radio quoted the Berlin correspondent of the newspaper *Asahi* as declaring the new German offensive was using more than 400,000 men between 20 and 30 years old "who had been drafted in August from the munitions industries."

The correspondent ascribed what he termed the "success" of the German paratroops in their night operations "to the use of black parachutes" and asserted that the main factor in the "overwhelming success" of the current offensive was strict secrecy over preparations and strategy.

To THE ORIENT

Shortly after Japanese Imperial Headquarters issued an unsubstantiated claim to the destruction of 14 of the B-29's that struck a daylight blow at Tokyo late in December, Domei admitted some damage had been caused when the raiders concentrated their bombs on the capital's industrial sections.

The dispatch insisted, however, that "intrepid interception" by fighter planes and "quick action" by air raid defense units had kept losses light.

At the same time Domei circulated a story that the members of the 86th Imperial Diet had been gathering in the parliamentary dining room when the first air raid alarm sounded about 12:30 p.m., but insisted on completing their meal.

"Saying, 'We can't fight if we're hungry,' these men leisurely took up their chopsticks, and at the completion of the luncheon they proceeded to the shelter, unperturbed and calm," Domei declared.

The story of how the Diet reacted to a raid that the Japanese said was carried out by at least 50 *Superfortresses* appeared intended to add weight to Domei's claim that Tokyo residents were meeting the air assaults with high courage.

"The morale of the city people, who with their own eyes saw the air battles and the spectacle of B-29's wrapped in flames and falling to their inglorious end, is high indeed."

To THE UNITED STATES

The "citizens" of New York City are in such great fear of the danger of a German bombardment by flying bombs they are "making hasty preparation to evacuate." Though no German bombs have landed yet in New York, Mayor Fiorello LaGuardia, according to Tokyo, said he is afraid of possible panic.

To JAPAN

The Japanese Munitions and Welfare Ministries announced that they had established a "guaranteed allowance" for war workers whose families had suffered casualties during air raids so that they could "forge ahead for production without anxiety about their homes." The allowance will include money for "air defense, money for condolence for the dead and a sympathy sum for the wounded." A monetary award will be given to those who fight resolutely at the time of war disaster.

SHOW ME THE WAY TO GO HOME

Celestial Fix

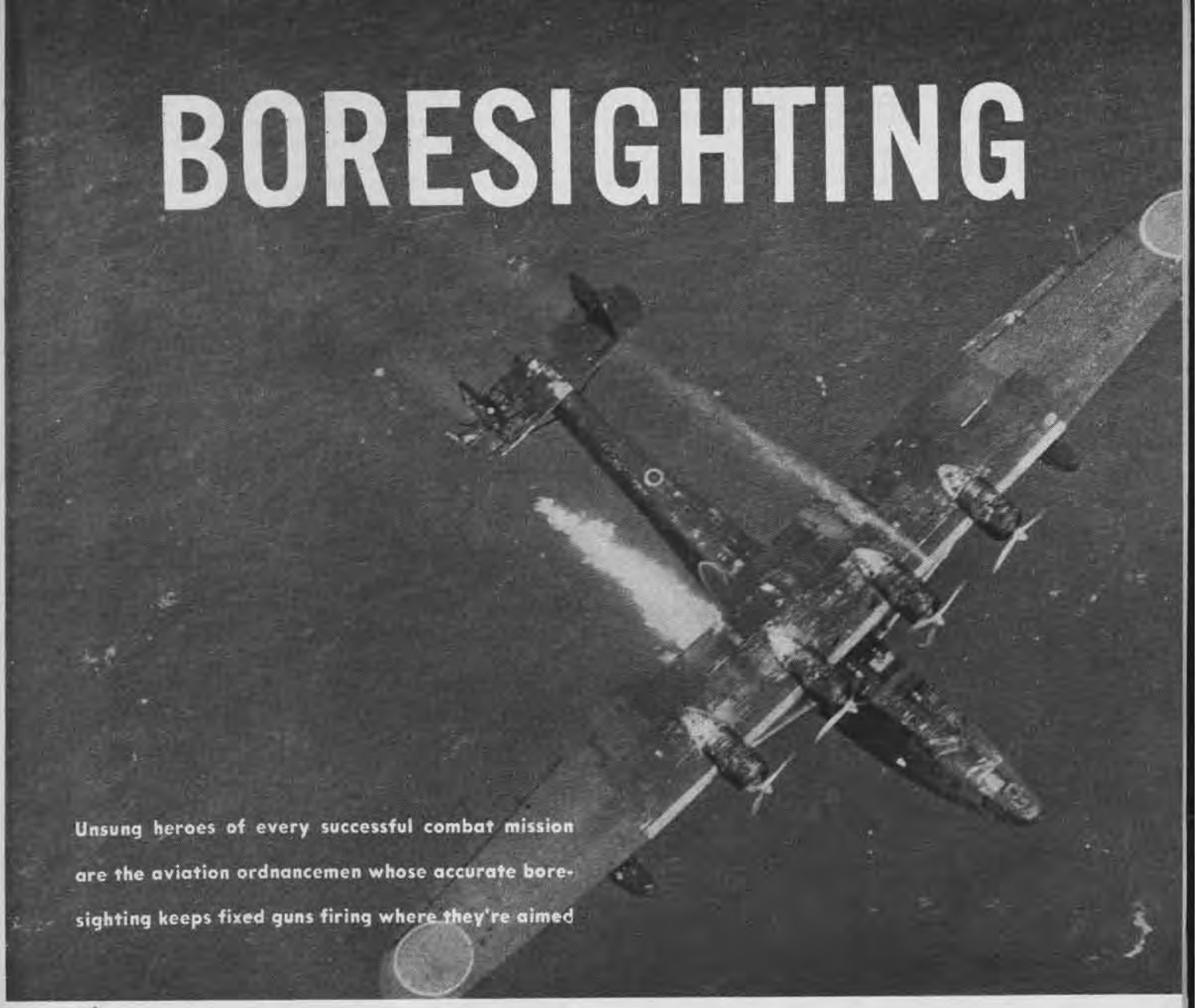
At 0600 GCT on July 1, 1943, your DR position is Lat. 19° 14′ N, Long. 134° 46′ W. As you have not definitely fixed your position since 0446 GCT, at which time you were in Lat. 21° 24′ N, Long. 136° 05′ W, you make the following observations in order to obtain a celestial fix. Your TAS is 140 k and you have been flying continuously on TH 144° at an altitude of 5,000 ft. You have an IC. of +4′ and a WE of 5 sec. slow.

Watch Time (GCT)	Body	hs
05-56-08	Spica	46° 07′
06-00-10	Denebola	35° 02′
06-05-54	Dubhe	25° 45′

1. What wind have you been using to DR? From——— Force———
2. By what GS will you advance and retard your LOP's? ———
3. What is Spica's hc and zn? hc——— zn———
4. What is Denebola's hc and zn? hc——— zn———
5. What is Dubhe's hc and zn? hc——— zn———
6. What is your 0600 GCT fix? Lat.——— Long.———
7. What is your new wind (between fixes)? From——— Force———

(Answers on page 48)

BORESIGHTING



Unsung heroes of every successful combat mission are the aviation ordnancemen whose accurate boresighting keeps fixed guns firing where they're aimed

WHEREVER naval aircraft operate, the record of their combat efficiency is directly proportional to the skill and accuracy of the ordnancemen who boresight the guns. The finest aircraft American science and industry produce, flown by skilled pilots, are doubtful weapons with sights and guns not accurately harmonized.

Neither pilots nor ordnancemen can afford to be satisfied with sighting that is almost right. Accuracy pays off in hits, *almost accurate* boresighting will not.

Boresighting errors increase with target distance. A 10 mil error will throw the fire of a gun 10″ off the intended target at 1000″. The same boresight error at a 1000 ft. range results in a miss of 10 ft.—too serious for VF pilots to tolerate. At 1000 yds. the error becomes 10 yds., at 2000 yds., 20 yds., increasing with distance.

The average machine gun, it is true, has an inherent error of about 5 mils and a good pilot will average a 5-mil sighting error. Other errors may amount to from 5 to 15 mils. All these are inherent and largely uncorrectable. Boresighting errors, on the other hand, are preventable and can be corrected. In the split-second timing of combat, where pilots must rely primarily on sights rather than tracers or bullet impact, preventable boresight errors can be deadly serious.

Ashore or afloat, every combat pilot or aircrewman considers his ordnanceman part of the plane's combat team. Without a perfect job of boresighting by the AOM, pilots and aircrewmen cannot function in combat with the deadly accuracy required in this war. To do his job well, the AOM must be able quickly and accurately to analyze the individual problems of each plane.

EVEN THE best boresighting will not last. Every time a plane takes off or lands, alignment of its sight, camera, guns, or launchers may be thrown out of harmonization by vibration or operational shocks. Equipment must be checked whenever conditions permit. A quick check is advisable before each flight.

ACCURATE BORESIGHTING JOB REQUIRES STUDY OF SIGHTS

KNOWLEDGE of sights and sight mounts is essential for all aviation ordnancemen whose duties include boresighting of combat type aircraft. Sights commonly used for forward firing fixed guns, rocket firing, and glide bombing are the Mk. 8 and Mk. 9. Both these sights are the infinity type and have no fixed eye position. On target, the pip of an illuminated sight will not sensibly move from side to side with the eye provided the target is 500 feet or more distant.

To properly adjust any illuminated sight, the AOM moves his head back in proper sighting line to a point where all segments of the circumference of the reticle's outer ring begin to fade. This is the correct eye position for sighting.

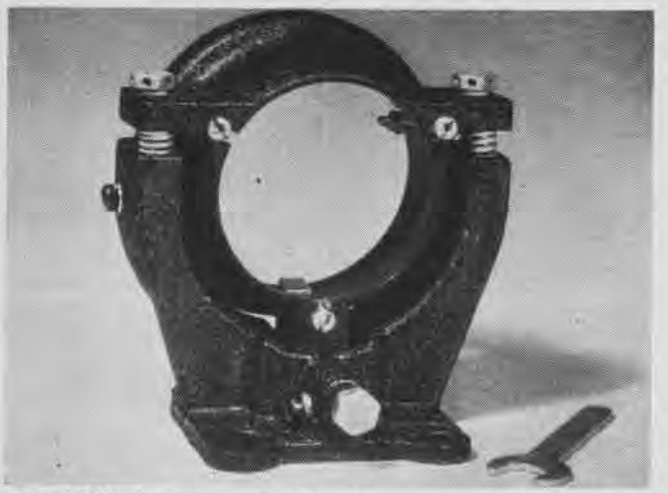
In planes in which sight mounts are known to be standardized, a fixed spot representing correct line of sight in the desired harmonization pattern can be placed on the boresight screen. Where there is any question of positioning of the sight on the plane being checked, the AOM must take careful measurements of vertical and horizontal offset from the boresight datum line. A corresponding spot then is accurately located on the bofesight screen pattern.

