

NAVAL AVIATION

# NEWS



Jap Aircraft Factories  
Av. Storekeeper School  
Aerial Mine Spotting

Mar. 15, 1945  
RESTRICTED





## JAP AIRCRAFT FACTORIES

### PHOTO INTERPRETATION STUDY

GERMAN aircraft and oil plants have alternated as number one and two targets for Allied bombing in Europe. Japan's aircraft companies are high on the list of U. S. Pacific targets and already are being battered in B-29 and Navy carrier plane raids. Navy airmen are eager to crack open these plants which are the source of so much Jap strength.

Photographic analysis of Japanese aircraft factories is simplified by the fact that the plane-building industry was developed in America, Europe, Japan along somewhat similar lines and at about the same time. American as well as German engineers helped design

Japan's plants in the years before the war. Now results of hundreds of reconnaissance flights over Germany are combined with a close photographic scrutiny of U. S. and British aircraft factories to help interpreters understand Japanese plants.

In general, plants of the aircraft industry are larger than those of other Jap factories. Where German factory buildings often are dispersed, the Japs usually concentrate their plant structures. (Their newest works show a tendency to spread out more.) The Japanese are believed to have converted automobile, textile and other large companies to plane manufacture. With good aerial pictures, skillful photographic interpreters can select important targets in most Jap aircraft plants.



PART OF LARGE MITSUBISHI ENGINE WORKS AT NAGOYA. TEETHLIKE SHADOWS IN LOWER CENTER ARE CAST BY ENGINE TEST CELLS

## ENGINE PLANTS

**J**APANESE airplane engine works usually are separate from assembly plants, and completed engines are shipped by truck or rail to the assembly units.

The photographic interpreter surveying prints of Japanese engine factories looks for aluminum and magnesium foundries, which are identified sometimes by vents on the roof. Magnesium generally is melted in oil or gas-fired furnaces, which require large stacks, while an aluminum foundry, normally with an electric furnace, is less likely to have big stacks. The aluminum foundry yard may be cluttered with materials such as molding boxes and aluminum ingots, but magnesium castings and pigs, which are susceptible to corrosion, will not be stored in the open. A high roof is expected over magnesium casting shops to give necessary special ventilation.

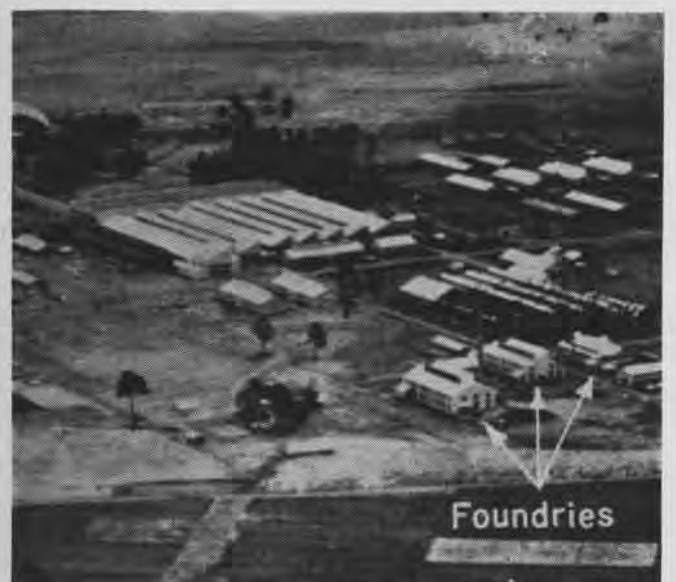
**Machine Shops Require Good Lighting**

A typical engine plant machine shop, Japanese or Allied, is one-story, usually quite broad and long, from 15 to 30 feet high. The roof is designed to permit maximum skylighting and probably is of sawtooth or monitor type, or may have horizontal skylights or glass walls for this purpose.

### Machine Shops Require Good Lighting



**Nakajima** Musashi Factory has fireproof, multi-storied buildings at right, with older, typical one-story engine shops on left



**Showa** Aircraft Company was designed originally to produce plane like American DC-3. Arrows point to plant's foundry buildings





JAP AUTOMOBILE COMPANIES, LIKE THE "DATSUN" WORKS IN TOKYO, ARE STUDIED FOR INDICATIONS OF AIRCRAFT MANUFACTURE

THE MOST easily recognized engine factory building is the "hangar type" test cell (*below left*). Each completed engine, as it comes from the assembly line, is given a running test in which it is mounted in a special chamber and allowed to run under its own power for about eight hours. Test cells of the "hangar type" usually have walls, doors and roof of triple thickness to minimize effects of vibration. Because of their peculiar shape these cells can be identified quickly on aerial photographs.

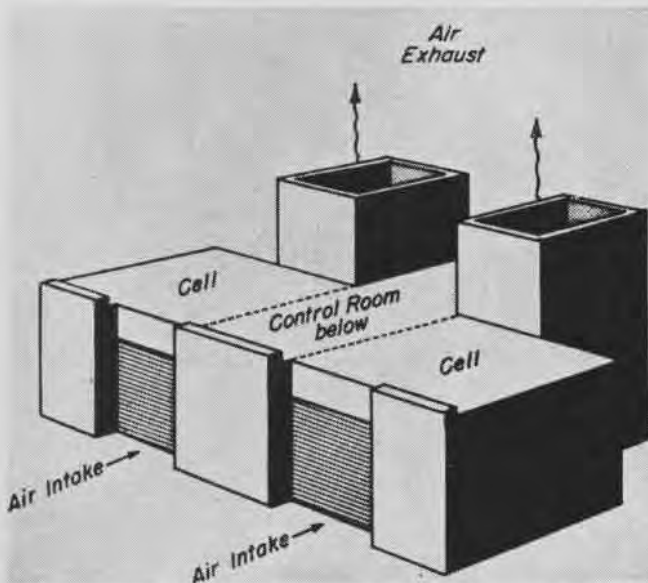
Paint shops, located inside large shop buildings, are revealed by the presence of vents and by paint stains on the roof. If a large paint shop is found, it is likely that crankcase and engine housings are completed nearby.

Engine assembly buildings seldom have special features,

being of the same height and general construction as machine shops. To determine location of an engine assembly unit the interpreter estimates the amount of space required and calculates the logical position of the building in the general flow through the plant. Since assembly requires larger bays than ordinary machine work, broad monitor or broad sawtooth roof spans may be expected.

#### Engine Plant Produces Main Working Parts and Housings

Most captured Jap airplane engines are of the radial air-cooled type. Although engine factories sub-contract minor parts, which flow to the assembly line from a variety of sources, main working parts and housings are processed at the same plant that actually produces completed engines.



Engine test cells photographed at Okayama, Formosa, were "L"-shaped. Jap cells are variations of U.S. and European designs



Former Nissan auto factory at Yokohama represents type of plant suitable for aircraft engine building or fighter-plane assembly



Japanese airframe assembly plants are among largest enemy factories. Usually they are located near airfields from which com-

pleted planes take off for duty. Aerial reconnaissance photos sometimes reveal clearly type or types of plane being produced

## ASSEMBLY PLANTS

PHOTOGRAPHS reveal that the Japs have greatly expanded their assembly plant facilities, and it is believed that, as in Germany, hangar-type airfield buildings and automobile assembly plants have been converted to aircraft assembly. Automobile plants are adaptable to assembly of fighters and other small aircraft, and in Europe many former German air force stations now are converted to assembly works. Often it is possible to determine the type of aircraft being produced in a Jap assembly plant because some of the completed planes are present near the final assembly building or on an adjacent landing field. Type or types being manufactured will be in a majority on the field.

A clue to receiving and storage buildings of an assembly plant area often is given by piles of parts stored in the open.

Sheet metal working units probably will have a central location since they serve all sub-assembly departments. The sheet metal shop itself may have a raised section above its presses and vents over its painting booths.

### *Bunch Shelters Near Machine Shops and Sub-Assembly*

Concentrations of air raid shelters are noted near Jap machine shops and sub-assembly buildings, indicating that these sections employ the largest numbers of workers. The importance of the machine shop may be diminished, however, by the peculiar Japanese approach to mass production. An example of this was a standardized lathe developed by government engineers and used widely in one-family shops in the industrial slums. Each shop made one simple part of a product, or in some cases performed a single operation on the part. A pick-up and delivery system supplied material, collected the part, and shuttled it to the other shops for further processing, whence it proceeded to the final assembly plant. Aircraft assembly works in Japan probably rely on decentralization of machine work to some extent.



Heat treating department is essential part of assembly plant. Old photograph shows electric furnace at Tokyo bicycle works



Finished Betty's are lined up at Mitsubishi Mishima plant. Tall completed building on right evidently is used for final assembly





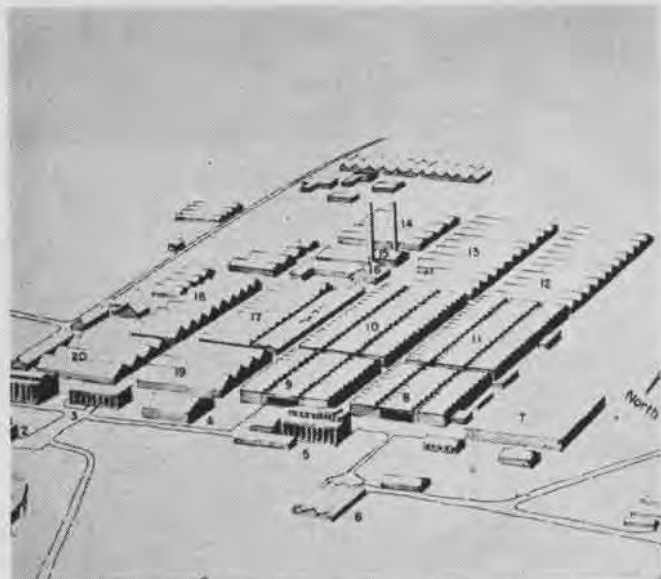
**Before** Assembly and repair plant at Okayama, Formosa, was good-sized producer of Jap planes, with airfield adjacent and wide road or taxiway leading to underground activity three miles away in the hills. Photos showed numerous aircraft



**After** Activity is halted completely by bombs from Army B-29's and carrier-based Navy planes. Many buildings of wooden construction burned to the ground. It is estimated that Japs will need four or five months to restore plant



**New Ota** assembly plant of Nakajima Aircraft Company has taxiway leading to Koizumi airfield where planes are tested. Taxi strip at lower left leads to a sound assembly plant, Nakajima Koizumi works, which uses same field for testing finished aircraft



**Sketch** of new Ota plant was made from oblique photo. Buildings 8 and 9, which have hangar-type doors, are for final assembly

## JAPS USED HANGARS FOR ASSEMBLY

**T**HE FINAL assembly building usually is about one-third higher than surrounding plant structures. It will have a hangar-type door and a wide apron in front. A simple way of recognizing the final assembly area in a Jap plant where shops have sawtooth roofs is to look for a large building where sawtooths are farther apart and appear wider than on surrounding shops. This indicates the building is higher and hence is likely to be used for final assembly. Size of the plane that is being constructed sometimes determines height of the final assembly building. Where final assembly is done in several separate buildings, they often will be of the hangar type. Most airport hangars will serve for this work, which requires a large floor space that is well lighted and uninterrupted by columns.

Sub-assembly units usually are not as high as those which turn out completed aircraft. They are arranged so that materials can be brought conveniently from the machine and metal shops. Sometimes they are connected to final assembly buildings for better coordination.

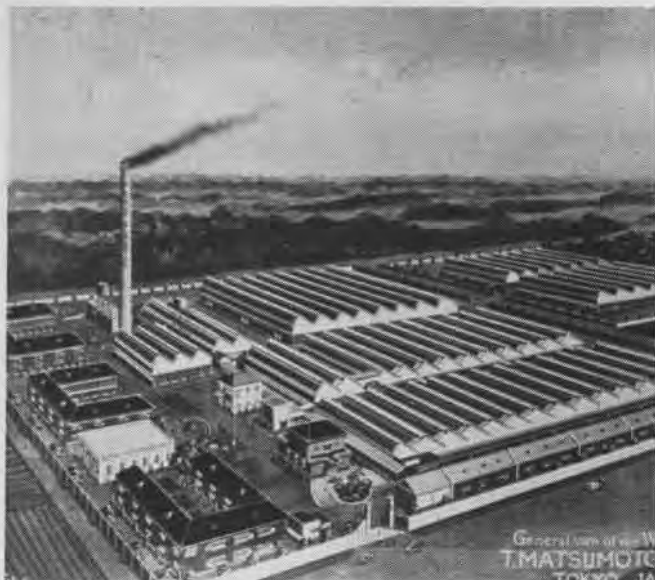
### **Paint, Anodizing, Heat Treatment Sections Require Vents**

The paint shop in the assembly plant requires considerable mechanical ventilation. Vents, perhaps with a visible deposit of paint around them, may be found above the paint shop. Interpreters also look for roof intakes that supply the paint shop with fresh air. Anodizing rooms, where aluminum alloys are given a protective finish, may be identified similarly by their vents and by discolorations on the roof. There also may be special vents above the heat treatment department of the plant.

A salient feature of some German airframe assembly plants, which Jap factories thus far photographed lack, is the cannon and machine gun testing range. Open and covered ranges are seen at German plants, with special shelters in which the plane is placed while its guns are undergoing test. Jap plane manufacturers, however, ordinarily do not install armament, leaving the job to Army and Navy arsenals.

U.S. and Japanese aircraft assembly plants apparently follow the same general flow plan—from raw material to finished plane—but while American manufacturers often have many divisions under the same roof, the Japs tend to break up assembly factories into several closely grouped structures.