Several mounts are used for the Mk. 8 sight in TBF and TBM planes. Original factory sight mounts were removable. With these mounts the sight was installed by the pilot in flight. Frequent installations and removals of the sight provide opportunity for changes in alignment that can throw harmonization completely off. A fixed countersunk Mk. 8 sight installation for *Avenger* type airplanes is now factory-installed. This fixed, and far more accurate installation, was designed and first placed in operation by Fleet units.

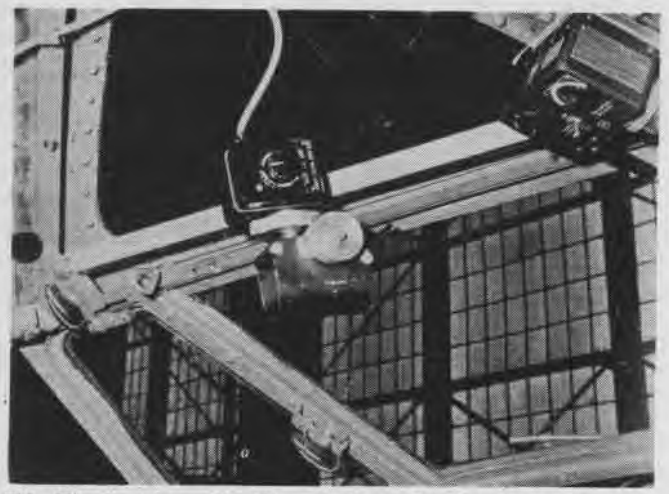
IN ADJUSTING Mk. 8 sights, care must be taken not to tighten azimuth and elevation screws to a point where tension is removed from springs. If tension is removed these screws vibrate loose, throwing sight out of adjustment. The sight is adjusted in azimuth and then in elevation.

Sights, as well as guns, cameras, and launchers, must be checked aboard ship, as at shore stations, at every opportunity. Vibration can quickly throw gear out of adjustment.

Countersunk mount developed in the Fleet for Mk. 8 sight in *Avenger* eliminates necessity for frequent removal. Older Mk. 8 mounts in TBF (M) type airplanes placed sight over a portion of instrument panel. Countersunk mount is permanently fixed

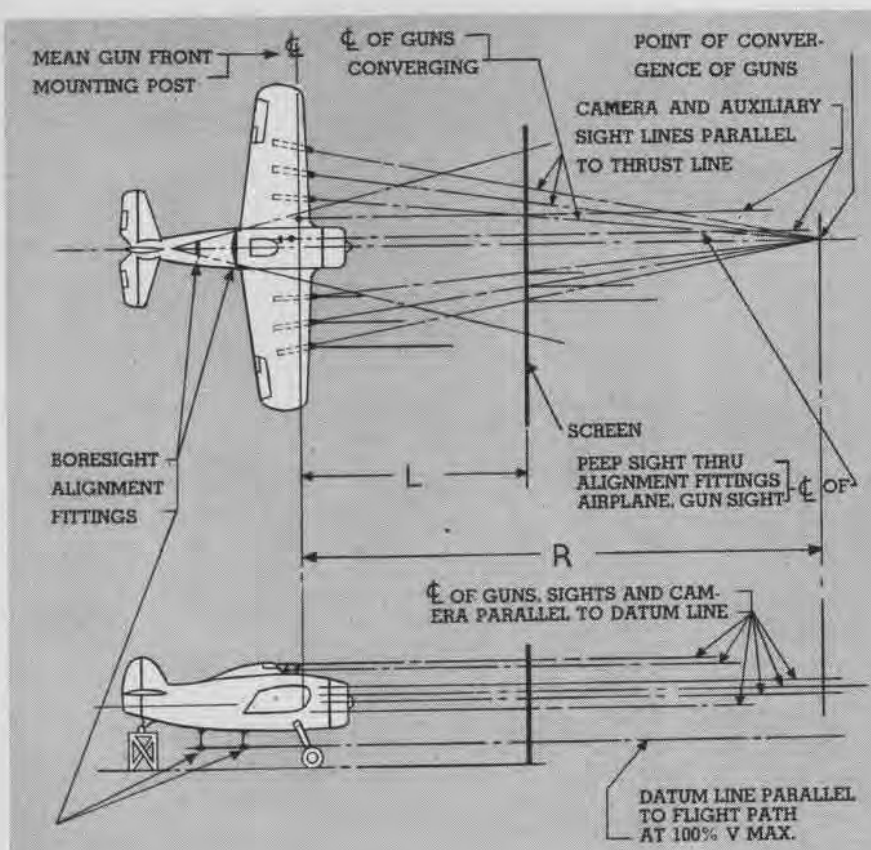


Base of Mk. 8 illuminated sight shows azimuth and elevation screw adjustments with wrench used for work. In boresighting, tension must never be entirely removed from springs around screws. AOM adjusts first in azimuth and then for elevation



This Mk. 9 sight with tilting reflector head requires accurate adjustment for use in low level bombing. Bar mount with adjustable reference ring (PV-1 change No. 157) holds sight in place. NAS Patuxent River perfected this reference ring design

Reference ring holds Mk. 9 sight in use position on PV-1 type airplane. When sight is not in use, pilot may slide it to one side on mount bar. Reference ring on bar always remains in position, insuring fast, accurate adjustment of Mk. 9 when needed



QUIZ FOR AOM'S

Can You Define:

1. **Angle of attack**
2. **Boresight datum line**
3. **Flight path**
4. **In azimuth**
5. **Mil**
6. **Pip**
7. **Reticle**
8. **Thrust line**

SUGGESTED READING

Tech. Note (Restricted) 64-42
Tech. Note (Restricted) 59-44
C.I.T. UNC 8 (Restricted)

BORESIGHTING MUST BE EXACT IF IT'S TO PAY OFF IN BATTLE

HARMONIZATION is the adjustment of an aircraft's sight, fixed guns, rocket launchers and gun cameras in a known relation to one another and to the target at a given range.

Aviation ordnancemen traditionally have harmonized fire of fixed guns with the pilot's sight by screen boresighting. Methods for establishing boresighting datum lines and screens for fixed guns, cameras and sights on all combat type naval aircraft are set forth in BuAer (Restricted) TN 64-42 and TN 59-44.

Basic principle involved is use of a standard boresight datum line established on all aircraft by means of boresight fittings provided by the manufacturer. It is defined as a line parallel to line of flight at maximum velocity of plane at critical altitude with full combat load and one-half fuel. This line is calculated from best figures now available. Tests are under way to check validity of these calculations.

Ordnance officers or chiefs, knowing the physical position of all boresightable equipment on a particular type aircraft, can prepare an accurate screen suitable for obtaining required alignment of sight, fixed guns, cameras and launchers. Boresight patterns may vary with the type of plane and combat duties assigned the particular squadron concerned.

For accuracy, AOM's must use great care in placement of the screen. A screen erected for a particular type and model plane at a specified range is accurate only when used at that exact range. Marked on the screen are the exact points where line of sight and lines of sight down the bores of each of the airplane's guns would strike in order to form the desired pattern at a predescribed range. Individual guns, cameras and launchers are adjusted to this pattern.

All Mk. 5 (zero-length) launchers are fixed and adjusted at the time of installation. The Mk. 4 launcher guides the rocket for several feet and consequently must be boresighted down the rail as carefully as a machine gun to be accurate.

ALERT AOM's must check each plane to be sure its boresightable equipment is in identical position with that of the plane for which the screen was erected. Differences, even though slight, will cause inaccuracies. A correctly marked screen, using small dots and narrow lines to insure exactness, must be available for the plane being boresighted. In boresighting, the greater the distance between screen and plane the smaller the chance for error in harmonization.

Shooting in guns on a target at converging range is still the best, surest and most accurate harmonization method.

ORDNANCEMAN SIGHTS DOWN BORESIGHT FITTINGS ON AN F4U

MARK ON PROP LINES UP WITH SIGHT PIP AND WINDSHIELD POINT

SMALL CROSS ON WINDSHIELD ACCURATELY MARKS LINE OF SIGHT

CARRIER-BASED AOM'S MUST CHECK EQUIPMENT CONSTANTLY

ABOARD carriers, boresighting is a more difficult problem. If facilities and space permit, most accurate results are obtained by setting up screens on bulkheads at the greatest possible distance up to converging range. In every case, sight, fixed guns, gun camera and launchers must be carefully and accurately harmonized at a shore-based activity just before the plane is taken aboard ship for operational use. Planes should be returned ashore for accurate rechecks whenever possible.

A method developed by ASDevLant may be used in emergency to check an airplane's sight adjustment aboard ship. Marks are placed on windshield and propeller when an accurate harmonization is made ashore. The AOM permanently marks a point on the windshield that intersects sighting line between pip and screen sight point. The propeller, set in low pitch, is turned until one blade vertically intersects sight point. Exact vertical intersection is determined by marks on either side of the screen sighting point. A dot is painted on prop blade in line with pip and windshield mark.

Two sharp lines are painted across the crankcase front section flange to mark proper setting. To check the plane's sight aboard ship, prop is turned to marked position and sight pip carefully lined with windshield and propeller marks.

THIS METHOD of carrier sight-checking is acceptable only in emergencies. It must be abandoned if propeller is damaged or position of thrust bearing nut is changed. Boresighting with the old template method is not recommended and should be used only as a last resort, because any error in boresighting is magnified by proximity of template to guns and sight. Other inaccuracies occur because the engine and propeller hub position shift because of rubber mounts.

It's the aviation ordnanceman's responsibility to insure that the airplane's guns shoot where the pilot aims them.

LINES ON CRANKCASE FLANGE MARK CORRECT PROPELLER SETTING

AOM QUIZ ANSWERS

ANGLE OF ATTACK—angle made by flight path with thrust line or any specified line such as mean chord line of wing
BORESIGHT DATUM LINE—an arbitrary line established by use of boresight brackets. Line represents flight path of aircraft in horizontal flight at maximum velocity at critical altitude with one-half gas and a full useful military load
AZIMUTH—in boresighting term *in azimuth* is used to denote horizontal or lateral adjustment of the boresightable gear
FLIGHT PATH—path of aircraft through air. Line of motion of center of gravity of plane without respect to its altitude
MIL—an angle equal to 0573° degrees. One mil is the angle subtended by one foot at a distance of one thousand feet
RETICLE—a delicate screen in illuminated gunsight through which light is passed to form a pattern on the reflector plate
THRUST LINE—in single engine aircraft a line drawn through the propeller shaft. In multi-engine planes, a line parallel with the center line of aircraft and with the propeller shafts
PIP—dot in illuminated sight center is the reticle's center

Vibration and operational shocks will throw guns and sights out of alignment. An alert aviation ordnanceman will check lugs securing fixed guns at every opportunity. An ASDevLant AOM tightens lugs on an *Avenger*. Some planes have lock washers

Trainees preparing for aviation ordnanceman duties with the fleet learn how to accurately boresight airplanes. Sloppy or careless boresighting is not tolerated. These Norman NATTC trainees learn duties by erecting screens and sighting in guns

AOM uses jack to elevate fighter's tail preparatory to boresighting. Tail of plane must be elevated when necessary to bring boresight brackets in alignment with proper markings on screen erected for use with particular plane being boresighted

Boresight fittings provided by manufacturer determine plane's boresight datum line. On TBF or TBM planes ordnancemen must check erection manual to be sure correct boresight bracket is used. One set of fittings is provided for each six airplanes

Ordnanceman uses hydraulic jack to level wing of *Wildcat* during boresight operations at NAS Norfolk. In boresighting plane the AOM should check pressure of airplane's tires to be sure they are inflated to pressure required in the erection manual

Accurate rocket firing, as demonstrated by this Navy *Ventura*, is only possible when the ordnanceman does his job well. The Mk. 4 rocket launchers must be sighted in along their rails like machine guns. The newer Mk. 5 launchers are permanently fixed


ANNOUNCING A NEW DEPARTMENT
UNCLE KIM TUSSIE
Devoted to Reducing the needless toll in lives and Equipment taken by Friend shooting Friend through FAILURE to RECOGNIZE OR IDENTIFY
Grampaw Pettibone says:
Meet a Kentucky friend of mine. He's quick on the draw, but always knows what he's shooting at. His ideas on identification and recognition merit attention.

UNCLE KIM TUSSIE

I've just been a-readin reports on this war and hit's kinder got me riled. Plague-gonnit, our boys have started to shootin one another. 'Pears like they get in sich a big way a-shootin they don't take time to see whether 'r not they're a-poppin the hot lead at the right ones. Thought I might as well step in and see if I couldn't do somethin about it. I've seen a lot of things happen among these hills in my day. I've seen a powerful lot of shootin; I've done a little of it myself. I'm plain lucky at my age to have eyes as bright as the seat o' my pants and to have a trigger finger cool as a cucumber. In less time than hit takes a catamount to blink his eye, I can tell whether a man's my friend 'r enemy. If he's my friend, I hold my fire; if he's my enemy I drap 'im 'fore he draps me.

ACTION REPORT: **"On the morning of the 19th, one PBM was attacked by four F6F's and the plane captain of the PBM was killed and two other crew members injured. The plane reached base but was not in condition to continue operations. Failure to recognize a PBM would appear inexcusable. Crew members were certain of the identity of the attacking aircraft and saw the American bar and star on the fuselages. The fact that the attack was broken off would indicate that the F6F's eventually identified the PBM as friendly."**

Hit reminds me of th' night when Cousin Boliver Tussie's boy Sneed was a-comin home from church and got into a fight with old Fiddis Van Horn's boy Eif over a gal. They both wanted to bring Martha Porter home from church. Sneed had been a-walkin along beside her down th' path, had 'er by th' arm and was a-wingin 'er home. Eif Van Horn walked on the other side o' Martha and finally he got 'er by t'other arm and then the trouble started.

A Tussie and a Van Horn could never be that close to one another even with a gal as purty as Martha Porter betwixt 'em. That would spell trouble. They both wanted Martha, and Sneed had 'er. Eif just thought he'd walk up and take 'er. And when he did. Sneed told 'im in mighty plain words to get down the path and mind his business.

Ye don't know the Van Horns like we do. Ye can't tell a Van Horn he has to do something anymore 'n ye can tell a Tussie. When Sneed told Eif to go on down th' road and mind his own business, Eif jerked out a big long-bladed knife with a hairy handle from the sheath and told Sneed he's a-goin to work on 'im. When Martha Porter saw Eif's ugly knife, she broke into a run down the mountain path, a-screamin as she went. And when Snail Tussie, Sneed's brother, heard 'er screams and Eif's and Sneed's cusses and the clashes of knives, he took off in a hurry to see what was a-goin on. He's expected something to happen to his brother Sneed when he saw Eif Van Horn a-followin 'im from church with that dangerous lookin hairy-handled knife in a sheath on his hip. That's why he'd been a-walkin behind his brother to keep 'im well kivered.

When Snail got to Eif and Sneed they were down on th' ground a-rollin, a-cussin, and a-tryin to butcher one another with thar knives. Each was a-clutchin th' other with a death-grip with his free hand, while with his knife-hand he was a-tryin to find a soft spot to stab th' other, to slice 'im, to get to his juglar vein. Hit was a fight o' life 'r death, maybe death fer one, life fer tother . . . maybe death fer both in th' end. Snail was a-lettin 'em fight until he saw the big knife Eif Van Horn was a-usin on Sneed. When Snail saw th' bright-shiny blade of his knife, nearly as big as a corn-cuttin knife,

flash in the moonlight, his hand went down to his holster and he yanked out a long blue pistol, ready fer trouble.

He watched for a minute his brother Sneed's pocket-knife blade a-stabbin into Eif Van Horn's back but with this big knife, Eif would get Sneed in th' end. The moonlight was as bright as day and Snail knew what he was a-doin as he watched the two men a-rollin on the ground a-stabbin one another. Hit was too much fer Snail to stand. Maybe he got blood in his eyes when he thought about th' way th' Van Horns had thinned our Tussie clan and maybe he failed to remember how we had thinned thar clan. Hit didn't take Snail long, not nigh long enough, to find th' right spot to drive th' hot lead at Eif Van Horn. He knew one little bullet hole at the right place would stop this big knife. He stood thar at close range and aimed his pistol at Eif so he couldn't miss. And with his cool finger he squeezed th' trigger. He got his man all right.

But as he stood thar a-watchin the fight after he'd shot his pistol, he saw the big hairy-handle knife with the long blade a-coming up and a-goin down and he watched the familiar hand with a death-grip on the pocket knife come up and go down into Eif Van Horn's back, sinkin the knife blade less every time. He saw th' hand get slower and slower until the pint o' the sharp blade barely went through th' bloody shirt and then it eased down and didn't stab at all. The familiar hand was still, fer Sneed had drawn his last breath. He was dead.

Snail couldn't believe he'd killed th' wrong man. He couldn't believe he had failed to recognize his own brother. Hit teached me somethin. I'll never pop lead agin without I'm doggoned *shore!*

IMPROPER CLEARANCE OF AIRCRAFT

Disregard of Weather Hazards By Pilots Often Results in Serious Aircraft Accidents

WITH a large section of the continental United States in Winter's grip, it is more important than ever for pilots and operations officers to observe standard flight clearance procedures.

In many cases pilots have cleared from operations offices on contact flight plans when minimum contact weather prevailed, with instrument conditions forecast. Inexperienced pilots have been released too late in the day to complete their flights before dark and have crashed en route to their destinations.

Pilots cleared on contact flight plans upon encountering instrument conditions are not obeying Civil Air Regulations unless they return or land at the nearest field without delay.

Too many factors are involved to lay down hard and fast rules to cover all conditions relative to the release of aircraft. Existing instructions set forth the conditions under which instrument flights may be made, restrict ferry flights to contact flight rules and pre-sunset landings at destinations and give the commanding officer the right to withhold clearance when in his opinion a flight cannot be made safely owing to weather conditions prevailing or forecast.

On routine flights as distinguished from fleet operations and NATS flights, safety should be paramount. Contact weather does not necessarily mean safe conditions of flight. In the case of minimum contact weather, consideration should be given to the time of the year, terrain to be crossed, available airports along route, conditions causing questionable weather (for example, haze and smoke vs. rain and snow), the weather forecast, the time of day and the experience of the pilot.

Commanding officers should inspect operations offices to determine that the organization and procedures are such as to insure safe clearance of aircraft under both contact flight rules and instrument flight conditions. The following items should be carefully checked by *experienced* operations officers prior to every instrument flight:

a. Insure compliance with Aviation Circular Letter 19-44, *Federal Airways Instrument Flying Qualifications and Instrument Flight Clearances.*

b. See that forecast weather, especially the ceiling, is compared with pilot's proposed altitude. When proposed altitude exceeds the forecast ceiling, flight must be classified as instrument. This classification should be made by the pilot, but must be checked by clearing authority.

c. See that terrain altitudes along the route of proposed instrument flight do not exceed the proposed flight altitudes, but insure an adequate clearance and safety margin of at least 1,000 feet.

d. Examine the pilot's instrument card, and consider his experience on the type aircraft he is currently flying and his recent experiences with instrument flights.

e. Study the weather forecast along route to insure that the pilot's flight plan does not contemplate entering areas of extreme turbulence, icing or bad weather.

f. Check the knowledge of the pilot regarding instrument flying rules to insure that proper altitudes are maintained and proper radio checks complied with.

g. Be sure pilot is familiar with the Pilot's Advisory Service. This is important.

WEATHER clearances for flights under instrument flight rules or when forecast indicates instrument conditions will develop will be made *only* by qualified *commissioned* aerological officers after consultation with the operations officer or his representative. Under such conditions pilots will be fully briefed on the weather, and the weather release will be signed by the aerological officer after consultation with the operations officer. When no qualified aerological officer is assigned, instrument weather clearance will be obtained if practicable by telephone or teletype from nearest activity having a qualified aerological officer and a notation to this effect made on the release. The flight clearance will be signed by the operations officer personally or in his absence by a qualified senior assistant who is an instrument pilot.

A pilot cleared on a contact flight plan shall not file an instrument flight plan en route unless all the requirements of ACL 19-44 as to instrument rating, airplane equipment and weather minimums for the rating held are met.

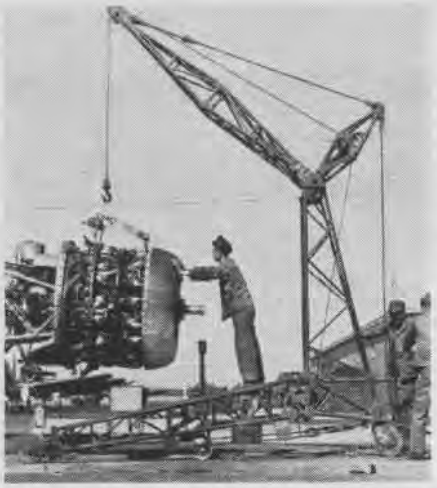
[CONDENSED FROM AVIATION CIRCULAR LETTER 26-44, IMPROPER CLEARANCE OF AIRCRAFT]

TECHNICALLY SPEAKING

Revised Hoist Aids Engine Change

MCAS MOJAVE—Difficulty was encountered by one of the squadrons while installing a Pratt and Whitney R-2800-8 engine on a *Corsair* using a Portable Tripod Hoist, model 452-A, manufactured by the General Bronze Corporation.