General view of the W. T. MATSUMOTO TOKYO, JAPAN

Photo interpreters examine large Japanese textile factories, which are thought to manufacture planes and aircraft components



Entrance to underground factory in Italy shows hillside opening. Air photos of Japan have indicated some subterranean activities

## UNDERGROUND SITES

INTERPRETERS are alert to the possibility of underground Japanese factories similar to Germany's, which have been driven increasingly into subterranean production by Allied bombing. Photos of the aircraft plant at Okayama, Formosa, show underground activities in the hills about three miles east of the plant site. These are connected to the

factory by a railroad spur and wide road or taxiway. Potential underground factory sites, interpreters suspect, include mines, quarries, railroad tunnels and subways. Spoil dumps usually are seen near underground construction.

### *Cripple Production by Locating, Bombing Vital Plants*

Although the aircraft industry is perhaps Japan's most vital war manufacturing, oil, steel, shipbuilding and other big companies are essential to enemy war effort. Photographic intelligence methods are being used to locate these factories and select departments in them which, when crippled, will block production effectively for the longest period.



SMALL PARTS ARE BELIEVED TO BE TURNED OUT IN NUMEROUS DIFFERENT SCATTERED BUILDINGS THAT ARE DIFFICULT TO IDENTIFY



# GRAMPAW PETTIBONE

## Mandatory Carrier Landing Signal

If you don't comply with the landing signal officer's instructions promptly, you can get in all sorts of trouble. The LSO is there to help you and when he says "cut," there is no alternative—cut, and promptly.

Here are two examples of what can happen when there is a delay in answering LSO signals:

1. The pilot was given the "cut" when in an approach position such that a normal landing could have been made. He delayed complying with this signal, however, and took a late "cut" while high in the groove. Of course, he overshot and plowed into the barriers. The pilot escaped injury, but the airplane was badly damaged.

2. Making a normal approach for a night carrier landing, the pilot was given the "cut" signal before the plane reached the ramp. He took a "slow cut", however. Since the plane was fast, it floated up the deck to the last wire which caught the tail hook and pulled it out of the aircraft. The barrier finally stopped the plane.

The accident investigating board recommended the following:

a. That all pilots be thoroughly instructed in the premise that the signal officer will usually bring planes in with more speed at night, compensating for the excess speed by giving the cut signal a little earlier.

b. That all pilots should comply with the "cut" signal without delay and maneuver the airplane thereafter to make a safe landing on the deck.

c. That all pilots be thoroughly instructed that if there is any doubt as to the safety of the approach, they should take their wave-off prior to reaching a position where the signal officer may give the cut signal.

► **Comment**—Reports indicate there is a current and undesirable tendency for pilots to approach the ramp while still in a turn. The turn into the groove should be completed approximately 100 yards (no more) from the ramp. This will insure sufficient time to get squared away—wings level—before the "cut" signal and will also prevent unnecessarily long approaches being made. Any voluntary wave-off must be taken before the cut. Compliance with that signal is mandatory.

While no instructions have been issued to increase the speed of carrier landing approaches at night, it has been noted that there is a tendency, both among pilots and signal officers, to do this. If approach speed is increased, the cut, naturally, must be given sooner, to compensate for the extra speed.

All the LSO directions must be obeyed.



## Grampaw Pettibone's Diary



Volume 1 of *Grampaw Pettibone's Diary* has just been issued. As will be noted in the Foreword, this is not new material. It is a reprint from earlier issues of NAVAL AVIATION NEWS. It was prepared in compliance with the many requests that these items be printed in a form suitable for review of pilots and for issue to newcomers.

Distribution is being made to all squadrons and ACI centers and to student pilots at all training commands. Additional copies of Vol. 1 may be obtained by writing to Office of Chief of Naval Operations, Op. 33 J-11, Navy Department, Washington 25, D.C. Requests should be made by the publication number: NAVAER 00-808-12.

Expressions of opinion from the various commands are solicited as to the considered value of the material in this form. Printing of Volume 2 is being held up pending receipt of such advice. If it appears warranted, further volumes of *Grampaw Pettibone's Diary* will roll from the presses at regular intervals, each volume being a reprint of another group of Grampaw's earlier columns.

## Guilty on Two Counts

When the pilot lowered his landing gear during the approach, the starboard wheel did not drop. He failed to check the indicators and was therefore un-

aware of his predicament. He also failed to see the frantic "wave-off" given him by the runway signalman.

Considerable damage resulted.



*Grampaw Pettibone says:*

Let me ask one question. If you owned this airplane and had hired this pilot to fly it, and then saw him crack it up in such a bonehead manner—would you ever trust him to fly it again?—Me neither!

## Tips on Air/Sea Rescue

A commander whose PBY was forced down in the Pacific because of a fuel leak offered the following suggestions on the basis of his and his crew's experiences during the 28 hours they were adrift before being rescued:

1. Somebody should take charge immediately and maintain order and quiet. Unless guarded against, even the most rugged characters may show symptoms of hysteria after a crash. Don't let anyone bring out the dark side of the situation. Depression is easy at this time and spreads quickly.

2. Treat injuries as soon as possible. The commander reported that such treatment in his experience prevented infections although crew members had dozens of cuts.

3. Everybody should check out on each individual piece of survival gear. All hands also should have a check-out in rowing, sailing, knot-tying and seamanship.

4. If you don't want sharks, don't trail bright objects over the side.

5. All pilots engaging in search missions should be familiarized with life-raft drift.

6. Rescue planes should carry plenty of long burning float lights and should drop extra emergency gear and rations, even when it is thought survivors are not short.

7. Life-jackets and escape hatches must be checked carefully before take-off.

8. At the first sign of trouble, a radio message should be sent to the base to alert rescue facilities.

9. Rafts should be kept together and, where lashings or tow lines are resorted to, frequent checks for chafing of the rafts should be made. When possible, chafing pads should be improvised.

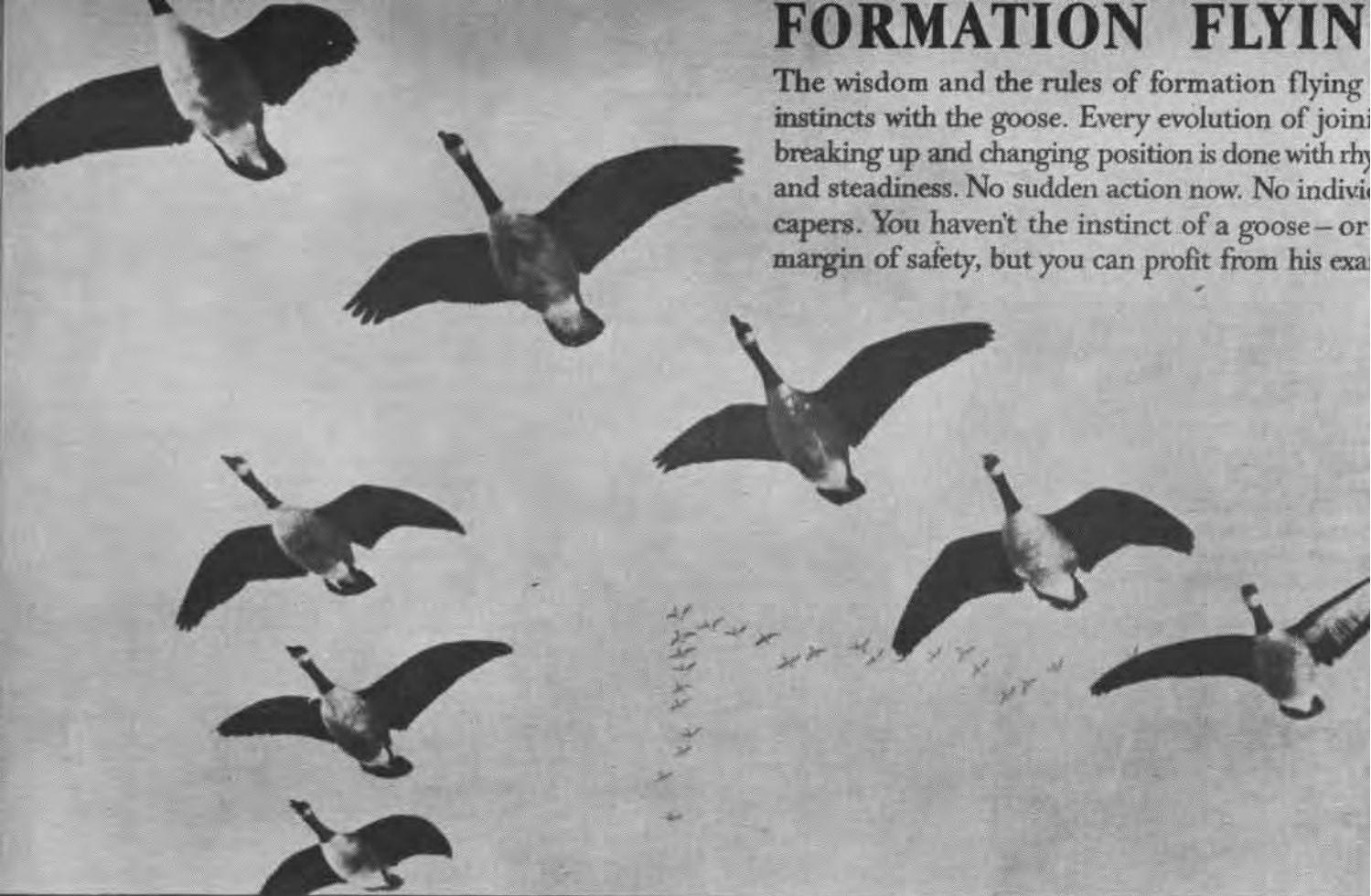
10. After a short rest, every possible precaution should be taken before inevitable ennui sets in. This includes lashing gear, anti-sunburn measures, readying sail and mast, treating injuries, readying measures for attracting attention when occasion arises as well as assignment of duties.

11. Keep the Will to Live burning.

**SAFETY IN FLIGHT:** These photographs (right) are reprinted through courtesy of the Royal Air Force, with permission of Graham and Gillies, London, who produced the original poster series. ►

## FORMATION FLYIN

The wisdom and the rules of formation flying instincts with the goose. Every evolution of joining breaking up and changing position is done with rhythm and steadiness. No sudden action now. No individual capers. You haven't the instinct of a goose — or margin of safety, but you can profit from his exa



## SWANS' TAKE-OFF

This pair of swans is 50 years old. They've been flying ever since before the first aeroplane. Yet there is no risk in their take-off. Every time they choose the longest run into wind, with no obstacles in front.





## Why Tempt Fate?

While on a night navigation flight at sea, the pilot noted that his repeater compass was out, but he continued on the second stage of the problem. When approximately 70 miles out, the section of planes passed through a squall and the pilot lost contact with the lead plane in the overcast. His compass out, the pilot was completely lost and made an emergency water landing when his gas ran low.

The investigating board pointed out that since the pilot had no magnetic compass, common sense should have caused him to return to base as soon as he could safely do so. Opportunity for doing this occurred when he was in sight contact of the base at the end of the first stage of the problem.

## Creeping Throttle

A third of the way down the deck, an SB2C pilot heard a dull thud and took his hand off the throttle to check whether the tail hook was in place. It was. He then looked up toward the bridge for an indication that something was wrong. In the absence of any signal, he continued his take-off.

Deck personnel noted that the plane was losing power; however, the motor was not cutting out. The pilot, realizing he didn't have enough room to stop, applied 51" manifold pressure and dove toward the water after leaving the deck, to pick up speed. He might have succeeded except for the fact that his wheels hit the water, flipping the plane over on its back. The pilot worked his way out of the cockpit and was picked up by the plane-guard destroyer.

The investigating board believed that the throttle crept back when the pilot took his hand from it to check his tail hook. The importance was stressed of having sufficient tension on the throttle quadrant to insure against the throttle creeping when set in any position. It was pointed out that there are many occasions, such as raising or lowering the landing gear, when the pilot is unable to keep his hand on the throttle.

### Grampaw Pettibone says:

A simple twist of the throttle friction control knob on the SB2C will give you enough tension to prevent throttle creepage, even when catapulted. Any pilot who has an accident because of a creeping throttle in a plane where tension adjustment is so simple and effective, has no one to blame but himself. Throttle tension should be checked before take-off.

## Barrier Crash Warning

One carrier reports four recent barrier crashes due to pilots taking their hands off the throttle during landings. Normally this would not cause a crash, but in these cases the pilots also had

previously released the throttle quadrant friction for "flexibility." When the pilots removed their hands from the throttles, vibration juggled the throttles open, thus producing unexpected power.

Two of these pilots have special cause to regret these errors. Upon realizing that a barrier crash had become inevitable, each placed his left hand on the top of the wind screen to brace himself. In both cases, the ends of the fingers which protruded over the wind screen were amputated when the airplane turned over.

### Grampaw Pettibone says:

To make sure no one misses the moral of this report, I will spell it out:

- Keep your throttle quadrant set up tight enough to prevent creeping at all times.
- Keep your hand on the throttle during take-off and landing.
- Keep your digits and other extremities well inside the cockpit during a crash. It's okay to brace yourself, but use internal bracing.

## Hints For Fighter Pilots

The following list of not-so-common-but-equally-important MUSTS for fighter pilots was compiled by VF-15 as the result of considerable flight experience. Most of this advice is equally applicable to all aviators and is, accordingly, earnestly recommended for study and guidance.

- Check all fuel tanks for suction prior to take-off. This is particularly applicable to the droppable tank.
- Insure that droppable tank manual release is fully down, otherwise it may be released inadvertently.
- Keep oxygen mask and helmet out of the slip stream when taking off unless strapped on well, as they may be lost.
- Recharge guns on SAFE after completion of each strafing run to insure against COOK OFF, loss of accuracy from over-heating of barrels and tumbling of bullets, as well as allowing for best cooling.

## 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.

- Why is it dangerous to bank during a dive pull-out?
- When in flight, how does a pilot obtain the current "altimeter setting"?
- Is smoking permitted in naval aircraft?
- Are Navy pilots required to respect "danger areas"?
- Where are the locations of "danger areas" published?

Answers on page 40

pletion of each strafing run to insure against COOK OFF, loss of accuracy from over-heating of barrels and tumbling of bullets, as well as allowing for best cooling.