The span between rigid wheels of the hoist and landing gear of the plane is the same; therefore, the hoist can not be brought in close enough to the



ADJUSTABLE WHEELS SIMPLIFY INSTALLATION

plane for easy installation of the engine. If the tripod hoist is moved to either side so that wheels of the hoist move in along sides of the plane wheels, the engine is brought off center, making it difficult to install. This caused a great deal of trouble.

The hoist was revised, making the span between the wheels adjustable, thereby simplifying installation. Rigid wheels were revised to swivel. Points at which the trussed legs, supporting the wheels, meet the main frame were revised so that the span between the wheels is adjustable. Torque rods, between the legs, also were revised, making the hoist adjustable. The hoist can be used on any plane that the A&R section or engine overhaul section of this organization may work on.

▶ *BuAer Comment* — Service Squadrons having time and facilities to make this modification will obtain a more versatile piece of equipment. The Bureau, however, has a similar modification made on this hoist. Since that time a new turret and engine hoist has been developed which has overcome the problem of leg spread and has an increased capacity and lift. These hoists now are under procurement.

Dye Colors Snow-Covered Circles

NAS BUNKER HILL—The operations division was ready and waiting with a procedure to provide visible circles and runways when the first snow of any consequence hit the station.

The circles were dyed purple by use of a solution compounded as follows:

Mix 2½ oz. of purple analine dye with ½ gal. of denatured alcohol; then add ½ gal. of hot water. Mix thoroughly and let the solution stand for at least six hours. Next mix ½ gal. of the dye with 100 gallons of water and stir thoroughly.

Circles are located by posts in the boundary fence, placed opposite the center of each circle. The posts are painted orange, so the circles may be located easily when snow-covered.

After a snow, pick-up trucks are used to pull drags aground the circles. The drags are wooden, **A**-shaped devices with a spread of approximately five feet. They are made of light materials, with dimensions of 7′ x 8″ x 6″. The dragging of the snow-covered area makes a solid surface for the dye mixture; otherwise the dye would penetrate through soft snow and would not show adequately from the air.

To apply the dye, two 55-gal. barrels are placed horizontally on a rack made to fit a light pick-up truck bed and are connected with a 1″ pipe. This pipe has shut-off valves and extends down to within a foot of the ground where it is attached to another 1″ horizontal pipe, five feet long, which has enough 1/32″ holes in it to permit a spray.

Under normal conditions, the dye will show on the circles for approximately six days. If the temperature does not go above freezing dye lasts longer.

Guard Will Protect Bombsight

VC-80—A metal guard for the bombsight stabilizer in TBM-type aircraft has been developed by this squadron. The guard corrects many objectionable features in the present plywood box cover now issued with the stabilizer.

The wooden box does not protect cables in the sector control box and cables often are knocked off the sheaves during flight. It represents a splinter hazard and is bulky. The metal guard not only protects the follow-up cables but will serve as a permanent step for the turret gunner. It does not hide the primary and secondary clutches and potentiometer needle. It does not prevent lifting up the sector control cover or removal of the stabilizer itself from the aircraft. The guard does not constitute a hazard and uses little space.

METAL ARM PROTECTS BOMBSIGHT STABILIZER

During the months the metal guard has been installed by this squadron, not a single follow-up cable has been knocked off the sheaves. Several other squadrons have adopted it not only for TBM but also in PBY and PBM aircraft.

Pensacola A&R Works 2 Shifts

NATB, PENSACOLA—In a move to step up production to meet the constantly increasing work load, the A&R is now operating on a basis of two nine-hour shifts. A third shift is employed when necessary. Both naval and civilian workers were affected.

A&R topped all previous production records again during November, exceeding by 11 planes the previous all-time record for planes overhauled, assembled, flight tested and delivered. The old mark was 65 planes.

However, additional civilian workers are needed and a total of $1,000 worth of War Bond prizes have been offered from the station welfare fund to employees and naval personnel who recruit the largest number of new workers. During the first three weeks of the drive secured 700 new workers.

PUBLICATIONS

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

FLIGHT SAFETY BULLETINS

34-44 *Anoxia—What to do about it.*
35-44 *PB4Y Weight Limitations.*

AVIATION CIRCULAR LETTERS

124-44 *Outfitting of Aircraft Carriers, Seaplane Tenders and Carrier Type Squadrons with Aeronautical Material and Equipment.*
125-44 *Exhaust as Driven Superchargers—Centralized Overhaul of.*
126-44 *Aeronautic Forms—Distribution of.*
73-44B *Instructions in Regard to Ferrying of Naval Aircraft.*
127-44 *Overhaul Facilities for Auxiliary Power Units and Aircraft Heaters, all Types—Designation of.*
128-44 *Aeronautical Material—Coding and Manufacture of.*
129-44 *Reports of Unsatisfactory or Defective Material—Disposition of Material.*

TECHNICAL NOTES

J-44 (Conf.) *Blast Effect of Five Inch Guns on Aircraft Control Surfaces.*
99-44 *AR-10 Rescue Assembly, Attachment & Rigging for Dropping from* TBF/TBM—*Type Aircraft.*
100-44 *Drinking Water Kit—Desalting; Chemical.*
101-44 *Replacement of the* (AC *Electrical Connector on* NEA-3, 4, *and* 5 *Generators.*
102-44 *Means of Handling Buoy-Mounted Seadrome Lights.*
103-44 *Airborne Rescue Assemblies* AR-2, AR-4 AND AR-7—*Description, Use and Fabrication in the Field.*
104-44 *Life Rafts—NavAer Specification* (M-3r —*Folding and Packing into Carrying Case—Procedure for.*
105-44 *AN/ART-13* (ATC) *Radio Transmitting Equipment—Tuning Precautions.*
106-44 *Modificaton of Leece-Neville Type* L-2, M-3, R-5A *and* ND-2 *Generators.*

TECHNICAL ORDERS

142-44 *Aircraft* IFF *Equipment—Pilot-Operated Destruct Switch, Safety Wiring of.*
143-44 *Model* SB-2C-1, -1A, -1C, -3, and -4 *Airplanes—Model* SBF-1, -3 *Airplanes—Model* SBW-1, -3 *Airplanes—Stability and Controllability Characteristics.*
144-44 *Model* R50-1, -2, *and* -3 *Airplanes—Restrictions and Permissible Maneuvers.*
145-44 *Model* JM-1, -2 *Airplanes—Restrictions and Permissible Maneuvers.*
146-44 *Airplane Arresting Hook Inspection, Replacement, Testing.*
147-44 *Model* R50-4, -5, *and* -6 *Airplanes—Restrictions and Permissible Maneuvers.*
148-44 *Model* SC-1 *Airplanes—Restrictions and Permissible Maneuvers.*

Robot Arm Cuts Down Fatigue

NATB, PENSACOLA—A robot arm designed to speed up the method of teaching code has been introduced by the naval air training bases communications department code instructors.

The idea was conceived by an instructor who sought to teach students more consistent sending form by doing, seeing and hearing. He had employed those principles by having instructors send code at the same time the students were sending, but consistent form was hard to maintain, as the instructors tired after sending for several classes. The mechanical arm was invented to remedy the situation.

The device is approximately the size of a human arm and is electrically wired so that it gives the proper wrist movement with each character.

The robot is placed on a stand above a sending table which is equipped so that several students may use it at once.

Each student has ear phones with which he listens to the correct sound made by the machine while he is sending and watching the robot arm demonstrate the proper wrist movement. On one of the phones the student hears his own code sending signals and on the other the correct code sending signal made by the machine. When the sounds synchronize the student knows he is sending correctly.

ROBOT ARM HELPS IN TEACHING CODE

[DEVISED BY LT. (JG) A. P. LUDWIG, USN]

Wrench Adjusts Plane Generator

NAS BANANA RIVER—An enlisted man in this station's aircraft overhaul unit has designed a wrench for adjusting generator brush rigging. The wrench is made for the purpose of setting brush rigging in the commutating plane in order to minimize sparking.

OPERATES BY RUNNING GENERATOR FULL SPEED

The usual method of turning the brush rigging by means of a pair of pliers causes damage to the generator. This wrench is operated by running the generator at top speed and full load with brush rigging lock screws loosened. Brush rigging assembly is turned left and right till minimum sparking results.

[DESIGNED BY M. J. DEKLE, AEM3c]

OVERHAUL

New machines and processes now in various stages of development by BUAER will soon be distributed, if satisfactory, to various naval air bases. Many of these developments will go a long way toward alleviating maintenance problems and increasing production.

Four desludging machines are now undergoing tests at JACKSONVILLE, PENSACOLA, QUONSET POINT, and SAN DIEGO naval air stations. The machines are intended to desludge and clean oil temperature regulators without removal from the aircraft. The unit is portable, and consists essentially of a 25-gallon insulated tank, electric immersion heaters, pump, oil filter, and gasoline engine. If satisfactory, the machine should maintain efficiency of the oil cooler and increase length of time between overhauls.

Metal Finishing Cabinets Show Promise

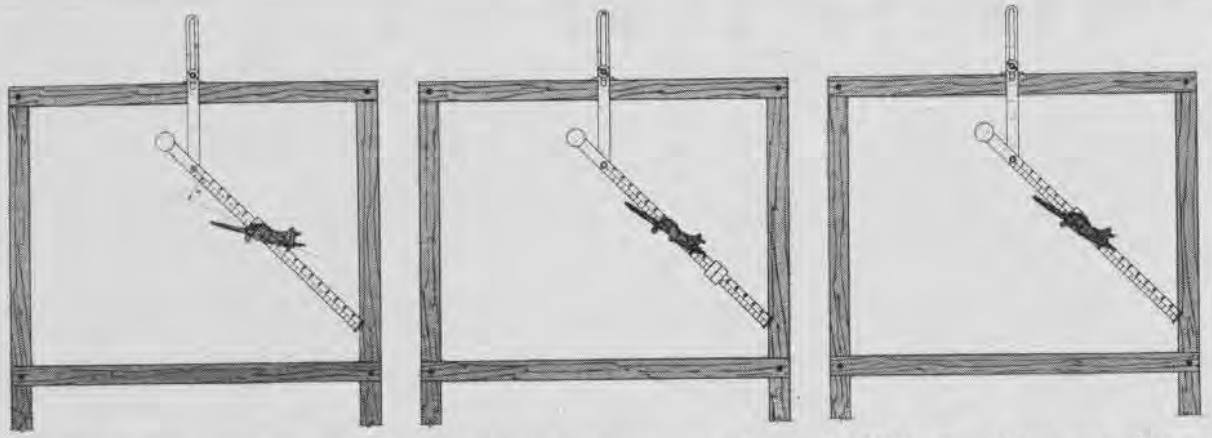
Vapor blast metal finishing cabinets are being service tested at NAS NORFOLK and NAS SAN DIEGO. Early reports indicate that this unit will be of great value in major A&R departments. A special novaculite rock abrasive, from 200 to 2500 mesh, is used in a solution of either water or solvent and sprayed under air pressure of from 80 to 90 p.s.i.