5. Check only two guns at one time with sight on to observe and check sighting discrepancies.

6. Set gyro compass and gyro horizon on prior to dawn take-off and rendezvous.

7. Check supercharger blowers on deck prior to take-off whether you expect to use them or not.

8. Always give own call when making a "bogey tallyho."

9. Maintain a running fix on your position from base and/or target so that you won't waste time in case of an emergency or if you must assume the lead.

10. Check ZBX after departure from base to insure best tone setting for maximum range.

11. Write out long radio messages prior to transmitting them and know what you are going to say before transmitting.

12. Never interrupt a message already ON THE AIR.

## That Blindfold Test, Again

The pilot wasn't too sure where he was supposed to secure his microphone.

So he looked down into the cockpit while continuing to taxi down the landing strip. Yes, you know the rest. His plane hit the aircraft ahead, the prop. chewing into the vertical fin, stabilizers, fuselage, rudder and one wing.

The cure, as recommended by the investigating board, was:

"Require all pilots to pass blindfold cockpit checkout."

### Grampaw Pettibone says:

Ye gods, does each squadron have to wreck a plane or maim a pilot before they will institute the blindfold cockpit checkout!

## Where Am I?

Because he had no idea of his position, a fighter pilot was forced to land at sea when his radio failed. Fortunately, this pilot is able to profit by his mistake, for he was rescued the next day.

### Grampaw Pettibone says:

Talked to the CO of a fighter squadron the other day whose pilots all had the reputation of being expert navigators. Asked him how come. He allowed as how his "boys" probably were the best fighting pilot, navigators in the Fleet and then he made the following ambiguous remark: "They don't like to eat chamois skin."

Seems the CO himself was once forced down at sea because his navigation was a bit careless. He claims the only thing that kept him from starving to death before he finally was rescued, was eating the inside of his helmet. Right then and there he decided that nobody in his squadron would ever have to eat chamois because of not knowing how to navigate and return home.

# DID YOU KNOW?

## Instrument Panel Is Installed

### Efficiency of Control Tower Increased

MCAS MOJAVE—A new streamlined effect has appeared in the control tower with installation of an instrument panel and remote controls for radio and airport lighting equipment.

A compact panel of volume and squelch controls for eight radio receivers is located immediately to the right and



LEATHERNECKS SIMPLIFY CONTROL TOWER

in front of the controller's position, while to the left in a diagonal panel are recessed altimeter and wind indicating instruments as well as field lighting control switches.

All radio receiving equipment has been moved to a room on the deck below. General effect of these alterations has been to improve the appearance of the tower interior, reduce obstruction of vision and increase efficiency of the traffic controller.

## War Bond Sales Soar in January

### 1945 Navy Program Takes Off Fast

The Navy war bond program got off to a flying start in 1945 with a January total of \$39,537,382. This was 31.5 per cent greater than the \$30,070,575 total of January 1944. It brought the grand total of bond purchases since the beginning of the program in October 1941 to over a billion dollars, or \$1,022,130,396.

Navy yards, as a group, led the bond program in January, followed by naval air stations, NAS JACKSONVILLE leading with 94.6 per cent of its civilian personnel participating regularly in monthly bond purchases, investing 11.6 per cent of their pay. NATB CORPUS CHRISTI was second and NAS SAN DIEGO third.

Allotments by uniformed personnel during January brought the total number of effective allotments to more than two million. Of these, 1,741,908 were Navy allotments, 270,000 Marine Corps and the remaining 87,107 Coast Guard.

## Transportation Problem Solved

### Crews Use Converted Torpedo Trailer

VMSB 343—Transporting pilots and gunners to and from aircraft dispersed over a wide area produced a major problem for this squadron. Although they had their quota of motor transportation, there was nothing that would carry pilots, crew, parachutes and plotting boards to the planes satisfactorily.



REVISED TRAILER CARRIES MEN TO PLANES

This situation was solved effectively by building a flat wooden bed on top of an unused torpedo trailer. On this were secured the front seats from surveyed SBD's. Two running boards and mud guards finished the trailer. A carryall is used to tow it. The pilots and gunners strap their chutes on at the ready room and ride to their aircraft that way.

## "Zoomin' High" Stirs Audiences

### Script of Memphis Show Is Available

A witty musical called *Zoomin' High*, with script by Lt. (jg) Lester Combs

## Uniform of the Day

FROM THE BOOK: Commissioned officers, warrant officers, and chief petty officers attached to fleet aircraft squadrons will be required to have available only prescribed working uniforms when serving away from the designated home port of the squadron to which attached.

—BuPers Circular Letter 145-44 dated 15 May 1944: 44-580, Changes in U.S. Navy Uniform Regulations 1941, 2.(b)

and music by Lt. (jg) Arnold Allison, rivaled Broadway when it set off a storm of applause from an audience at NAS MEMPHIS and again at NATC MEMPHIS.

The play, which is a musical case-history of a naval aviation cadet, launched eighteen new and original songs, including *Zoomin' High*, *The Notsototra Song*, *Naval Air Station Blues* and *Alone in the Sky*. For its cast of 75, all departments of the station were combed, including WAVES, and rehearsals went on despite production headaches such as members being shipped out to sea and rehearsals running afoul of watches. *Zoomin' High* depicts the kaleidoscopic career of the cadet-hero in training and races to a dramatic crescendo when the heroine whips off to join the WAVES after being "jilted for an airplane." Script and score are readily available from NAS MEMPHIS.



THE SC-1 SEAHAWK, twice as fast and with three times the horsepower of the venerable KINGFISHER, now is operating in Pacific waters. Its fundamental jobs are to scout for enemy fleet units, spot gunfire both in sea actions and during fleet support of landing operations, and act as search-rescue plane. Recognition features are: square wing tips, straight central wing panel, oval cowling, heavy fairing on fin and long single float



## BEST ANSWERS

### Tropical Diseases

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

- The most widespread and common of serious tropical diseases are—
  - a—malaria and dysentery
  - b—cholera and plague
  - c—leprosy and elephantiasis
  - d—sleeping sickness and kala-azar
- Malaria is transmitted to man by—
  - a—the Culex mosquito
  - b—the Anopheles mosquito
  - c—the Aedes mosquito
  - d—any mosquito in a heavily infested area
- Beri-beri comes from—
  - a—alcoholic overindulgence in hot climates
  - b—eating too much rice
  - c—insufficient vitamin D
  - d—insufficient vitamin B
- The beneficial action of atabrine or quinine taken regularly in a malarial region is that it—
  - a—repels malaria-carrying mosquitoes
  - b—prevents malarial infections from bites
  - c—suppresses the clinical symptoms without necessarily destroying all parasites
  - d—destroys, within two weeks, all parasites that may be injected into the blood stream by the bite of an infected mosquito
- A disease of little concern several years ago that recently has become important in the western Pacific is—
  - a—typhoid
  - b—scrub typhus
  - c—yellow fever
  - d—plague
- Dysentery comes from—
  - a—food and water exposed to direct or indirect contact with human excreta
  - b—the bite of the tsetse fly
  - c—inadequately cooked saltwater fish caught along tropical reefs
  - d—walking on contaminated ground around native villages
- Elephantiasis is—
  - a—a disease resulting from long-standing malarial infection
  - b—transmitted by the Aedes mosquito only, and symptoms appear within one or two weeks
  - c—characterized by shrinking of the limbs, and results from drinking impure water
  - d—transmitted by many types of mosquitoes, and symptoms generally appear months later.



VENTURA, WITH 100-LB. BOMB IN BAY, MAKES A LANDING ON PACIFIC ISLAND WITH LITTLE DAMAGE

## ONE-WHEEL LANDING

A PV PILOTED by a Lieutenant Commander made a successful one-wheel landing on a Pacific island airstrip without injuring the crew or dislodging a 100-lb. bomb no one knew was stuck in the bomb bay. The pilot's report follows:

WHILE OVER AN enemy target the plane received one hit in the left engine nacelle which severed the hydraulic line and broke the engine mount near the fire wall. The hydraulic system lost all pressure. On return to the field the hand pump would not extend the landing gear.

Using the emergency extension system only extended the left main mount; the right wheel could not be released from the mechanical uplocks as the cable broke. The tail wheel extended but would not lock. I dropped both external gas tanks and released the escape hatch. My approach was higher than normal and at 110 knots indicated. Keeping the left wing low, I slipped the plane to hold it straight and lose

my additional altitude without picking up excessive speed.

As the plane touched the ground on the left wheel, the radioman cut the master electrical switch, I put both engines in idle cut-off and cut the ignition switches. All other electrical gear was cut off in the final approach. The landing was full stalled without flap. Aileron and rudder control was excellent and no trouble was experienced holding up the right wing.

At 58 knots IAS, aileron control was lost, causing the right wing to drop onto the runway. The plane swerved and turned about 150° over an embankment and stopped. The tail wheel being unlocked prevented damage to the empennage. Over-all damage to the plane was surprisingly small and the left main gear was not damaged. Neither engine suffered sudden stoppage and no personnel received any injury, having taken ditching stations before the forced landing was made.



ENEMY SHELLS RUINED THE PLANE'S HYDRAULIC CONTROL, FORCING PV TO COME IN ON ONE WHEEL

## Theodolite Stand Is Adjustable

### Jacking Arrangement Operates Easily

NAS ALAMEDA—Height of the theodolite stand on the roof of the control tower of this station now can be adjusted through a jacking arrangement designed by a civilian machinist. The adjustable stand, developed under the Navy's beneficial suggestion program, permits personnel using the theodolite to stand in normal position while following a balloon in flight.

Before the adjustable stand was available, personnel using the theodolite frequently had to assume uncomfortable positions for long periods of time to secure accurate readings. Readings for weather reports take place every morning and afternoon and last for one hour. A check for every minute, and at times every half minute, is made.

The jacking arrangement permits the operator to adjust the stand to any desired height. The stand is locked in de-



JACK HOISTS INSTRUMENT TO EYE LEVEL

sired position by a ratchet finger gear which can be easily released. Because the theodolite machine is so delicate, the slightest jar will throw it off, two dash pots are installed to allow the machine to settle slowly and seat easily upon return to original position.

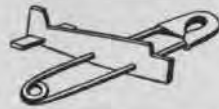
The adjusting jack is easily operated and is especially desirable when theodolite readings are taken by WAVES.

(DESIGNED BY CLAYTON F. CAMPBELL)



**A & R Shops**  
LET  
NEWS HEAR  
FROM YOU!

# FLIGHT



# SAFETY

A SURVEY of crashes in fleet activities discloses that fatalities have been occurring at a rate in excess of 300 per year in accidents during practice dive bombing, glide bombing, strafing and other types of simulated attack on surface targets (torpedo drops, rocket firing and, in a few instances, masthead bombing and skip bombing). About equally divided among these four general categories, the accidents have occurred with little regard for flying experience. One out of three pilots had more than 800 hours logged; one out of six had more than 1,000 hours.



### Altitude Is Life Insurance

In two-thirds of these accidents pilots began pullouts at too low an altitude to permit full recovery. As a result, they dove or mused into the water or ground, were caught in the explosion of their own bombs or were forced into high acceleration pullouts and stalled, blacked out or overstressed the aircraft. Many of the accident reports pointed out adverse operating conditions, such as glassy water, haze, intervening clouds, darkness, small target, hills surrounding target—conditions the pilot did not adequately take into account. Other factors were incorrect altimeter settings and approaches made into the sun.

Next in number of accidents were those in which the pilot made no recovery or no perceptible recovery. Many followed runs started from a poor position, accompanied by excessively steep or erratic dives. Several TBF-M's had wings carry away as a result of high altitude dives in excess of existing speed and acceleration restrictions.

### Don't Get Hypnotized

The principal cause underlying both partial-recovery and no-recovery crashes was that pilots were not sufficiently altitude-conscious. In the majority of cases the pilot was intent on his aim that he concentrated on it to the exclusion of everything else. He was "hypnotized" by his target. Don't let this happen to you. Remember your altitude.

Akin to hypnosis crashes are those that result from dives exceeding speed and acceleration restrictions. The greater the speed and steeper the dive, the more rapidly altitude is lost, the more altitude needed for recovery and the greater the danger of structural failure

or a high-"g" stall during recovery. Choose your pushover position carefully and beware of excessive speed and acceleration. In an erratic dive the normal distribution of stresses is disturbed, creating danger of structural failure. Such a dive also may result in a stall because of unusual altitude of the aircraft during recovery.

### Watch Your G's

Number of accidents during pullouts begun at proper altitude were one-tenth the number of low-altitude partial-recovery and no-recovery crashes. All of these proper altitude crashes were the result of high-"g" pullouts. In the typical case, the pilot made a very sharp pullout, lost control, stalled and spun, blacked out or buckled his wings. A number of them followed failure to lower diving flaps. In others, the pilot failed to appreciate the danger of a spin or stall during recovery.

Remaining accidents were mid-air collisions between aircraft of the same or coordinated sections; aircraft struck by bombs, rockets, etc., from other aircraft; stalls during violent evasive retirement; accidents such as followed overspeeding engines and props, allowing engines to overload or cool excessively in glides and landing gear damage from failure to lock the gear during the dive.



### There's a Lot to Remember

If you don't want to make a practice attack your last attack, prepare a mental check-off list of factors to bear in mind before, during and after your run. *Be sure to note:* altimeter setting, landing gear lock, diving flaps, operating conditions (glassy water, haze, clouds, reference lights at night, position of the sun relative to the target in daylight), size of target, hills near target. Choose your pushover position carefully; allow proper interval on the plane ahead; remember your altitude; beware of exceeding speed and acceleration restrictions for your airplane; watch your pullout altitude; don't pull out too sharply; don't bank excessively during pullout. Again, remember the plane ahead and get out of the path of planes following.

These items add up to a lot to remember. Sufficient pre-flight mental drill will make it a great deal easier to remember them all. Everything you learn in practice will pay off in combat.