Favorable results have been obtained in salvaging rusted aircraft engine parts (in lieu of laborious buffing), and for cleaning prior to parco-lubrizing of ordnance material. Less metal is removed than with buffing, and a satin finish instead of the customary polished surface is obtained. The satin finish is actually as smooth as a polished surface.

The better light of a polished surface is due to surface orientation rather than excessive smoothness. Amount of metal removed by the process is for all practical purposes negligible, however, it is considered that the recently developed soft-grit blasting method is better for removing carbon from pistons and cylinders. Future possible uses of the vapor blast method that are now being evaluated are: spark plug cleaning, preparation of parts for anodizing and plating, finishing of propeller blades, increase in strength of steel parts from the peening action, and general polishing and deburring operations.

Oxygen Regulator Stands Test Supply

Test stands designed to test type A-12 and and A-13 Demand Oxygen Regulators, in accordance with T.O. 19-44, will be dedelivered within a few months to all Class A, B, and C activities, Marine Air Group Servrons, advanced bases, and aircraft carriers. The test stand will measure the amount of oxygen the regulator will deliver, as well as suction rates. The test stand consists of manometers, draft gage, altimeter, vibration buzzer, pressure chamber, control valves, and a regulator for adjusting pressure of the oxygen supply. A motor-driven vacuum pump will be furnished separately for use with a test stand.



WRONG In this case, the amount of lead was correct, but the direction was above the line of flight. Result this time was a miss.

WRONG Point of aim was along line of flight, but lead was not enough; should have been 135 mils instead of 80. Another miss

RIGHT Everything was done properly in this instance. Lead was applied in the right direction, resulting in a direct hit

ASSESSING FIXED GUNNERY FILM

A NEW simplified device to assess film made by a fixed gun camera has been developed by Special Devices.

To assess fixed gunnery film, two variables must be determined—target speed and "angle off," or angle the attacking plane makes with the longitudinal axis of the target. It often is necessary to know the range at which the picture has been made to determine whether a gunner is holding his fire for the most effective firing range. The device provides a solution to this variable.

The assessor consists of three major parts: a base and slide for mounting the projector and target assembly, a target assembly with suitable interchangeable "aircraft models" or shadow casters, and a motion picture screen and measuring unit. The projector, Device 3-B-18-b, is supplied with reels, film splicing unit, rewind unit, tools and spare parts.

Only One Model Need Be Used

The "aircraft model" consists of a celluloid disc with a small wire rod set through the center at right angles to the plane of the disc. It has been found that the ratio of fuselage length to wing span for all planes having a wing span of less than 60 feet is essentially constant. Therefore, only one model need be used, provided appropriate range scales are available for each target.

The operator adjusts the measuring scale so the point about which it pivots coincides with the boresight point of the fighter's guns. He then adjusts the "aircraft model" so the shadow of the plexiglas disc just circumscribes the wingtips of the target image, and the shadow of the wire rod lies along the fuselage of the target image and is equal in length to it. When this has been done, "angle off" and range may be read directly from the scales, and lead in mils determined from angle off quadrant.

Finally, correct lead may be compared with actual lead by using the measuring scale and slide, and errors determined. The assessor may also be used to assess film taken in FSGA cameras of targets not attacking along a pursuit curve; it will be available soon.

ASSESSING DEVICE COMBINES ADVANTAGES OF PREVIOUS MODELS

ADJUSTABLE SPRING TAKES UP SLACK IF GEARS BECOME LOOSE

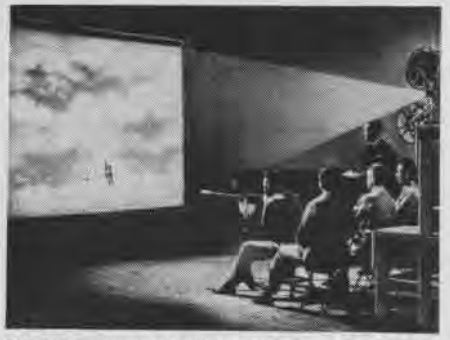
SCREEN NEWS

Shadow shooting. A certain suicide fringe in every class of aerial gunnery students becomes inoculated with the dangerous illusion that the best time to learn how to shoot is when you have a real enemy to shoot at. This unhealthy notion is roughly equivalent to the idea that the best time to learn how to fire a hunting rifle is the moment a one-ton grizzly is bearing down on you. Fair warning against such fatal reasoning is given in a series of motion pictures on Special Devices' 3A-2 Trainer and its relation to Combat Gunnery:

MN-4036a *Aircrewmen Back from Combat Tell Experiences* (Restricted, 5 min.)
MN-4036b *Tips from Combat Vets on Combat Gunnery* (Restricted, 3 min.)
MN-4036c *Aircrewmen Relate Combat Experience in Gunnery* (Restricted, 5 min.)
MN-4036d *Aircrewmen Praise Synthetic Training* (Restricted, 3 min.)

These films are similar in one respect: all of them give men untried in combat the benefit of the experiences of men just returned from combat.

Treatment: Toward the end of a gunnery training course, two students become fed up with everlastingly blasting away at



3-A-2 DRILL: BULL'S-EYE NOW, A JAP LATER

shadow planes zooming around on a movie screen. The instructor, noting that glazed look, arranges for them to be present while he interviews combat fighters. Every one of these veterans thanks his 3A-2 training for being there to tell the tale and explains exactly how the endless shadow-shooting exercises at school paid dividends later on in life, liberty and pursuit of the enemy.

Irresistible Force Moves Immovable Body

MA-5149 *It Can Be Done* (Restricted, 20 min.)

Here at last is a dramatization of the now famous slogan of men who enjoy tackling tough problems at the point where others give up: "The difficult can be done right away—the impossible takes a little longer."

The film is Army all the way through, with the exception of one scene showing Chinese building airfields, but the examples of G. I. ingenuity in the face of overwhelming obstacles will inspire men in all the services to similar effort.

Samples of bull-dogging it through: men on Adak getting along without supplies for their machine shop; food and supplies delivered by parachute to Burma; badly damaged plane repaired in the field; a B-24 rescuing a broached ship in India; a home-made washing machine washing in New Guinea; oil spread near runways to help fliers see them through English fog.

Lighter Than Air-ology

MN-2722a *LTA History—Balloons* (Unclass., 26 min.)

A background film for LTA personnel, the picture goes into the history of balloon experimentation. *Covers:* problems, early attempts, development, famous names associated with progress, use of balloons in wars, including barrage balloons, armed cable and other devices as used today. Partly animation, partly live action.

Long Odds.

MN-2454b *Venereal Disease Control in the U.S. Navy—A Letter to Mary* (Unclassified, 11 min.)

From this film, a man can draw his own conclusions about (1) the wisdom of trading a girl's love for a cheap affair and (2) taking a fool's chances. There is no sermonizing—just a convincing story of what can happen to any guy whose willpower and brainpower are blitzed simultaneously by a prettily camouflaged face and a "situation."

All weather ways.

MA-4802 *All Weather Flight Methods* (Restricted, 39 min.)

Demonstrates: Flight methods, such as all weather controllability, positive ground control, stall landing, landing descent procedure, landing paths, landing distance procedure, use of brakes, continuation of flight, cross-wind take-offs and landings.

Now Being Distributed

MN-2596ae *Aircraft Recognition—PBAY-2* (Restricted, 9 min.)
MN-2596ag *Aircraft Recognition—SC-1 Seahawk* (Restricted, 8 min.)
MN-3197e *Aircraft Recognition Tests—Test No. 5* (Restricted, 21 min.)
MN-3197g *Aircraft Recognition Tests—Test No. 7* (Restricted, 21 min.)
SN-1059ad *Instrument Flight Control — Instrument Flight Rules* (Slide film, unclassified, 58 frames)
SN-1059ae *Instrument Flight Control — Airport and Airway Traffic Control Procedure—Part I—Pre-Flight Procedure* (Slide film, restricted, 52 frames)
SN-1059af *Instrument Flight Control — Airport and Airway Traffic Control Procedure—Part II—Enroute Procedure* (Slide film, restricted, 49 frames)
SN-1059w *Instrument Flight Control—Analysis of Maneuvers Using Instruments* (Slide film, unclassified, 46 frames)

Where to get 'em. Films named above may be obtained through Aviation Film Libraries at:

ComAirPac
NAB Navy #140
" Navy #939
Navy #3233
ASD Navy #3205
Hedrons 4, 10, 12
16, 17
FAW 7, 15
NAOTC Jacksonville
NATB Pensacola
" Corpus Christi
NATEC Lakehurst
MCAS Cherry Point
MarFairWestCoast
MCAS Navy #61
4th MAW
NAS Seattle
" Alameda
" San Diego
" Norfolk
" Patuxent
" New York
" Quonset
" Atlanta
NAS Clinton
" Moffett
" Navy #115
" Navy #116
" Navy #117
" Navy #720

Catapult Fails; TBM Still Flies

U.S.S. GUADALCANAL—Despite a catapult failure, a TBM-3, weighing 14,000 lbs., recently made a successful, practically unassisted take-off from this ship after a run of only 80 feet down the deck and over the bow. Wind velocity over the deck was 30 knots.

That launching, it is believed, was the first time a torpedo plane ever had been successfully flown off from the catapult position without benefit of a full catapult shot, although it is known that fighters have done so.

As the catapult was fired the launching mechanism failed, freeing the airplane. The catapult then ran away "wild." Knowing his plane received only a small initial nudge from the catapult, but that there was insufficient room to stop, the pilot continued on.

Deck personnel watched with amazement as the plane skimmed over the wave tops and continued to be airborne. By radio, the carrier asked the pilot, "How did the launching seem?"

"It seemed," he said, "a little slow."

***BuAer Comment*—This "catapult failure" apparently was 100% personnel error. The deck crew failed to secure the launching mechanism correctly. It is the first reported case of a VTB making such a take-off successfully. The airplane probably received considerably more help from the catapult than the phrase "small initial nudge" implied. If it did not, the plane could have stopped on deck as have several other VTB in similar circumstances.**

Recap Unit Completes Training

The Navy's first overseas aircraft tire repair and recap unit recently completed training courses at commercial tire establishments in Jacksonville and San Antonio prior to transfer overseas.

Enlisted members of the unit did part of their "undergraduate" work at a Jacksonville tire shop that serves the naval air station. They worked the night shift for three weeks, recapping 20

PLANE TIRES WILL BE RECAPPED OVERSEAS

tires the first night and doubling this output in the latter stages of their training.