**Doomed** and seconds away from destruction, this Jap *Nachi* class heavy cruiser lies dead in the water. Three torpedoes, released from planes based on an *Essex* class carrier, leave narrow white wakes as they race toward their already badly damaged and burning target

## Death Agony of a Jap Cruiser

**H**OW THE split second timing and accuracy of carrier-based Navy pilots and aircrewmembers spelled doom for one Jap heavy cruiser is dramatically portrayed in official photographs made during strikes over Manila harbor. Bombing and torpedo attacks by carrier planes took heavy toll of Hirohito's fleet in this and other Philippine actions. Timing is all-important as fighters, dive bombers and torpedo planes press home attacks on heavily armed Jap surface craft. The Jap cruiser's frantic maneuvering failed to save it as Naval aircraft came in for the kill. In addition to

taking heavy toll of ships, Navy planes heavily damaged enemy shore installations and destroyed hundreds of Jap aircraft. This carrier strike and others like it paved the way for General MacArthur's invasion of Luzon island at Lingayen gulf. *Nachi* class heavy cruisers like the one sunk in this action are 10,000 tons displacement, have an overall length of 656' and an estimated speed of 33 knots. Armament includes ten 8" 50 cal. twin turrets, eight 4.7" AA twin shield mounts and eight torpedo tubes. *Nachi* class cruisers have two catapults, carry four seaplanes for scouting use.



**Navy camera** recorded the frantic maneuvering of this Jap heavy cruiser. Geysers mark explosions of bombs that missed. Seconds later the Jap ship was struck by bombs from carrier-based aircraft and left in a burning and sinking condition. Action was fast and deadly



**Smoke pours** from the stricken Jap cruiser's starboard quarter and around her after turrets. Jap *Takanami* DD circles near by



**Its bow shot away**, broken abaft the stacks and in flames, the *Nachi* is doomed. Photograph reveals no survivors in water



**Three minutes** later large bubbles rise from the main section of the hull. Fantail, with rudder still attached, bobs like cork on the water. Burning oil, escaping from Jap ship's fuel tanks, floated on the bay for some time, marking the death scene where it sank



# PERFECT LANDING

PILOT, landing signal officer, Fly 3 officer and hookman function like precision parts of a well-made machine in a perfect carrier landing. A Navy photographer caught this action.



GIVEN A CUT BY THE LSO, AN SB2C COMES IN NICELY OVER THE CENTER OF THE DECK; DECKMEN LINE THE WALKWAY



ARRESTING WIRE HALTS SB2C AS FLY 3 OFFICER AND HOOK MAN SPRINT OUT TO PLANE; TEAMWORK SPEEDS OPERATION



FLY 3 OFFICER SIGNALS "HOLD IT" WHILE HOOKMAN RUNS IN FROM REAR TO FREE HELLDIVER FROM THE ARRESTING WIRE



FLY 3 OFFICER PASSES PLANE ALONG TO NEXT DIRECTOR, CLEARING DECK FOR THE NEXT PLANE IN TRAFFIC PATTERN

# SQUADRON NOTES

**Black Cat Scores Heavily.** Sinking a 9,000-ton seaplane tender and two armed escort vessels in one night would be a good record for a whole squadron, but one "Black Cat" pilot flying a *Catalina* did this unaided. He bagged his three Jap ships in the Southern Philippines with four bombs during a series of masthead attacks on enemy shipping. In a 34-night period his squadron sank 103,500 tons of enemy warships, damaged another 53,000 tons and thereby set a record hard to top.

**At Top In 16 Days.** In just 16 days, Air Group 19 became one of the Navy's top-scoring carrier-based fighting outfits. During carrier strikes on Formosa, the Pescadores Islands, Nausei Shoto and the Imperial Jap Fleet, the air group destroyed more than 100 enemy planes in the air and rained destruction on Nip surface units. In one day of the 16, pilots of this group were credited with sinking a submarine tender, an oiler, three medium merchantmen and three barges. Thirteen other ships were either sunk or damaged. On another day the air group sank or damaged 20,000 tons of Japanese shipping near Ansan naval base in the Pescadores.

**On a Famous Mission.** Though VPB-4, which recently returned on leave from the Pacific theater, put in 12 effective months against the enemy, its most celebrated mission stands out above all other actions. This was the famous 2,400-mile night flight in the raid on Wake Island. The patrol bombing squadron planes each carried 2,400 pounds of explosives, successfully neutralized enemy installations and returned without losing a plane. During its year of duty VPB-4 made 1,300 patrols in which it covered 68 million square miles of the Pacific without a single casualty.

**Made Most of Opportunities.** Patrol Bomber Squadron 216, which recently returned from duty in the Pacific, was forced by the nature of its duty to spend much of the time in long hours of over-water flight on search and patrol. However, there were a few occasions when the squadron had a chance for action and it made the most of these. During its five-month tour the squadron attacked eight ships of the enemy. One was listed as probably sunk and two were damaged. Squadron members had 17 encounters with Jap planes and damaged two without sustaining losses of their own.

**Escort Pilot Gets Five.** Although escort carrier pilots seldom get the opportunity of participating in aerial "turkey shoots" like their brother pilots aboard larger carriers, one of the "Jeep" pilots had his day recently in action off the Philippines. Four Jeep-based pilots were flying target area combat con-

trol when they intercepted a large formation of Jap army bombers. Sighting a Jap *Lilly*, one Jeep-based pilot fired four bursts from dead astern and sent the Jap down in flames. Maneuvering into position for another high side attack, the same Navy pilot took on a division of four Jap planes and shot every one of them down. All in all, the four escort carrier pilots bagged 12 Japs, got two more probables and saved a group of American Army transports and Navy vessels from a bombing.

**Expensive For The Japs.** In 80 days of combat action in the far Western Pacific, Air Group 18, part of which has returned home on leave, destroyed or damaged 557 Jap planes, sank 69 ships, probably sank 27 and damaged 88 more. Almost a million pounds of bombs and more than 85,000 rounds of machine gun and cannon ammunition were expended by Fighting Eighteen during the 80 days. Returning from one strike the group's *TBF's* were twice attacked by enemy fighters. On the first occasion 14 Jap fighters attacked and in the second instance there were 16 in the gang. In each case the Japs lost one plane.

**Catalina Sets a Record.** One of the Navy *Catalinas* which helped to rescue survivors when the 2,200-ton destroyer *Cooper* was sunk in Ormoc Bay, established a world's record by lifting and carrying 3,000 pounds more weight than it was designed to fly. On one flight the *Catalina* carried 64 passengers including its crew and the survivors. When an underwater explosion sank the destroyer, 158 men of the 300 aboard her were saved, most of them by *Catalinas* which landed in the bay by daylight under fighter cover.

**Cleared Six Million Miles.** During 10 separate amphibious attacks in which it participated while on 13 months of combat duty in the Pacific, Air Group 37 helped to clear the enemy from bases scattered over six million square miles of ocean. From its carrier, which is one of the Navy's converted tankers, the air group saw plenty of action. In more than 100,000 miles of cruise the group made 5,300 carrier landings and its veteran torpedo pilots each averaged more than 500 hours of combat flying. The fighter pilots averaged 400 hours flight time.

**Odds 10 to One.** Three pilots of Air Group 26 did not hesitate to attack when 32 Japanese medium bombers with fighter escorts launched an assault against American transports in the gulf and newly won positions on Leyte Island early in the battle of the Philippine invasion. Calling for help as they gunned their motors to full military power, the three Navy pilots drove toward the oncoming Japs. By the time help arrived they had already knocked down eight Nip bombers. Reinforced by other Navy planes, the defenders brought the fight to an abrupt climax and surviving Japs turned back.

**Delivered 300 Tons.** During 13 months of combat duty in the Pacific the Navy's Air Group 60, which recently returned to the States, personally delivered 300 tons of bombs to the enemy. The hard-hitting air group in 18,000 hours of combat flying, expended a half million rounds of .50 cal ammunition, made better than 5,000 carrier landings and made 4,000 catapult take-offs. The group's *Hellcats* and *Avengers* shot 30 Jap planes out of the air, wrecked 35 more on the ground, sank three Jap ships and sank or damaged 25 smaller craft.

**Patrol Squadrons Cited.** Three patrol squadrons of Patrol Wing Ten attached to Aircraft, U.S. Asiatic Fleet, have been honored with the Presidential Unit citation for action against Japanese forces during the first few months of the war. They are squadrons 21, 101 and 102.

In part the citation reads: "For extraordinary heroism in action operating against enemy forces in the Philippines and Netherlands East Indies from January, 1942 until March 3, 1942. Holding fast to their courage as the Japanese ruthlessly hunted them down, the pilots doggedly maintained their patrols in defiance of hostile air and naval supremacy, scouting the enemy and fighting him boldly regardless of overwhelming odds, and in spite of crushing operational inadequacies existing during the first months of the war. The exceptional achievement of this combat group reflects the highest credit upon the United States Naval service."

**VPB-52 Wins A Citation.** One of the Navy's oldest *Catalina* squadrons, VPB-52, returned home on leave with the coveted Presidential Unit Citation for destroying or disabling more than 90,000 tons of Jap shipping from Midway Island to the Bismarck Sea. During its 18-month tour of duty in the combat area, this squadron's members also won four Navy Crosses, three Silver Stars, seven Distinguished Flying Crosses, 114 Navy Air Medals, a Commendation Ribbon and two Purple Hearts.

**A & R Shops**

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FROM YOU!





# TOKYO TALKS

## TO AMERICA

Men about forty years of age are manning United States carrier-borne planes according to close investigation of personnel shot down in raids over Philippine bases.

## TO JAPAN

Nurses at the Osaka Imperial University hospital and other Osaka hospitals in their spare time are manufacturing airplane parts and munitions.

## TO JAPAN

The Japanese Publicity Association has completed a song for mass singing in Japan entitled "A Tune For Throwing Out the Anglo-Americans," or, "Bei-ei Opparai-Bushi." As translated by the Federal Communications Commission, the lyric reads:

Yamashita is in command,  
His pride is in battle.  
He will not let MacArthur escape this time.  
Mr. Yankee, please do not get away;  
All Japan is an arsenal.

## TO OCCUPIED ASIA

Since the "key to victory" in the Pacific depends on which side has superiority of air power and shipping, Japan's Federal Communications Commission reports that it is more important at present to sink "enemy transports and cargo ships" than battleships and carriers. "The United States, relying solely on her material strength, is trying to erect a bridge of transports across the Pacific and thus keep her supply line intact. In order to smash the enemy air power it is necessary to sever this supply line."

## TO JAPAN

Endo, Director of the General Air War Weapon Bureau, claimed recently that an additional complicating factor in Japan's ability to muster sufficient air power was the "wear and tear" on planes already produced.

## TO INDIA

The Tokyo radio reported that "several score fighter planes, antiaircraft guns, sound detectors and observation instruments" had been "donated" to the Japanese capital's air defense corps recently.

"That's bad news for the would-be Tokyo raiders, and don't say we didn't warn you," Tokyo radio declared. "The skies over the chief city of Asia are well protected. Asia marches on!"

## TO JAPAN

Dr. Hideji Yagi, president of the Japanese Board of Technology, reported to the Diet that scientists were ashamed because the United States staged its attack on the Philippines before new weapons were ready. The Batavian radio said that Japanese "inventive genius had developed a mystery ray capable of blowing up the entire city of Washington; a plane three times as large as the B-29 capable of directing pilotless planes and unmanned tor-

pedo boats; and special chemicals that could be spread into the air to guard against B-29's by forming a compound with gasoline to turn it into a sticky substance.

## TO JAPAN

Hirohito, in an Imperial rescript read at the formal opening of the 86th regular session of the Japanese Diet, warned that "the war situation is becoming more critical" and urged his subjects "truly to devote their total effort and to repel the enemy."

He praised the Japanese Army and Navy for "destroying the powerful enemy, wherever he is confronted, with their death-defying gallant fighting."

"While the war situation in Greater East Asia progresses daily, the alliances with our friendly nations also are being further solidified," Hirohito was quoted.

## SHOW ME THE WAY TO GO HOME



### Interception

You take departure at 0900 at flight altitude of 5,000 ft. from over St. Augustine Lighthouse, Lat. 29° 53' N, Long. 81° 17' W to intercept a vessel reported at that time to be in Lat. 27° 38' N, 78° 12' W on course 338°, speed 22 k. Your wind is from 248°, force 25 k. Your TAS is 130 k.

1. What is your TH to intercept? \_\_\_\_\_
2. What is your cus to intercept? \_\_\_\_\_
3. What is your GS to intercept? \_\_\_\_\_
4. What is your ETI? \_\_\_\_\_
5. What is your GPI? Lat. \_\_\_\_\_  
Long. \_\_\_\_\_

At 0930 you are notified that the vessel at that time changed cus to 010°, speed 20 k. You plan to alter heading to make good interception at 0940.

6. What is your 0940 Lat. \_\_\_\_\_  
DR position? Long. \_\_\_\_\_
7. What is your new TH to intercept? \_\_\_\_\_
8. What is your DRM? \_\_\_\_\_
9. What is your new ETI? \_\_\_\_\_
10. What is your new Lat. \_\_\_\_\_  
GPI? Long. \_\_\_\_\_

(Answers on page 40)

# PUBLICATIONS

## Revised Section "K" Allowance List

The latest revision of the BUAE Section "K" Allowance List covering DCNO (AIR)-BUAE Publications and Forms (NAVAER 00-35QK-1, dated January 1945) was distributed recently to all naval aviation activities.

While this list is of primary interest to newly commissioned activities, it also contains information of value to others. For example:

a. It summarizes important current policies for the distribution of technical aeronautic publications.

b. It is the guide to standard distributions of such publications until such time as each activity (in accordance with ACL 90-44 or on its own initiative) requests a change in the types or quantities of publications being received.

c. Table 5 (Forms) is a guide to the maximum quantity of each form which will be supplied on request by an activity. Such quantities will not be exceeded unless the request for a larger quantity of a particular form is accompanied by an explanation of the reason why such a large quantity is required. (Indication of adequate usage data on Publications and Forms Order Blank NAVAER 140, constitutes such adequate explanation. See ACL 126-44 for a fuller explanation of this policy.)

## Revisions of Section "K"

The Section "K" allowance is never static. Because new publications or types of publications constantly are being added or deleted, certain new items not listed in Section "K" may be received, and other items listed may not be received because they have been cancelled subsequent to the Section "K" issue date. In other words, progress in the distribution of publications does not stand still between quarterly revisions of the Section "K" list.

## Of Paramount Interest to New Activities

For most technical publications, Section "K" shows quantities for each class or type of publication (Table 3). An itemized list of individual publications is sent each newly commissioned activity, however, with the letter of transmittal covering the commissioning allowance; another copy is contained as a packing-slip with the shipment. Hereafter, to facilitate checking of such requisitions against Section "K" quantities, the Section "K" item number of the publication will precede each title listed on a requisition. Such listing will make it possible for anyone, even someone unfamiliar with technical publications, to check quantities received against Section "K" quantities, and to determine whether items representative of each class of publication shown in Section "K" for the particular type of activity have been received.

If your activity's future needs differ from Section "K", corrective action should be taken, if it has not already, in accordance with Aviation Circular Letter No. 90-44.

# AVIATION STOREKEEPER SCHOOL



**A**VIATION storekeeping as taught at NAVAL AIR TECHNICAL TRAINING CENTER JACKSONVILLE is as practical as the three "R's." The Navy's only skv school sums up aviation storekeeping as the trinity of supply—getting it, keeping it, and issuing it. The "it" in every case being naval aviation supplies.

Facilities of the school now are largely devoted to providing practical training to storekeepers from fleet and shore based activities. Selected men assigned to skv school return to their units well trained in aviation supply.

## **School Quotas 122 a Week**

To keep abreast of the ever-changing needs of a globe-encircling naval aeronautical organization, the school makes full use of operational experience in the present war. Instructors all are aviation storekeepers and graduates of the skv school. More than one skv instructor backs up his teaching with two years or more experience in combat areas.

School quotas call for an entering

class of 122 every other week. Men assigned come principally from operational activities. Fleet commands desiring to enter men in skv school address requests to BuPers through COMAIRLANT or COMAIRPAC, except West Coast Fleet commands who address requests to BuPers through COMFAIRWEST. Shore commands address requests to BuPers through Naval district commandants or air functional training commands.

Selected men from class "A" storekeepers schools are assigned to skv school on the basis of educational or business background. On successful completion of the six-weeks course they are rated skv3/c. All men who successfully complete the school wear the skv insignia, are assigned to aviation.

To wear the skv rate, established in August 1943, a man must be able to identify instantly airplane parts accessories or maintenance materials and also understand aeronautical nomenclature. All this is in addition to the general knowledge of naval storekeeping.

When a mech walks in to aviation supply, throws down a damaged part and says: "Get me one of these gadgets," a Jacksonville-trained skv knows what to do. Part identification training enables him to quickly recognize the gadget as a magneto part. The skv turns to class 86 in his ASO catalogue, identifies the gadget as to part number and through use of a location system goes directly to the proper shelf.

## **Job Could Take Many Hours**

A storekeeper, untrained in aviation part identification, might have had to enlist the mech's aid and wasted a morning searching for the part.

All skv trainees receive practical instruction in aviation supply procedures for procurement, receipt, storage, salvage, preservation, packing, shipping, and marking of aeronautical materials. Each skv trainee solves a series of supply problems designed for CASU's, CVE's, PATSU's, supply depots, shop store-rooms, CV's, shore stations and CASD's.

[Check Nearest Aviation Film Library for Films]



TO KEEP NAVAL AVIATION FUNCTIONING AT MAXIMUM EFFICIENCY, ALL PRECISION PARTS MUST BE PACKED FOR BEACHHEAD DELIVERY





## TRAINING FITS SKV'S FOR DUTY IN FLEET

**E**VERY step in an skv's training is practical. By going through each procedure in 11 different practical aviation supply problems skv's learn to draw, preserve, wrap, pack, mark, issue, receive, identify and post each part. All work is closely checked and supervised. Every step must meet fleet standards. The skv school course provides an endless chain of practical training without waste of time or effort.



In this model storeroom skv trainees work out each step in 11 different naval aviation supply problems. Trainees work in sections, one drawing supplies, another preserving, packing and

marking supplies, and a third issuing. Actual problems designed for CASU's, PATSU's, CV's, CVE's, and supply depots are worked out by trainees under the close supervision of trained instructors



**Proper paper** work procedure must be mastered by every trainee. To complete their problems, students learn to use Supply and Accounts forms 43, 44, 76, 127, 129, 132, 220, 307, 675



**To do his job** well an aviation storekeeper must be familiar with aircraft nomenclature. During the six-weeks course all the trainees are thoroughly grounded in aircraft part identification



## PART PRESERVATION WILL SPEED VICTORY

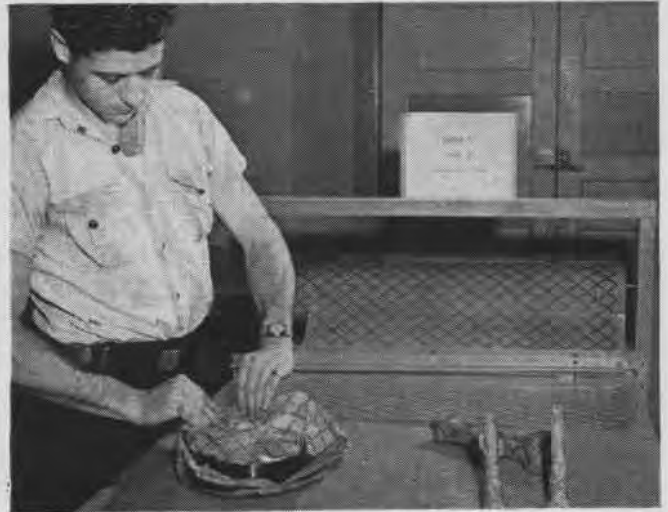
**T**O KEEP naval air power supreme, aviation supplies in ever increasing amounts are being shipped to all parts of the globe. It's the SKV's job to preserve, wrap and pack these supplies to withstand arctic cold, jungle humidity, desert dryness and even salt water. SKV's must be able to mark packages correctly and read package markings accurately. On a beachhead there must be no guesswork in opening supplies.



Before any part is preserved it must be carefully cleaned. Manufacturing residues and fingerprints are removed by immersion in Stoddard's solvent and fingerprint solution. Care is required



Thoroughly cleaned, a part is then dipped in preservative to protect it during shipment or storage. Precision parts get special treatment. Supplies must arrive at front in factory condition



Special wrapping papers are used to protect aviation parts. SKV's learn to wrap supplies so they will arrive in combat areas undamaged. All Navy procedures are tested and standardized



Inside markings like these enable storekeepers at delivery points to properly identify parts without breaking through the preservation. Inner wrapping is dipped in molten wax to protect part



Outside markings are important, gear opened by mistake on a jungle beachhead may not be salvaged. All packages contain water proof inner liners to withstand all types of climatic conditions



# HE REPAIRS NAVY WINGS

## DOES HE REGULARLY GET Naval Aviation News?

IT'S only natural for the men who keep wing surfaces safe for flight to want to stay abreast of the latest dope published on Naval Aviation.

On the flight or hangar deck, and in A&R shops, the great force of enlisted men in all categories who overhaul and maintain Navy planes profit from the safety, survival and technical tips the magazine publishes. And to every issue they contribute ideas of use to the entire naval air organization.

So you don't do any favors when you sit on NANews or hoard it in a desk drawer. Get what you want from it, then pass NANews down the line so EVERYBODY in Naval Air can take a gander at it.

If the trouble is copies—too few or even too many—tip off that hard working Publications Officer and maybe he'll jot us a brief note about it.



IT'S OUT...GET IT AROUND

# UNCLE KIM TUSSIE

When Cousin Boliver's boy, Bush Tussie, come home from th' Pacific, he was full o' talk and stories about the hot headed Navy flyers. One in perticular stuck in his head. They'd told this flyer once the shootin' started and the ships had up-ended thar big guns and filled 'em with slugs, they'd cut loose at any plane that flew over thar territory if the pilot didn't



make hisself known. Well sir, this pilot Bush was a-tellin about, flew over our ships anyway, without a sign o' warnin and they brought 'im down just like you would a patrich. He was madden a turpentine dawg when they hauled him out of the ocean. He ast his captain if he didn't know his friends from his enemies. . . .

Stop right thar, I told Bush. I know jest what that captin said to 'im, because the same thing happened to me. And I told 'im about the time Cousin Fred, Uncle Millard, Uncle Hargis hepped me post my land. We put up signs ever few feet and writ on them plain fer any eye to see:

Thar'd been a lot o' pilferers a-goin over my land and I didn't know just th' exact nature of these pilferers. They could 've been Revenooers 'r they could 've been Van Horns a-spyin on us. We saw footprints all along the paths and the creeks. And I thought these signs would put a stop to th' Van Horns, th' Revenooers and th' city slickers. But they didn't stop 'em. We kept right on a-findin foot prints along the paths and signs o' tracks in the sand along the creeks.

"We'll break up this pilferin on a body's premises," I said to Cousin Tracey one day. "Fetch yer old twelve gauge shotgun over and let's go a-huntin fer th' busy-bodies that don't pay our trespassin signs no heed."

"What size shots must I bring?" Cousin Tracey asked.

"Take out th' slugs and fill yer shells with these little hard Navy beans," I said. "Give 'em a good sprinklin with these and they'll do the work . . ."

"Guess ye're right, Kim," Cousin Tracey said. "Thar's a lot o' people a-livin around here who may think we just stuck the signs up to dekorate our farm." "Yeah, thar's a lot o' people that don't seem to keer fer signs," I said to Cousin Tracey. "Uncle Seymore Tussie's boy Bert by his first wife never did. He died a-tryin to beat a freight train at th' crossin atter the engineer blowed his whistle at 'im three times and was a-ringin his bell and the red lights at the crossin were a-blinkin fer Bert to stay offen the tracks."

WE TOOK our twelve gauge shotguns with plenty o' shells loaded with Navy beans and we took off over th' farm.

"Yander's one now," Cousin Tracey said, pintin at the man.

"Cut down on 'im," I said. "Feed him the Navy beans!"

Cousin Tracey leveled down on 'im and squeezed the trigger. I heard 'im scream just about th' time I heard th' gun go off. And I saw two more men take off with thar backs to us a-hoppin over the broomsage like two wild rabbits, their hats in their hands.

"Give 'em both barrels, Kim," Cousin Tracey said. "The pilferin hellions have it a-comin to 'em."

I pulled one trigger and honest th' man shot up in the air like a rubber ball



and come down a-bouncin like a big buck rabbit. Then I got th' other'n but he's a few feet futter away yet he screamed like I'd shot 'im with the real thing.

"Git offen this land, ye pilferin hellions," I screamed.

And when I screamed, they all stopped dead in thar tracks and started rubbin the places we'd shot 'em which was in the behinds.

"Uncle Kim," one o' 'em said, "ye're a-gettin too handy with yer guns around here. Ye're a-shootin yer own blood kin!"



I looked at Cousin Tracey and he looked at me. Then we walked over where the boys wuz. Thar wuz Nando, Possum, and Lief all a-pullin thar britches down to see how bad they's shot up.

NANDO had more red spots on 'im than a strainer has holes and Possum's behind looked like a red-dotted sieve. Lief looked like he'd been spanked.

"Th' Navy beans did th' work, Tracey," I said, laughin fit to die. And Tracey started laughin.

"Hit ain't so damned funny, Uncle Kim," Possum snorted like a young bull.

"Hit ain't nice to shoot yer blood kin fer fun," Nando whined like a hungry hound pup.

"What's funny about shootin us on our own premises?" Lief growled like a trapped possum.

"Didn't ye see th' signs tacked up everyplace?" I ast th' boys.

"Shore we saw the signs," Possum said, pullin a bean from his flesh.

"Then why didn't ye take heed?"

"Because this is Tussie land," he said. "I thought these signs were fer Van Horns, Revenooers and city slickers!"

I told 'im the same thing th' ship captain told the pilot he shot down—"When a man says ever'body keep off, that means ever'body!"





NAVY'S WINGED TARGET IN FLIGHT CLOSELY FOLLOWS ALL MANEUVERS MADE BY THE TOW PLANE TO AVOID AIM OF THE GUNNERS

## WINGED TARGET

**W**INGED TARGET MK 1, MOD 1 is being supplied as an aid to gunnery training. In general it resembles a glider 12 feet long with a wing span of 16 feet, which is towed behind an

airplane at a distance up to 12,000 feet. In this position it serves as a target for either ground and ship batteries or airborne gunners.

The winged target is so rigged that it flies a course about 8° below the tow plane. In take-off the glider is trailed at a distance of about 200 feet behind the plane. It slides along on its metal skids, and will remain on the runway until the tow plane becomes airborne.

The target does not take off until the tow line is nearly vertical. Then it is lifted off the ground by the plane and becomes airborne. Only after a tow plane has returned to the landing area is the glider released from the tow line.

In the tow plane, line is attached to a reel and rewind motor, and when a safe altitude has been reached the plane starts paying out cable. Plane speed should be held below 150 mph. while the cable is being lengthened until at least 1,000 feet of line has been paid out. If target is within 1,000 feet, no maneuver except shallow banking turns should be tried by the plane pilot.

Winged target has many advantages. It simulates an actual aircraft and will maneuver like one. It has less drag than a sleeve and greater stability while in flight. Added to this, the target can be used many times; is good for radar. [Check Library for Film MN-4329, *Winged Target*]



Series of coil springs is built into the main skid to take up major landing shock



Metal shod skids which are secured to the lower side of both wings prevent dragging



Long rods serve as braces extending from nose of target back to leading wing edge

# 25 YEARS AGO THIS MONTH

## Naval Aviation in March 1920



*March* — Arrangements have been made for a course in parachute jumping at the Air Service Mechanics' School, Kelly Field, Texas. A number of trained men, sent from the engineering division of the Air Service, are on their way to Texas to act as instructors. Every

man at the Air Service school has volunteered for the course.