The Hawkinson method of recapping—used by this unit—has proved successful, according to reports received from naval air stations. In many instances, tires recapped under this system have outworn new tires.

It is contemplated that the unit will be able to recap all tires used on important naval aircraft, including land-based bombers and transports. The unit also may recap tires used on AAF pursuit, bomber, attack and cargo planes, as well as nine of the more popular sizes of tires used on ground vehicles. It will be equipped to repair all repairable tires and tubes. In all, the unit will be able to recap 26 different sizes of aircraft tires.

Fence Saves Space In Line Tests

NATTCEN CHICAGO—To accommodate an increased number of aircraft to be line-tested without loss of operational safety, four types of blast fences were constructed and successfully tested at 87th and Anthony. Fences were constructed by Public Works Department.

The fence is 7′ high and supported by 6′x6′ posts set in concrete with a spacing of 8′ on centers. Total length of the fence is 180′. Each section is 45′. The two sections of blast fence with louvre-type construction produced

FOUR TYPES MAKE UP 180 FT. BLAST FENCE

almost complete blast dispersal. All sections were successful.

When parking space is at a premium, it is possible to operate aircraft on both sides of the fence in a tail-to-tail position. A louvre-type blast fence designed to produce an unlifting air current on the downstream side can only be used for air flow in one direction.

[DESIGNED BY LT. D. W. SCULLY AND SAMUEL WESTON, CCM]

▶ ***BuAer Comment*—The vertical louvre-type, if constructed for louvre overlap, would be of value as a barrier between two distinct apron areas where no cross traffic existed. Adverse points to be considered in establishing a blast fence are: presents a taxi hazard; restricts flexibility of a parking area; effectiveness of fence is restricted to the row of planes adjacent to it; fence offers a fire hazard of oil-soaked wood and restricted movement of fire-fighting apparatus around the station.**

NEW VHF PROVIDES 10 CHANNELS

"Traffic jams" in aircraft radio channels in operational areas will be relieved when the new AN/ARC-1 two-way communication equipment which is now reaching the Fleet goes into general use.

The AN/ARC-1 provides 10 channels for VHF communication between aircraft, between aircraft and ship, or between aircraft and ground. Earlier VHF sets, the AN/ARC-4 and AN/ARC-5, provided only four channels, which were found insufficient for all necessary radio "traffic" when large numbers of aircraft and vessels were operating in a small area.

To solve the problem, the AN/ARC-1 was developed by the Bureau of Aeronautics and is beginning to reach fleet activities. It is scheduled for installation in all new carrier-based aircraft and, in addition, will be in some new aircraft not based on carriers and will be backfitted into some aircraft already in service.

The AN/ARC-1, expected to be the final equipment in the present Navy VHF band, is a light-weight, crystal-controlled set with a transmitter and receiver combined in one unit. Similar in appearance to the AN/ARC-4 (often referred to as the W.E. 233-A), it fits in the same rack as the late-model AN/ARC-4 altho it weighs 47 pounds as compared with 33 pounds for the AN/ARC-4 and 35 pounds for the AN/ARC-5. The new equipment more than doubles the number of frequency channels available with only one-third more weight.

Not only does it offer more channels, but it has slightly greater power, so that signals will be stronger; and improved audio quality, so that signals will be clearer than in earlier gear.

Other advantages of the AN/ARC-1 include a new type of shockmount and an improved "auto-tune" system which permits easy switching from one frequency channel to another. All necessary tuning adjustments can be accomplished by means of three knobs on the front panel, shown in the photograph. The photograph also shows the holders for the 10 crystals which control accurately the frequency of the transmitted and received signals.

TRANSMITTER-RECEIVER UNIT OF NEW VHF (LEFT) AND CONTROL BOX OF UNIT (RIGHT)

The 10 channels available for communication include a "guard channel" which permits simultaneous monitoring of two receiving channels, similar to the AN/ARC-4 "guard channel" system.

Range of the AN/ARC-1, like that of all VHF sets, will depend upon the altitude of aircraft carrying it, since VHF communication usually is limited to line-of-sight distances. Ranges for plane-to-plane communication may reach 100 to 200 miles if both aircraft are at 10,000 feet or higher.

Like earlier VHF sets, the AN/ARC-1 has several advantages over lower-frequency radios—more security from the enemy and less static, for example.

In the design of the AN/ARC-1, maintenance personnel as well as operators were kept in mind. Every effort has been made to provide maximum accessibility to all components, consistent with limited size and weight, and the equipment is constructed on a sub-assembly basis so that an entire section may be repaired when convenient.

The complete AN/ARC-1 equipment includes the transmitter-receiver unit, a shockmount, and control box or panel.

'CONSOLE' PANEL FOR ELECTRONICS GEAR

New Planes Group Controls of Radio, Radar and IFF so That Pilot Has Them in Easy Reach

TO HELP pilots confronted by the increasing number and complexity of controls for electronic equipment, a new "console control" system for naval aircraft has been developed by BuAer and is appearing in certain planes rolling off production lines this winter.

Ending the scattered control box installations necessary hitherto, the new system groups controls for all electronic equipment together on a horizontal "relay rack" assembly on the starboard side of the cockpit, convenient to the pilot's right hand and at lap level.

Not only does the new system make operation of electronic equipment more convenient for the pilot, but it also "cleans up" his cockpit, standardizes arrangement of controls so that he could operate them by the touch system if necessary, and facilitates substitution of control units to accommodate the mission of the airplane. The advantages are apparent in the photographs, which show electronic control units installed in the F4U airplane.

Under the new system, the individual controls for each piece of electronic equipment are grouped together on one panel and the various panels are assembled in a line running fore and aft of the plane. Each panel has a standard width of 6 inches and a fore-and-aft length of some multiple of 1⅛ inch, the basic unit, depending on the number and size of the controls.

For instance, the VHF panel is 2¼ inches, or 2 units, long, and the present radar panel is 5⅝ inches, or 5 units, long. Use of the standard length in multiples of 1⅛ inches means easy interchangeability of panels. The panels may be easily removed for servicing.

So that panel installations of controls for both electronic and electrical equipment will be consistent in all types of naval aircraft, the following arrangement of panels has been adopted, beginning at the left:

ELECTRICAL: *1.* Power Source Controls, *2.* Preflight Controls, *3.* Flight Power Controls. *4.* External Lighting Controls, *5.* Internal Lighting Controls.

ELECTRONIC: *6.* Radio Master Panel, *7.* HF Transmitter or Transmitter-Receiver Panel, *8.* VHF Transmitter-Receiver Panel, *9.* Mixer Panel, *10.* Navigation Panel, *11.* Receiver Panel, *12.* Radar Panel, *13.* IFF Panel, *14.* Blank Panel.

Not all of those panels will be necessary in every plane, but a standard order for the panels selected will be used. In the F4U and SB2C console installations, controls for all six pieces of electronic equipment used in those planes are assembled in a space of only 16⅞" by 6" wide.

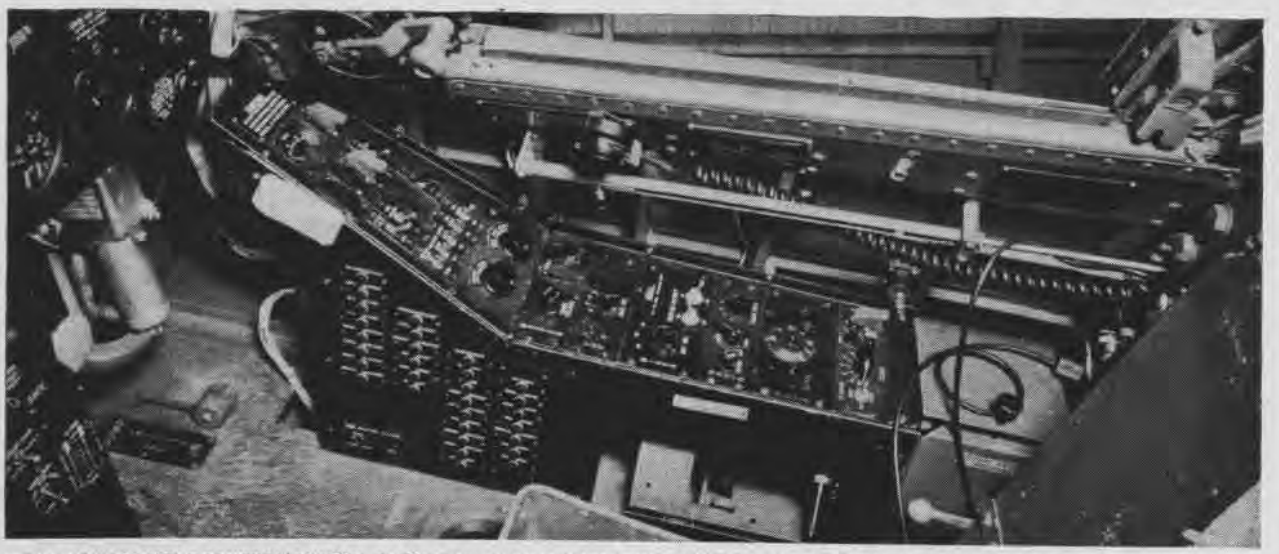
Generally speaking, the console panel includes the same controls as appear on regular control boxes for the equipment, so that no additional pilot training in use of controls is necessary. However, non-vital controls have been omitted and remaining controls rearranged to increase accessibility and relabeled, where necessary, for greater clarity.

Console panels are being manufactured at present for various radio communication and navigation equipments, IFF, radar and altimeter equipments. A radio master panel and mixer panels are being made.

FIRST plane to come off the production line equipped with these console panels was the F4U, to be followed in turn by other new model planes. Although the present program is for single-pilot aircraft, investigations will be initiated soon regarding similar installations in dual-pilot aircraft.

Provisions are made for console installations either with or without shielded cable, and no serious interference problems are anticipated. However, the interference problem will be investigated in the "systems test" program under way at the Naval Research Lab.

Not only will the console system concentrate electronic equipment controls in a small area, but it will also produce an effective "clean-up" in the electrical system in the plane.



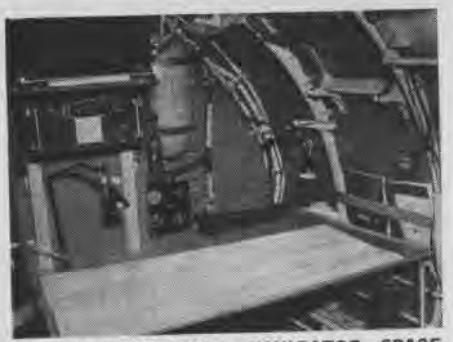
UNDER NEW 'CONSOLE CONTROL' SYSTEM, ELECTRICAL GEAR IS ON SLOPING CONSOLE AND ELECTRONIC CONTROLS ON THE SIX LEVEL PANELS

Navigators Rearrange Equipment

MAG 35—Navigation school members prefer their new arrangement of the navigation table in R5C's based on their collective experiences, instead of the factory method of installing navigation equipment. The main objective in the change was to install a gyro-stablized drift meter and to give the navigator more space.