*March 1*—Cheering crowds lined the runway as the Navy dirigible C-6 was nosed out of its hangar and readied for its maiden flight. At 2:30 p.m. sharp the ship took to the air in a light wind of about eight miles per hour and headed due west until out beyond the coast line. The course was changed to northeast and the ship circled around the city of San Diego.

*March 7* — Preliminary to another transatlantic flight, two naval aviators were assigned to London in connection with the rigid airship to be built for the U. S. government by the British Admiralty. The vanguard of a large company of American naval fliers who will assist in construction of the huge craft requiring a crew of 18, they will spend some months learning to operate airships of similar construction to prepare for flight of the proposed dirigible to this country next spring.

*March 10*—Commander C. C. Witmer arrived at NAS PENSACOLA to conduct experiments with a new kite balloon

fashioned after Italian models. Balloon experts believe an altitude of 5,000 feet may be reached, carrying a single passenger.

*March 11*—Official approval was received from the War Department on establishment of a battery of three-inch guns on North Island, San Diego, for use in connection with anti-aircraft target range facilities.

*March 15*—Orders were given to convert four DH-4 army airplanes into air-hospital ambulances. Aeronautical engineers at McCook Field, Dayton, have completed designs for the model.

Each plane will be equipped with two basket litters for patients and accommodation for a pilot. According to the Navy, need for this type of plane has been demonstrated by Army patrol work along the Mexican border.

*March 16*—Bids received from aircraft manufacturers for construction of one of two giant naval triplane flying boats to operate across the Pacific were opened at the Navy.

Both seaplanes, while designed primarily to cooperate with Atlantic and Pacific Fleets in offensive tactics, also will be used as a rapid means of communicating with far-flung U. S. possessions in the Pacific. Secretary Daniels has requested construction of naval air stations at Honolulu, Guam and Manila to facilitate flights across the Pacific.

Several models of the triplanes have been built to scale for testing in wind tunnels. Total weight will be 9,000 pounds made up largely of cannon, machine guns and bombs, all designed

principally for attack rather than defense.

The most important requirement is that the seaplane shall be able to ride out heavy winds when adrift at sea. Plans call for ability to land and get away in the open sea when winds are up to 20 miles an hour, without undue punishment to the hulls.

*March 29*—Following announcement that the Navy intends to build two great flying boats to have nine engines each, and to be larger than the NC-4 which flew the Atlantic, word comes that Navy also is to build the biggest and fastest dirigible in the world.

This ship is to surpass in size and power the R-34, British dirigible which flew from England to New York and back last summer. Ground work already has been started for the hangar at NAS LAKEHURST. The dirigible is to be made in sections at Philadelphia and shipped to LAKEHURST for assembly.

*March 29*—The *Nordstern* or *North Star*, second German postwar commercial Zeppelin that took approximately eight months to build, has just been launched. It is patterned after the *Bodensee*, but will carry a crew of seventeen men and fifty passengers on regular service between Berlin and Stockholm.

*March 31*—The committee on Near Eastern Relief requested Navy's permission for airship flights from NAS ROCKAWAY over New York City in connection with the committee's campaign to aid Armenia. The Third Naval District Commandant was instructed to cooperate.



A DH-4 IN FLIGHT OVER NAS PENSACOLA. CONVERTED PLANES DID AWAY WITH SECOND COCKPIT LEAVING ROOM FOR BASKET LITTERS





BLIMPS CAN BE USED SUCCESSFULLY IN FRIENDLY TERRITORY, LESS VULNERABLE PLANES GENERALLY ARE BETTER FOR SPOTTING

## AERIAL MINE SPOTTING

**At the Beginning, Aerial Mine-Spotting in Mediterranean Was Casual Operation; First Organized Work Followed Allied Invasion**

CASUAL reports from Allied flyers operating in the Mediterranean theater during the early part of 1944 were responsible for development of a new science—that of aerial mine-spotting. Already, it has played an important part in the Mediterranean. In one instance alone, two capital ships and several Allied freighters were saved from entering a German mine field because of airborne mine-spotting operations.

Much of the technique developed in the Mediterranean already is being

utilized in the war with Japan. An increase in mine warfare may develop as American operations penetrate more deeply into the far western Pacific, and aerial mine-spotting could again prove its value.

### **Organized Spotting Followed D-Day**

At the beginning, planes engaged in other work sighted mines occasionally in Mediterranean waters and reported their presence. This information, obtained casually, proved valuable in bypassing and sweeping enemy mine fields during amphibious operations. Such informal mine-spotting was used to assist sweepers on the west coast of Italy.

The first organized operational use of mine-spotting was planned as part

of the amphibious attack on the Southern coast of France. After preliminary tests several PBV's were obtained for mine-spotting and were stationed at a convenient airfield outside the assault area. For security reasons mine-spotting was not begun until after D-day to avoid tipping off the enemy.

### **Planes Were Assigned Provisionally**

Originally, planes were assigned to mine-spotting duty on a provisional basis only, with the idea of using them for a courier service in case spotting did not pay good dividends. Early in August, a PBV on a mine-spotting training mission located a new enemy mine field off Elba. This incident proved the practicality of mine-spotting from the air under favorable conditions. Cruisers anchored in the immediate vicinity were warned from the plane. Later, by urgent dispatch, the entire area where the mine field was spotted was declared dangerous as a safeguard to shipping.



JAP MINES SPOTTED OFF PALAU WERE TARGETS OF DESTROYERS



CATALINAS USE A SPECIAL TECHNIQUE IN MARKING MINE FIELDS

### Much Has Been Learned Already Concerning More Effective Methods For Mine-Spotting

NOT LONG after the first mine field discovery, another one was sighted on August 23 across the southern entrance of the same bay. The second had two lines of 30 mines each.

In the days that followed, eight missions were flown over the assault area, and five mine fields were located. For the most part these mines were in waters still under enemy control, and spotting planes were not infrequently driven out by AA fire. Information thus obtained on the accurate positions of enemy mine fields was of great assistance in opening much-needed ports.

#### Spotting With Blimps Is Tested Next

Following the assault phase a mine-spotting program was initiated to cover the entire coastal area. Between the coast and the 100-fathom curve, area was divided into sectors of 100 square miles each. A sector was assigned for each mission. An early mission revealed two fields, two of four lines of mines, six miles long, the other of two four-mile lines.

Because of the success with which planes had been used in mine-spotting it was decided to investigate the capabilities of blimps in the same work. Accordingly a blimp was stationed in France, and with that as an operating base it made several mine-spotting flights. During this interval five mine fields were accurately plotted. The blimp was also used to assist mine-sweepers. By use of smoke floats the blimp indicated a general area in which mines were located, and then by voice directed the mine-sweepers into a position in a closer proximity to the field.

► Mine-spotting by blimps when area is in friendly hands beyond range of enemy fighters has three advantages:

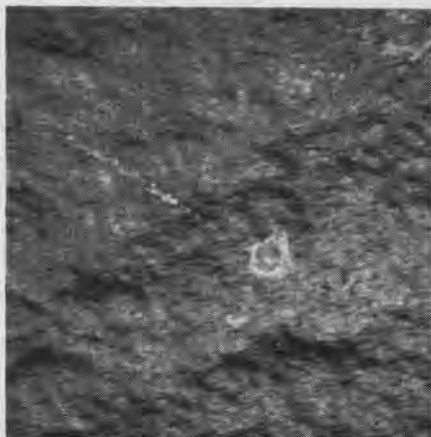
1. Deliberate and thorough visual examination by several observers with unobstructed views while the blimp hovers or passes slowly over the area.
2. Accurate plots of each mine.
3. Accurate, on-the-spot control of mine-sweeping craft by smoke-floats, buoys and voice direction.

#### Aerial Mine-Spotting Has Limitations

Aerial mine-spotting is subject to certain limitations. Calm seas, clear water and sunshine are necessary for best results. Under favorable conditions mines may be sighted at depths of 30 feet or more. In rough weather, observation is difficult, and if there is much spray, mine-spotting cannot be trusted. Though mines sometimes can be seen in cloudy weather, it is desirable to check area again in fair weather.

► LASTLY, AN AREA COVERED BY AIR RECONNAISSANCE WITH NEGATIVE RESULTS CANNOT BE SAID TO BE SAFE.

Although one harbor entrance was surveyed thoroughly several times and



FROM ABOVE MOORED MINE LOOKS WHITE

no mines were sighted, mines later were swept in the area. In another harbor five mine-like objects were sighted in a swept anchorage. A re-sweep of the area produced five sunken net buoys.

#### Six Recommendations Cover Technique

Technique developed so far in aerial mine-spotting can be covered in six general recommendations.

**First.** Brief crew before starting survey. Plan course to include point of land, buoy or other fixed point so mine positions can be fixed accurately.

**Second.** Fly parallel and criss-cross courses over the area at altitude of about 400 feet; when using PBY at 90 knots speed. Area of 400 to 800 yards can be considered covered if both blisters have good visibility.

**Third.** Fly in such a direction relative to sun's reflection as to give the observer on each side of plane a view of water with sun behind him. Sun's reflection on water is one of the biggest handicaps.

**Fourth.** After spotting a mine and dropping smoke float, circle until another mine is found. Drop second smoke float, then start run down row of mines so as to determine its extent and direction.

**Fifth.** After the first row has been marked, make a run at an angle of 15 or 20 degrees over its center to locate other rows in the field. If a navigational aid is near field, make running fixes, counting and timing the mines during the run. If there is no navigational aid, make at least two course and distance runs from the nearest landmark.

**Sixth.** When possible, direct surface craft to mine field so that buoys can be laid to mark it and warn approaching shipping. Expedite reports on the field.



# Pilotless Plane Lands Itself

ONE OF THE MOST incredible, yet authenticated, stories to come out of the annals of airmen's experiences is the saga of Marine Sergeant Charles E. Wood. As a photographer, Wood accompanied a torpedo squadron on a strike against Jap-held Kolombangara Island in the Solomons group. After being hit with enemy AA, the pilot gave the order to bail out, waited, then hit the silk himself. Believing everyone was out of the plane, he parachuted to safety, but Wood was still aboard. The Sergeant tells this story of how his life was saved when a flaming, pilotless plane belly-landed in the ocean.



WE DIVED from about 12,000 feet, released the bombs at 900 feet, and were just pulling out when anti-aircraft shrapnel hit the engine. . . . It began smoking immediately. Our pilot gave that plane all it had, and we started climbing to get enough altitude for jumping. As we leveled off, I reached for the 'chute to snap it on my harness and found it burning like dry leaves. All I could do was throw it out the window.

I didn't know what to do. . . . The flames had eaten their way into my compartment and were licking at my legs. The smoke had nearly suffocated me, and suddenly I found myself on the floor trying to protect my face from the flames with my life jacket.

Without warning, the plane started doing tricks—wingovers and loops. I knew the ol' ship wasn't built for such

shenanigans, and expected it to fall apart any minute. I jumped to my feet and tried to hang on and fight the flames at the same time.

With one hand, I gripped the side of the plane, and with the other I held my life jacket over my head. I tried to brace myself with my feet, but the fire was burning like hell all over the place.

Suddenly we nosed over and went into a dive. I expected that plane to crash in a thousand pieces, and find myself shaking hands with Davy Jones, but one of the most unexpected things happened.

ABOUT 30 feet above the water, we leveled off just as if a pilot were preparing to belly-land. It was amazing. We didn't wobble or slide in the least—just dropped foot by foot until we touched the water, then skimmed along to a stop. Landing was perfect.

The splash snapped me out of my smoky grogginess. A minute before I had been expecting to die. Now I suddenly realized that I was in the ocean and still alive—furthermore, I had to get out of that plane, but quick. I climbed out of the cockpit, and fell into the water. Then I inflated my life jacket, which to my amazement had not been damaged by the flames. The plane sank immediately.

Four hours later, I was picked up by a rescue boat and carried ashore. I had a lot of bruises and burns around my legs and arms, so they put me in a hospital. It wasn't long though before I was in good shape and out flying again.



# TECHNICALLY SPEAKING

## Engine Cradle Used By Marines

MCAS MOJAVE—An engine cradle manufactured at this station simplifies preparation of an engine for installation. The engine cradle is very handy for building up a quick change unit. As designed, it is of simple construction using non-critical materials. Squadrons wishing to use a similar cradle can manufacture it locally.

► *BuAer Comment*—The Bureau is interested in a similar design which will incorporate adapters to handle many models of engines and engine units. One such cra-

gether. Compression wrench holds the blade halves firmly. No slippage is encountered.

[DESIGNED BY DAVID HENRIQUES, AGMM(T)]

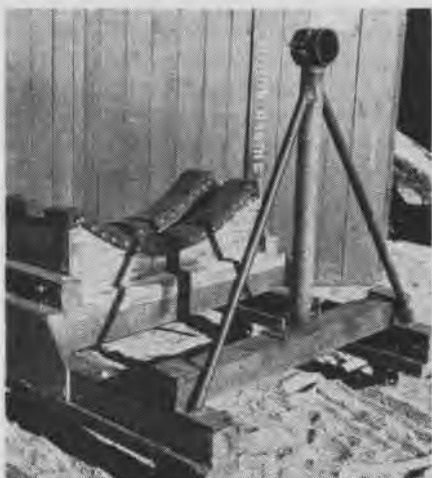
► *BuAer Comment*—The Curtiss wrench is believed to be entirely satisfactory, however this appears to be another good way to do the job. Judging from the apparent distortion of the wrench in the photograph, too much pressure is being used. There is no necessity for compression merely to hold split gears in position. It is recommended that a thumbscrew be used rather than the bar shown. Tool appears heavy and perhaps a little awkward to handle.

ments and assemblies. Sections are:

1. Automatic pilots, including accessories such as servos, amplifiers, valves, filters, etc.
2. Flight instruments, including accelerometers, altimeters, airspeed indicators, compasses and gyro instruments.
3. Navigation instruments, including drift sights, sextants, computers, plotting devices, binoculars, clocks and watches.
4. Power plant instruments, including tachometer, thermometers and pressure gauges.
5. Position indicators and quantity gauges.
6. Test and calibration equipment.
7. Cross reference tables.

## Tool Aids Cylinder Fin Marking

NAS PENSACOLA—A template that saves counting time and reduces pos-



HANDY ENGINE CRADLE IS EASY TO BUILD

dle is under procurement for the BTD-1 airplane and presently undergoing service tests.

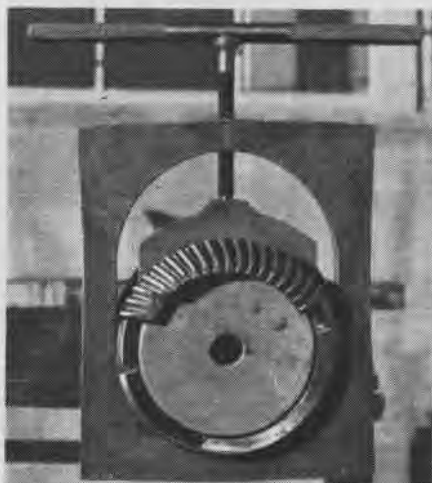
## Wrench Evens Torque Distribution

CASU 33—An efficient compression wrench for Curtiss electric selective pitch propellers, designed by a chief aviation machinist mate, is used at this activity.

Use of the wrench saves life of bearing assemblies. The tool is efficient in that the torque is evenly distributed and the blade halves are held closer together allowing bearings to slide in place with very little pounding.

Life of the compression wrench is longer than that of the Curtiss electric blade cuff assembly clamp, part No. ST 1010. Labor involved in changing of clamp belt due to wear and breakage is eliminated.

When installing compression wrench, a web belt or leather strap is placed around the blade halves to protect them from possible scars or scratches. The tool then is placed and operator turns "T" handle and compresses the halves



NO SLIPPAGE OF HALVES IS ENCOUNTERED

## Class 88 Instrument Catalogue

The first edition, January, 1945, of the *Aviation Supply Office Class 88 Instrument Catalogue* now is available. It includes class 88 aircraft instruments in stock or under procurement at the present time.

Purpose of the catalogue is positive identification of class 88 instruments by means of illustration, description, part numbers, drawing numbers and stock numbers. Every attempt has been made to furnish pertinent, accurate and up-to-date information regarding instru-



TEMPLATE SAVES CLAMP ASSEMBLY TIME

sibility of human error in accurately locating the proper cylinder fin for assembling a baffle plate clamp has been designed by an enlisted man.

The tool was developed under the Navy's beneficial suggestion program. It consists of a template that is held against the shoulder of cylinder. The correct fin is marked with chalk through the opening provided.

[DESIGNED BY A. C. GULLEDGE, AMM (MIN.)]

## Article Lists Overheating Causes

Numerous reports have been received of failures due to overheating of Type 800-1 Eclipse motor-alternators installed in SB2C aircraft. It has been found that much of the difficulty is caused by tight brushes or inferior ball bearings. In an article titled, "Preventing Failure of Type 800-1 Eclipse Motor-Alternators" in *Airborne Electrical Maintenance Notes*, NAVAER 08-1-507, issue No. 7, pages 1-17 and 1-18, these causes are discussed and measures recommended.

It is suggested that activities having difficulty with the 800-1 motor-alternators read and follow recommendations.

### For More Information

on the subject of maintenance, readers should consult *NavAer Maintenance*, new restricted magazine published monthly by BuAer and distributed to personnel of the naval air organization in maintenance.



# SCREEN NEWS

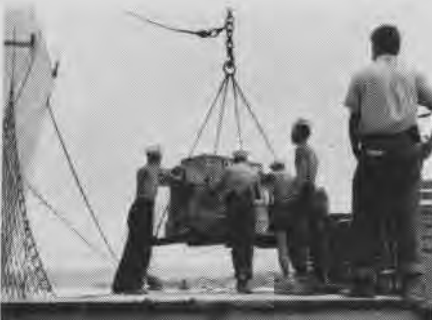
**Beating Interference.** Aerial heckling of the radio waves by the enemy, known as jamming, not only physically interferes with sending, but also wages psychological warfare on the nervous system of the radio operator. How to combat both types of attack is discussed in:

MA-4484 *Defense Against Radio Jamming* (Restricted, 20 min.)

The mental attack is dramatized by drawing a parallel between an American soldier who is killed when Jap heckling draws him out of his foxhole, and a radio operator whose nerves are tied into square reefs by enemy jamming. The film highlights the tremendous responsibility of the operator and shows how he protects the lives of others by staying on the job, combatting nuisance jamming with various tricks in transmission and reception, getting the message through and reporting immediately any jamming of his radio reception.

**Supply Paces the Attack.** Offensive warfare stands still until the battle of supply is won. No attack is hurled before logistics promises to pass the ammunition. No plan of combat can be sprung unless the right materials are in the right places at the right time.

For the information and encouragement



**SUPPLY MEETS TOUGH LOGISTIC PROBLEM**

of logistics personnel in naval aviation, a series of motion pictures is being produced, demonstrating what it takes to supply successfully, history's greatest waterborne force. The latest film released is the spearhead of the series. It gives a panoramic view:

MN-2294a *Logistics—The Advanced Base* (Restricted, 32 min.)

The film shows how each advanced base provides a jump-off for the next attack and a haven for supply and repair on the water roads to Tokyo. Each stage and operation in the Pacificward flow of material is described, from receipt of the stuff from the manufacturer through cataloging, inspection, testing, repairing, preserving, packaging, marking, shipping, to unloading and use at advanced bases.

Special attention is given to the importance of the jobs of everyone connected with supply activities—planners, business machine operators, factory workers, loaders, railroad men, warehouse men, stevedores and so on through the masters of

hundreds of assorted tasks and small jobs.

At the advanced base, the supply officer is deluged with the myriad needs of human beings newly arrived, for all practical purposes of war, on a desert island.

Beset by snipers, weather, mosquitoes, mud, and combat conditions, the advanced base supply officer must get supplies off the beach into dispersal areas and speedily into use—trucks, lathes, tents, bunks, cranes, bulldozers, pumps, hammers, everything from a 24-thread, one-inch screw to a 600-bed hospital.

Everyone working to keep the gigantic faucets of supply running will see in this film how each job dovetails into the overall pattern of multi-thousand-mile servicing and will understand how vital it is that no battle be lost and no attack delayed for want of a nail—or anything else under the sun!

## Other Films Being Shipped:

- MN-4563 *Operation of AN/AP-15 Airborne Radar—Search Pattern* (Confidential, 20 min.)
- MN-1006f *Fighter Direction Series—The Radarman* (Confidential, 32 min.)
- MN-1006k *Fighter Direction Series—Reconnaissance* (Confidential, 8 min.)
- MN-1006L *Fighter Direction Series—Interception in Low Visibility* (Confidential, 11½ min.)
- SN-2750a *YJ Radar Beacon Maintenance—Alignment and Adjustment—Test Equipment* (Confidential, 73 frames)
- SN-2750b *YJ Radar Beacon Maintenance—Alignment and Adjustment—Aligning "A" Band, Part 1* (Confidential, 60 frames)
- SN-2750c *YJ Radar Beacon Maintenance—Alignment and Adjustment—Aligning "A" Band, Part 2* (Confidential, 71 frames)
- SN-2750d *YJ Radar Beacon Maintenance—Alignment and Adjustment—Aligning "B" Band, Part 1* (Confidential, 63 frames)
- SN-2750e *YJ Radar Beacon Maintenance—Alignment and Adjustment—Aligning "B" Band, Part 2* (Confidential, 46 frames)
- SN-2750f *YJ Radar Beacon Maintenance—Alignment and Adjustment—Miscellaneous Checks* (Confidential, 52 frames)
- SN-2750g *YJ Radar Beacon Maintenance—Alignment and Adjustment—Preventive Maintenance* (Confidential, 56 frames)
- MN-1511r *Care of the Sick and Injured by Hospital Corpsmen—The Neuropsychiatric Patient* (Confidential, 27 min.)

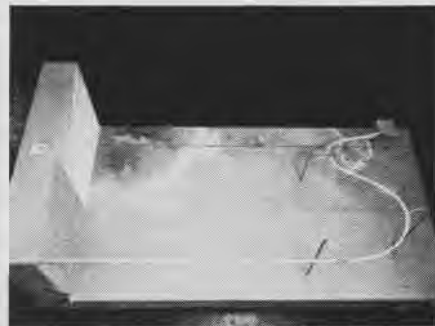
**Where to Get 'Em.** Detailed information on films, past and present, may be obtained at the following Central and Sub-Aviation Film Libraries:

- |                           |                      |
|---------------------------|----------------------|
| CASU 2, 4, 23, 24, 31, 32 | NATEC Lakehurst      |
| CASU ComDet, Port Hueneme | Headrons 2, 4, 7, 10 |
| ComAirPac                 | 12, 16 Det., 17      |
| FAW 15                    | NAB Seattle          |
| NAC Navy #140             | " Navy #939          |
| NAC Navy #3205            | NATB Pensacola       |
| NAOTC Jacksonville        | NATB Corpus Christi  |
| NAS Alameda               | Navy #3233           |
| " Patuxent                | TAL Navy #116        |
| " Atlanta                 | 4th MAW              |
| " Clinton                 | MarFas WestCoast     |
| " Kodiak                  | MCAD Miramar         |
| " Moffett                 | MCAF Newport         |
| " New York                | MCAS Cherry Point    |
| " Norfolk                 | " Eagle Mt. Lake     |
| " Quonset                 | " El Centro          |
| " San Diego               | " El Toro            |
| " Navy #115               | " Mojave             |
| " Navy #117               | " Navy #61           |
| " Navy #720               | " Parris Island      |
|                           | " Santa Barbara      |

## Device Indicates Path of Attack

The Attack Path Indicator (3-A-29), developed by BUAE's Special Devices Division, aids fighter pilots to time their runs so that arrival at desired fighting angle and range is simultaneous.

The device illustrates changing relationship between flight paths of a bomber and an attacking fighter plane. It



**UNIT AIDS FIGHTER PILOTS AND GUNNERS**

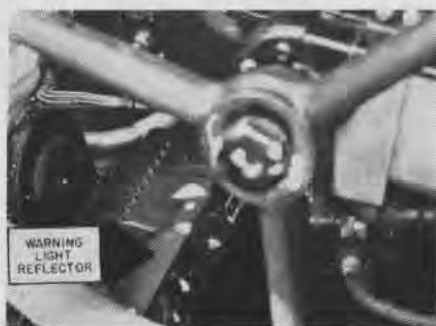
shows methods of making three fundamental approaches—overhead, high side and low side. It also may be used to teach free gunners to recognize positions at which attacking planes can bring their guns to bear and, thus, the precise moment when it is imperative to "kill."

By cranking a handle, the operator makes the fighter model move along a simulated attack path, which assumes proper attitude of climb, dive, turn and bank. Correct relationship with speed and position of the bomber is maintained constantly. Upon request, overhead, high side and low side approaches will be shipped together.

The prototype of this trainer has been sent to the Aviation Gunnery Training Standardization Unit for evaluation and recommendations to the Chief of Naval Operations, Aviation Training Division.

## PV-1 Warning Light Reflector

Factory "A" of Lockheed Aircraft Corporation, Burbank, has installed a small metal reflector on its resident PV-1



**BUAER APPROVES LOCKHEED MODIFICATION**

to enable the co-pilot to see the fuel system warning lights more easily.

At present these warning lights frequently are obstructed by the control column and effectiveness is reduced.

# INTEGRATED AERONAUTIC PROGRAM

## Teamwork Solves Repair Problems

A BASIC objective of the Integrated Aeronautic Program is use of new planes in combat and their retirement at a stated age to non-combat duty ashore. Teamwork among divisions and departments responsible for operating the I-A-P is required to achieve this overall objective.

BUAER Maintenance some months ago developed a repair and overhaul practice that has reduced greatly its problems and simplified its production schedule. This is the policy of having various A&R shops set up as specialists in the repair and overhaul of certain types of airframes and engines.

As an example, NAS NORFOLK and NAS SAN DIEGO are the only continental stations that make major repairs to hydromatic and electric propellers. On the other hand, all major repairs to counterweight or trainer-type propellers are done only at NAS PENSACOLA and NAS CORPUS CHRISTI.

## Overhaul Work Is Being Specialized

No engine model now is overhauled at more than two points within the continental limits. No single station needs to be expert in the overhaul of both Wright and Pratt & Whitney engines.

This specialization has proved effective in speeding up flow of overhauled parts and in simplifying necessary knowledge of overhaul personnel at any one naval station.

As an outgrowth of the Integrated Aeronautic Program, BUAER now is

expanding the principle of specialization to include, insofar as practical, plane accessories as well as airframes and engines. The program now being affected will designate certain stations to do all overhaul work on certain types of accessories. In AVCIRLTR 127-44, dated 22 December 1944, Chief of BUAER directed that:

Auxiliary power units and aircraft heaters requiring either major or minor overhaul or re-work to the extent of partial disassembly in overhaul shops shall be processed only by a designated overhaul activity.

## Three Stations Handle Superchargers

This circular letter then designated the activities by indicating which particular type of auxiliary power units or aircraft heaters should be overhauled at each activity. Power Unit no. 540-3-A will be overhauled only at NORFOLK, PENSACOLA or MOFFETT FIELD. All ground and airborne heaters will be overhauled only at QUONSET, NORFOLK, HUTCHINSON, SAN DIEGO or SEATTLE.

AVCIRLTR 125-40 directed that all exhaust-gas-driven superchargers should be overhauled at QUONSET, PENSACOLA or SAN DIEGO. These are illustrations of the many other circular letters to be issued. In time, all accessories that can be put practicably into this specialization will be so designated.