These two factors were taken care of by facing the table fore and aft instead of in its factory position. The gyro drift meter (Army type B-3 with 60" barrel) was used and was installed just to the right of the revised navigator seat and protrudes 4" from the bottom of the ship, 12" forward of the chute.

Airspeed altimeter and free air temperature gauges were added on an instrument panel in front of the navigator which with the drift meter and one



INSTALLATION GIVES NAVIGATOR SPACE

extra gooseneck light were the only material needed for the conversion.

▶ *BuAer Comment*—**This appears to be an improvement over the original design in that it provides more table space and necessary navigational instruments. It should be noted that fuselage space available for cargo has been reduced by the placing of range coil boxes on the port side. These and the B-3 drift sight are subject to damage during cargo handling.**

F4U Pilot Takes Bit In Mouth

"I pulled the rip cord, remembered to straighten my legs and waited for the jerk. It was pretty violent, and I found the chest buckle in my mouth like a bit."

This was the comment of an F4U pilot who bailed out after his plane had collided in mid-air with another plane flying in his section.

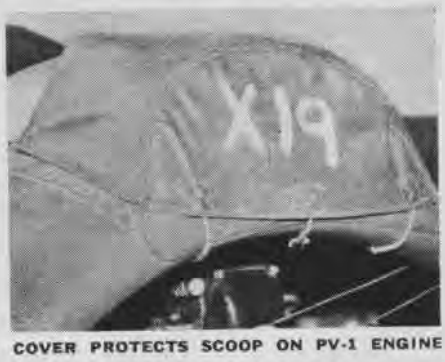
Fortunately only minor injury was suffered by the pilot, who noted that he "enjoyed" the rest of his ride down. Notwithstanding, more serious injury might have been sustained, and primarily the fault would seem to go back to the parachute rigger responsible for the fitting and maintenance of the parachute equipment and then to the pilot himself who neglected to preflight-check his parachute harness.

▶ *BuAer Comment*—**The trouble mentioned is believed due to the chest strap being tacked in position too high on the harness sling. When this is done, the jumper is forced well down into the leg straps with the consequent raising of the subject chest buckle to the face position. It is believed the mishap would not have occurred had the parachute rigger complied with Technical Note 74-44 (paragraph 3, A) which states: "Check the V chest straps of the Navy harness to see that they are tacked together at the intersection of the V just outside the slot of the fitting. Position of the chest strap is at lower edge of the breast bone."**

In the case of the AN harness, sew the sliding keepers to the main harness web with No. 6 or No. 9 cord in the same position as prescribed for Navy harness.

Air Scoop Covers Cut Moisture

FAIRWING 4—The headquarters squadron of this activity handles ground maintenance of several squadrons of PBY-5A and PV-1 patrol bombers. Owing to severity of the weather, en-



COVER PROTECTS SCOOP ON PV-1 ENGINE

CATALINA MOUNTS COVER OVER AIR SCOOP

gine covers always were used when planes returned from a flight.

Considerable ignition difficulty was experienced with the engines due to condensation of moisture. A secondary problem was the difficulty of putting on the covers in high winds and icing conditions which caused injury to ground personnel when slipping or falling from the wings.

To eliminate these difficulties, air scoop covers were devised and installed on parked planes. Material used was blue duck waterproof and the lines 3/16" bungee. The air scoop covers always are used, even in mild weather, as they serve to keep dust out of induction systems. In exceptionally severe weather expected to last for a period of days, engine covers should be employed.

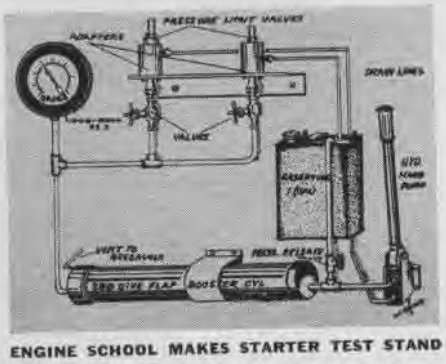
87th & ANTHONY

Engine School Makes Starter Test Stand

The starter and generator shop, in the Aircraft Engine School, has a new hydraulic test stand for testing and adjusting cartridge starter pressure limit valves.

All materials used on the testing device were obtained from salvaged parts found on the station. Only machine work required was on the adapters. These are similar to adapters in cartridge starters. One adapter is for Breeze pressure limit valve, the other for Eclipse pressure limit valve. An SBD dive flap booster cylinder is used to increase pressure built up from the hand pump. All drain lines lead back to the reservoir.

To operate his testing device: screw pressure limit valve in proper adapter and



ENGINE SCHOOL MAKES STARTER TEST STAND

open valve leading to that adapter; at same time close valve leading to unused adapter and close pressure release valve. Pressure is indicated on gauge when operating hand pump. Valve at which pressure limit valve releases will be indicated by maximum reading on gauge. Oil that passes through pressure limit valve is returned to reservoir by drain line. In order to release pressure in the system, pressure release valve is opened and oil flows back.

BuAer TO 66-44 requested conversion of cartridge starters to electric starters. Some cartridge starters still are in operation, however, and it is believed this test stand may be helpful at other activities where cartridge starters are still in use.

R-2800 Shop Designs Starter Jaw Puller

A starter jaw puller that does the job as well as a factory built tool has been designed from salvaged material by a shop supervisor in Factory Training R-2800 shop.

The puller consists of a 3" x ¾"-28 SAF screw, a ¾" hexagon nut, ¾" elastic stop nut, and a discarded ceramic spark plug shell. The hexagon nut is welded into bottom of the spark plug shell. To complete the puller, cap screw is screwed into barrel and held in place by elastic stop nut. This elastic stop prevents tip end of cap screw from bending to one side when in use for pulling.

To use this simple device, spark plug shell is inserted into starter jaw. By turning cap screw with a speed handle wrench, pressure is applied to the end of tail shaft, forcing starter jaw from drive gear.

AVIATION ORDNANCE

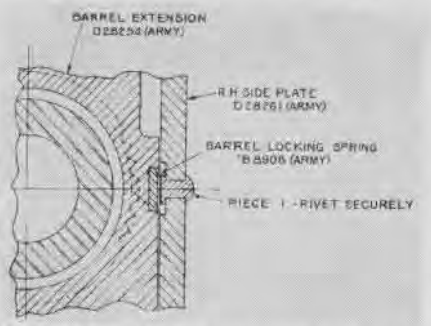
INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Barrel Locking Pin for Cal. 50 Guns

Personnel working around airplanes equipped with guns on which flash eliminators are installed must be cautioned not to use the eliminator as a handhold or leaning post, inasmuch as such use will tend to rotate the gun barrel, causing a change in the headspace of the gun.

To prevent inadvertent changing of headspace, particularly when the flash eliminator Mk 1 is installed on the gun, a barrel locking spring stop pin for Cal. 50 BAM Guns, M2, has been designed by Bureau of Ordnance.

This stop pin, when properly installed on the right sideplate of the gun, will



BARREL LOCKING PIN DEVELOPED FOR .50 CAL.

prevent accidental change of headspace when the gun is in the battery position. It is possible, however, by application of considerable torque, to force rotation of the barrel, but this procedure should not be followed, because forced rotation will mutilate the barrel locking spring and serrations on the barrel.

Necessary material for this modification should be obtained locally and should be accomplished by all activities possessing equipment to which this is applicable. For complete details on installation and illustrations, attention is called to OMI-V24-44.

New Device Simulates Weight of Bomb

A convenient means of simulating bomb loads on racks or shackles during ground checking of aircraft bomb release systems has been devised by ACOM James, VB-100.

When the test unit is latched to a bomb rack or shackle, a load approximating the bomb load to be carried is developed as the springs at each end of the unit are compressed by tightening the jackscrew. Upon release, rubber blocks provided between the suspension lugs and the main cross rod, as shown, cushion the impact as the springs return to their extended position.

The unit can be calibrated for several bomb weights by latching it to a suitable support, suspending several known loads from the cross rod and marking the spring rods to indicate amount of spring compression caused by each load.

This test device has proved very helpful to VB-100 ordnancemen in locating discrepancies in the bomb release system which might not be discovered in checking it under no-load conditions.

Until BuOrd can initiate manufacture of these units, some activities may desire to construct them locally.

Two OMI's Call for Changes on Truck

Activities having bomb and torpedo trucks, Mk. 5 Mod 1 upon which NavOrd OMI's V7-44 and V11-44 have not been performed are reminded of the desirability of accomplishing this work as soon as practicable. It is believed that a considerable number of these trucks have not been modified to date, although the necessary material has been available for some time.

OMI V7-44 covers installation of a torpedo tilting adapter of the type used on the bomb and torpedo truck, Mk 5 Mod 2. This makes it possible to tilt a torpedo for loading beneath certain low-clearance aircraft and still retain maneuverability of the truck for final spotting. The material required to perform this work is available through regular sources of supply under the designation: Adapter, Torpedo Tilting, for Bomb and Torpedo Truck, Mark 5 Mod 2, Stock No. 3-A-41 marked "For Conversion of Bomb and Torpedo Trucks, Mark 5 Mod 1."

OMI V11-44 provides instructions for installing set screws in the steering knuckle pins to prevent them from working loose from the front wheel brackets and blocking rotation of the front wheels. These set screws are available at regular supply sources under the designation: Screw, Set, No. 10 Headless Cup-point, Stock No. 43-S-16696.

Panel Tells All on the Use of Rocket

CASU 31 has simplified checking out of pilots and ordnancemen on rocket firing circuits and rocket safety procedure by use of a portable demonstration panel incorporating the complete firing system.

The panel, which can be readily manufactured by anyone familiar with rocket-firing systems, includes pickle switch, cockpit switches, distributor box arming solenoid, pigtail receptacles, and lights representing rocket launches. Check-out emphasizes steps to be followed in determining circuit is open before loading rockets.

By setting up the circuit for firing condition, lights numbered in pairs from outboard to inboard show firing sequence on both single and automatic selection. Arming solenoid and arming wire demonstrate procedure and action of fuze arming. By plugging in rocket launcher test kit, the procedure for checking the wiring system is readily pictured.

The rear of panel is covered with plexiglas revealing the wiring system. Panel was developed by J. T. Coe, AOMB1c.

Device for Plane Engine Noises

The Portable Interphone, developed under the cognizance of BUAER's Special Devices Division, is used to train students to speak and listen through a background of airplane engine noise. When pilot and crew are accustomed to these noises, directions are given and understood more easily. The device also is useful in developing correct voice procedure between pilot and crew.

The Portable Interphone (Device 8-I) consists of a specially designed amplifier with an output sufficient to operate up to 20 head sets or a loud speaker. Random noises of variable intensity are fed into the students' head sets. Input jacks are provided for two microphones, one for the student and one for the instructor. In this way, an instructor can keep an accurate and

PORTABLE INTERPHONE AIDS IN TRAINING

running check on the student's progress in learning to hear radio messages and to speak clearly against the interfering noises.

A filter is built into the device and is controlled by a two-position switch. In position 1, the output characteristic is flat to 4,000 cycles; in position 2, the output resembles that obtained from a sound-powered telephone system. The amount of noise is varied by the instructor and may be increased from zero to intensities greater than those encountered in operational flights. A VU meter (volume indicator) provides for the measurement of speech levels or combined speech and noise levels.

The power required for the operation of the Portable Interphone is 85 W. at 10 V 60 cycle a.c. Device weighs 50 lbs. and is 17" x 12" x 10" in size.

Requests for allocation of Device 8-I should be directed to DCNO (AIR), Airborne Electronics Training (OP-33-H).

Unit Cuts Dope Shop Humidity

ARU GUADALCANAL—During early months of operation of this aviation repair unit, considerable trouble was experienced with high humidity interfering seriously with proper doping of fabric aircraft surfaces. A refrigerating unit was installed to bring humidity down in the dope room.

Attempts to dope on the more humid days proved futile as the dope blushed so much the surfaces were unusable, throwing the shop behind schedule. When orders came through to increase production several times over the existing amount, a dehumidified chamber had to be devised and installed.

A standard carrier refrigerator unit such as was used in a 675 cu. ft. refrigerator was converted to handle the job. The dope room itself was constructed

REFRIGERATING UNIT REDUCES HUMIDITY

inside one corner of the standard Quonset hut, a chamber 29'x16'x8' being partitioned off by wall board. Cracks and openings were sealed as well as possible. Conditioned air came in at one end and escaped through a vent.

Average humidity of this area varies between 70 and 90 percent during the day and higher at night. Humidity inside the dope chamber after the refrigeration installation has been kept between 38 and 45 percent with temperature varying between 87 and 95 degrees. During a typical day of showers and sunshine, the dehumidifier removed 17 pounds of water an hour from the air being treated.

Air in the room is changed once every seven or eight minutes, the machine conditioning 500 cu. ft. a minute. Quality of doped surfaces improved.

▶ ***BuAer Comment*—This is an interesting article on the solution this ARU has developed for the painting and doping problem where high humidity exists. Interested activities can get further details on the installation from the unit itself.**

NATTC Issues a Revised Bulletin

The Naval Air Technical Training Command has issued a new *Bulletin of Naval Air Technical Training Courses*, listing various training offered at schools under the command.

Qualifications, curriculum, and convening dates of all courses offered anywhere in the country are given as a guide to commanding officers in aviation establishments ashore or afloat. The publication serves to advise them what training is available for their men now under the trend for more and more "refresher" courses where men return for review on old subjects and to pick up points on latest equipment.

Commanding officers should make certain that men chosen for training are fully qualified technically so that they can attain the maximum benefits from instruction. Unqualified personnel will not be enrolled for instruction. After instruction men will be returned to their units. Every effort should be made to assign them to billets for which the special training has fitted them.

NEW TRAINING BULLETIN LISTS COURSES

Requests for the *Bulletin* should be addressed to Naval Air Technical Training Command Headquarters, 3600 Board of Trade Bldg., Chicago 4, Ill. Copies will be sent as soon as possible.

1 January 1945

LIST OF NUMBER AND DATE OF LATEST ISSUE OF AIRCRAFT SERVICE CHANGES AND BULLETINS

Airplane	Bulletin	Date	Change	Date
F6F	86	12-8-44	85	12-18-44
FM-2	30	12-16-44	29	11-17-44
F4U-F3A-FG	145	12-7-44	202	11-2-44
J2F-6	4	12-15-44	8	8-26-44
JM	25	12-4-44	36	10-19-44
JRB-3	6	12-8-44	4	12-4-44
JRB-4	5	11-16-44	1	8-24-44
PV-1	85	12-18-44	156	12-11-44
PV-2	9	12-20-44	1	8-1-44
PBJ	39	12-15-44	63	12-16-44
PBM	72	12-20-44	144	11-24-44
PBY	84	12-13-44	170	11-14-44
PB2Y	52	11-11-44	152	12-5-44
PB4Y	103	12-20-44	126	12-13-44
R4D	31	12-20-44	0	0
R5C-1	18	10-22-44	82	10-13-44
R5D-1	33	11-22-44	89	11-20-44
R5D-2	11	12-19-44	4	11-20-44
RY	43	12-9-44	22	9-13-44
SBD-3	87	12-12-44	157	12-1-44
SBD-4	43	12-12-44	69	12-1-44
SBD-5	63	12-12-44	78	12-1-44
SBD-6	22	12-12-44	17	10-17-44
SBF-1	57	11-16-44	58	12-8-44
SBF-3	45	12-4-44	20	10-30-44
SBW-1	57	12-4-44	71	10-23-44
SBW-3	60	11-23-44	60	11-22-44
SB2C-SBF-SBW	112	12-8-44	126	12-8-44
SC	10	12-15-44	7	12-9-44
SNB-1	24	12-15-44	23	8-24-44
SNB-2C	15	12-15-44	11	12-8-44
TBF-TBM	140	11-24-44	220	12-13-44
TD2C	0	0	1	12-4-44

For a complete list of Aircraft Service Changes and Bulletins see Navy Aeronautic Publications Index NavAer 00-500 *and supplement NavAer* 00-500*A*.

LETTERS

SIRS:

In view of NAVAL AVIATION NEWS' request for news and interesting items from various units, enclosure A is submitted for possible publication or dissemination. This

sketch was prepared by H. J. Vallentyne, PhoM1c, who is attached to this ship.

COMMANDING OFFICER
F.P.O., New York *U.S.S. Charger*

¶ NANews publishes this with apologies to creator of the original Dilbert.

SIRS:

The space you give to the doings and thoughts of the men who comprised the Naval Air Service in its swaddling days is appreciated, I am sure, by the old-timers among your readers. It never occurred to me, incidentally, when I started flying in the Navy in 1917, that there would come a time when I would consider myself one of the old-timers, for I flew with men who had flown over Vera Cruz in 1914, and they were the old-timers to me.

In the "Letters" department of your issue of 15 December, I found one contribution of particular personal interest, for, in telling about the officers of Class 1 at Pensacola, following the last war, it mentioned that "an endeavor was made to overcome the first haphazard methods of training and to prepare a course which was a forerunner of the elaborate and well planned courses which are used today for training our naval aviators."

My personal interest is based on the fact that I wrote that course and turned the manuscript over to my skipper, Commander Earl F. Johnson, USN (Naval Aviator No. 24), on September 2, 1919, the day I was detached to inactive duty in the Naval Reserve. By present standards it wasn't much, but there was no precedent to work from and it represented some pretty hard work, crude as it was. I never had a copy of that course and have always wanted one, and I wondered if you could obtain one for me. It would be greatly appreciated.

LT. COMDR. GRAHAM S. MASON, USNR
NAS HOUMA *Commanding Officer*

¶NANEWS was unable to locate a copy of this manuscript. Anyone who can supply additional information may notify Lt. Comdr. Mason.

SIRS:

In perusing the 1 December 1944 issue of your publication, NAVAL AVIATION NEWS, I noticed on page 20 an article outlining an Aviation Engineering Officers school located at Memphis, Tenn. My purpose in writing this letter was prompted by that article.

If you can possibly advise me as to my chances for being transferred to this school, I would be greatly indebted to you for this service.

ENSIGN W. G. S., (DL), USNR
U.S.S. *Shoshone*, KA-65
F.P.O. San Francisco.

¶ Request must be initiated through proper channels for change of classification from D(L) into an aviation branch. That attained, a request is entered through the commanding officer for transfer to the school.

SIRS:

It is suggested, for use as a survival hint, that small folding rings be recommended to be soldered or otherwise attached to emergency back pack and life raft drinking water containers. By means of such rings, the water containers could be secured with light line to a raft or person, thereby preventing loss of these valuable items.

NC-92 LIEUTENANT, USNR

¶ This suggestion has been deemed inadvisable because new containers are to be produced, made of plastic. The present metal can is an Army model and it would take a long time to clear the rounds. The present contract also is about completed. If deemed necessary, the work could be done in the field by individual units.

CONTENTS

ANSWERS TO QUIZZES

● PIX QUIZ (p. 28)

1.3 2.2 3.3 4.3 5.3 6.3

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

● NAVIGATION PROBLEM (p. 30)

1. 110° 22 k
2. 122 k
3. 46° 34' 229°
4. 35° 33' 274°
5. 26° 04' 331°
6. 19° 06' N 134° 28½' W
7. 105° 9 k

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

● BEST ANSWERS (p. 12)

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

● GRAMPAW'S QUIZ (p. 10)

1. No. Fly around for at least 15 minutes at an altitude below 5,000 ft. in order to give yourself a chance to return to normal should you be slightly anoxic. Ref: TN 24-44.
2. To the left and long enough to observe other traffic. Ref: CAA Regs. 60.3301.
3. 1,500 ft. above the terrain. Ref: CAA Regs. 60.344.
4. "G" is prolonged in these maneuvers, resulting in blood being forced from the head. Ref: Pages 3 and 4 of "G" Sense and TN 22-44.
5. One hour each quarter. Ref: Par. 13, page 6 of Aviation Circular Letter 19-44.

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STEAL PLAYS OFTEN LOSE...

even among friends

Don't steal home without identifying yourself. They're your friends, those gunners on the destroyer or carrier, and they will strain to recognize your plane. But if they fail—you're "out!" The destroyer's gunners, remembering the fate of their mates in the ship creating the black plume of smoke, will be fast on the trigger finger when any unidentified plane comes near. The small smoke pyre marks where such a victim fell.

Identify

when approaching friendly ships

JAPS SHELL CARRIER

During the Second Battle of the Philippines Sea, a Jap cruiser loosed its rifles on an escort carrier. Pictures, taken from deck of another CVE, show near-hits on target vessel

SALVO FROM JAP CRUISER FALLS ABEAM OF ITS TARGET, AN ESCORT CARRIER WHOSE PLANES HAD PLAGUED THE ENEMY IN THE PHILIPPINES AREA

▲ FUNNEL SMOKE FROM SISTER SHIP FRAMES CVE AS SHELLS DROP CLOSE

▼ SPRAY SPIRALS SKYWARD AS BABY FLATTOP DODGES CRUISER'S BLASTS