ONCE overhauled at its special point, an accessory goes into the supply system ready for issue. Having correct and timely records of the overhaul work,

Aviation Supply Office acts as a clearing house. Any accessories not capable of overhaul already have been eliminated by the Identification and Screening Unit set up at each station to decide which parts can go into Class 265 (can be repaired and made ready for re-issue) and which can not.

## Program Has Five Major Advantages

From the station that forwards the part to be repaired through the I&S Unit, through the A&R shop and on to ASO PHILADELPHIA, the main theme which insures success of the entire plan is teamwork.

Advantages of the new plan are:

FIRST: Parts for a certain type of plane can be concentrated at two or three planes instead of being scattered thinly everywhere.

SECOND: Overhaul personnel at any one station become expert in repair of a limited range of accessories and need not know everything about all the parts of every plane.

THIRD: Output of repaired parts is greatly accelerated.

FOURTH: Supply problems are materially simplified.

FIFTH: Distribution of the finished product is made less difficult.

Through teamwork and through cooperation of all personnel entering the overall picture of naval aviation, each of these goals will be reached.

**CO's Please Note**—INFORMATION of interest to all in the aeronautic organization is contained in the confidential Aviation Circular Letter No. 11-45 dated 7 Feb. 1945 (SUBJECT: Integrated Aeronautic Program). Commanding officers are requested to give full circulation compatible with security.

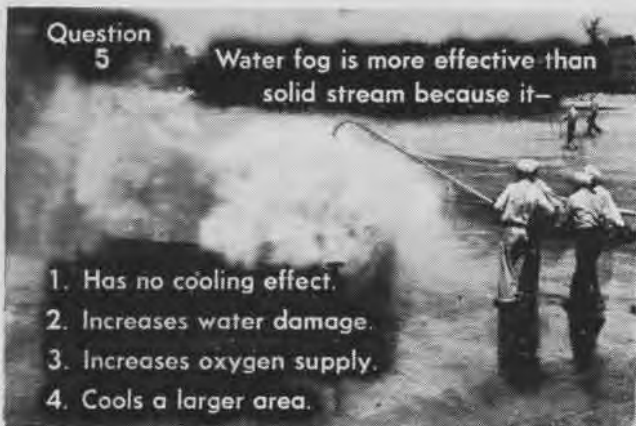
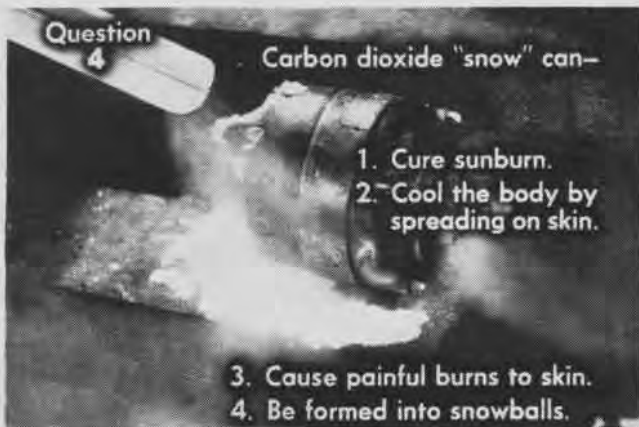
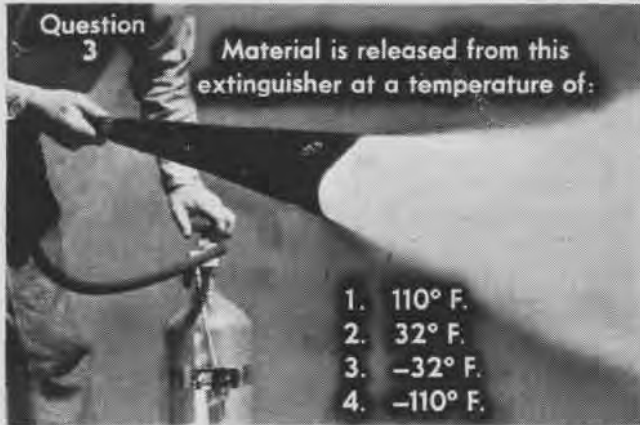
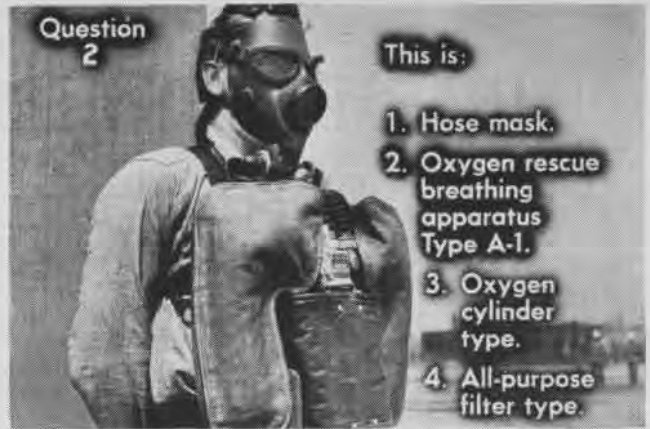
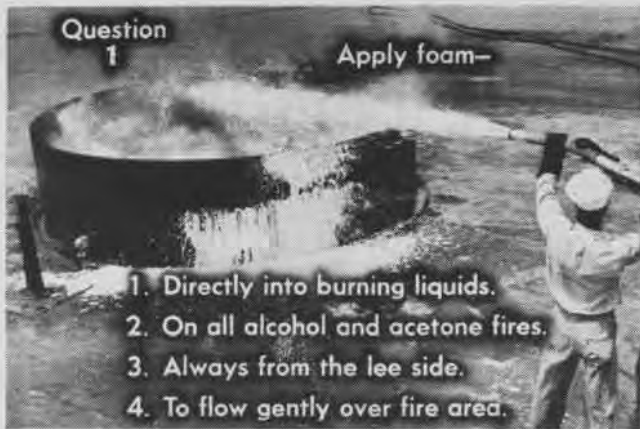


Propellor repair is being specialized, also. Pensacola and Corpus Christi both will repair counterweight or trainer-type propellers



New ASO-Maintenance program concentrates overhaul at no more than two continental stations. Each is expert on one particular type





**PIX QUIZ** WHAT DO YOU KNOW ABOUT **FIGHTING FIRES?**

SOME of the worst fire disasters in our nation's history have snuffed out hundreds of lives in just a few minutes. The 1944 "big top" fire in Hartford is an outstanding example. The Coconut Grove night club fire in Boston in 1942 is another. In these two cases the worst was over in a matter of minutes. Know what to do in case of fire and be able to do it quickly! Try these fire fighting questions, then see the answers on page 40.

[QUESTIONS FROM BUAEER SPECIAL DEVICES VISUAL QUIZZER FILM No. 69, FIGHT THAT FIRE]

*Write your answers here*

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



### Filter Preserves Dark Adaption

Pen-type flashlights, designed to give either red or white light at the flick of a finger, have been procured for use by naval personnel. They are expected to be of special value for aircraft use because of a red filter which preserves dark adaptation. The flashlight can either be clipped to a pocket or suspended around the neck by means of a cord.

Penlights are equipped with standard TL-3 lamps, designated as AN3134-243. Two batteries, type T2AA, are required for each light. The complete assembly,



**PEN-TYPE FLASHLIGHT IS STOCKED BY ASO**

including cord, is available under ASO Stock No. R17-F-13475. They have been stocked at the following supply stations:

Quantity	Location
5,000	NASD NORFOLK
38,800	ASA OAKLAND
19,000	NASD PHILADELPHIA
2,000	NAS SEATTLE
5,500	MCAS CHERRY POINT
2,500	NAS CORPUS CHRISTI
1,000	NAS TRINIDAD
1,000	NAS ALAMEDA
7,000	NAS SAN DIEGO
16,000	NAS PEARL HARBOR
20,000	NAS NORFOLK
2,000	NAS JACKSONVILLE
1,000	NAS MIAMI
2,700	NAS QUONSET POINT

Replacement parts also are available at the customary supply bases under the following ASO stock numbers: batteries, R17-B-6910; lamps, R17-L-6301; lanyards, R17-L-7840.

It is recommended that pen-type flashlights be obtained and used by naval pilots and other flight personnel.

### Grease Gun Applies Zinc Coating

NAS CORPUS CHRISTI—An aircraft mechanic at this station has submitted an improved method under the Navy employees' suggestion program for distributing zinc chromate paste on attaching angles of all aircraft leading and trailing edges.

Previously, the method used was entirely manual, the operator applying paste with a Dural or wooden paddle or even his fingers, smearing the paste along the attaching surfaces. This took considerable time, and resulted in the excess paste having to be cleaned off some 400' of seam.

To speed up the job, the mechanic introduced a gun to apply the paste. He modified a model 1016 Lincoln grease gun, drilling out the feed end to 3/4" diameter and tapping to accommodate a No. 4 Parker fitting. In use, the gun is filled with paste which it distributes



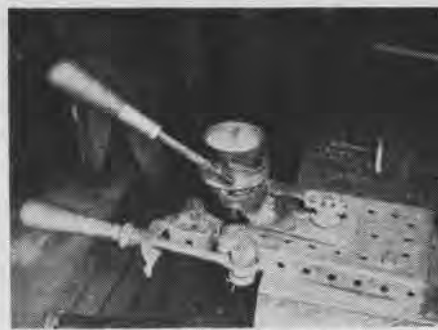
**GUN PREVENTS WASTING OF ZINC CHROMATE**

over the surface. Flow is controlled by the shut-off valve. The original plunger and spring in the gun keeps a constant feed on the valve. About three hours work and two pounds of material is saved on each plane.

[DESIGNED BY EDWARD GRAY]

### New Tool Removes Used Packing

NAS PENSACOLA—A tool that speeds the removal of old packing from intake



**CAN-OPENER ACTION PROVIDES LEVERAGE**

pipe nuts was designed at this station by a civilian machinist under the Navy's employee suggestion program.

The new tool is designed so that it cuts through packing in the narrow space between nut and pipe. The tool is worked around the edge of nut with a rocking motion. Old packing then is easily forced out by the leverage action.

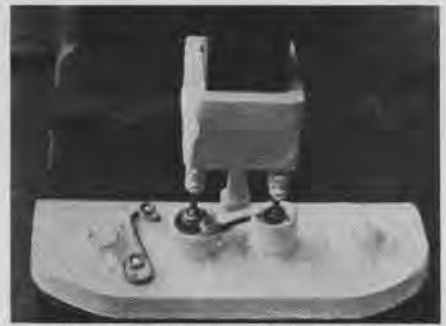
Use of the tool saves three hours per day. The suggested tool is safer and easier to use than ice picks or screwdrivers formerly used for the packing removal job.

[DESIGNED BY A. C. GULLEDGE]

### Punch and Die Tool Lowers Costs

NAS CORPUS CHRISTI—A punch and die designed for use on a hand-operated arbor press has materially speeded removal of rivets and straightening of used dzus fasteners. Suggested by a civilian employee under the Navy employees' suggestion program, this device has converted a slow and costly hand method to a fast and economical mechanical operation.

The spring fastener is placed in the die and the two end punches remove rivets as the center punch straightens the spring to its original shape in one



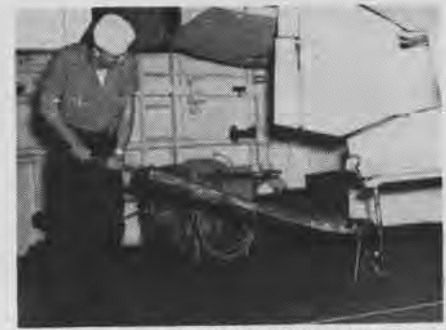
**PUNCH STRAIGHTENS SPRING FASTENER**

stroke of the press. The tool is simple to construct and can be modified to suit almost any arbor press available.

[DESIGNED BY R. B. RASH]

### Seaman Designs TBF Tail Jack

USS BOGUE—A tail jack designed for use with TBF type airplanes was developed aboard this carrier by an enlisted man. The device enables one man to lift the tail with ease. Formerly



**SINGLE MAN OPERATES THIS TAIL JACK**

it required from six to eight men to do the same job manually in order to lock the tail wheel.

The jack handle is made from 1" m pipe reinforced with 3/4" plate web. It is 6' long from the fulcrum with a 7" lifting arm from fulcrum to lifting member. The lifting member is 1" m pipe 11 1/2" long with a 3/4" plate pad at top. Standpipe member is 1" solid stock 19 1/2" long. The base is 3/4" plate and the bracking members are 3/4" and 1" m pipe. Elevation travel of this jack is from 20" in down position to 29" up.

[DESIGNED BY CHARLES RUSH ST. JOHNS, S1C]



**A & R Shops**

LET NA NEWS  
HEAR FROM YOU!



## Marker Cuts Vibration Trouble

NAS JACKSONVILLE — A tachometer marker to prevent protracted operation of the PBY Pratt & Whitney R-1830-82 engine within its critical vibration range (2450 to 2650 rpm) has been developed in the maintenance department of Operational Training Unit VPB2-1.

The marker, which consists of a red-and-white gummed label affixed to dial of tachometer, has virtually stopped breakage of accessories studs and oil leakage traceable to excessive engine vibration.

Prior to development of the marker, many other methods were tried in an effort to dissuade pilots from operating R-1830-90 engines within the critical range. Tags were tied to the control



SIMPLE DEVICE AIDS TRAINING SQUADRON

yoke, warning signs were put on the cockpit instrument panel and pilots were lectured, but results still were unsatisfactory, with many uncompleted training flights resulting from excessive vibration. The situation was especially difficult because the P&W R-1830-92 engine, also used on VPB2-1 planes, has no critical vibration range.

The new marker may be easily attached to or detached from a tachometer, depending on the type of engine it serves.

[DESIGNED BY LT. EDWARD M. SHANNON, USNR]

► **BuAer Comment**—Red fluorescent range markers, which may be suitable for marking the critical vibration range, are available at ASO, NASD, Philadelphia. The markers, stock No. 288-M-80, are strips 2" long and 1/16" wide and are packaged 12

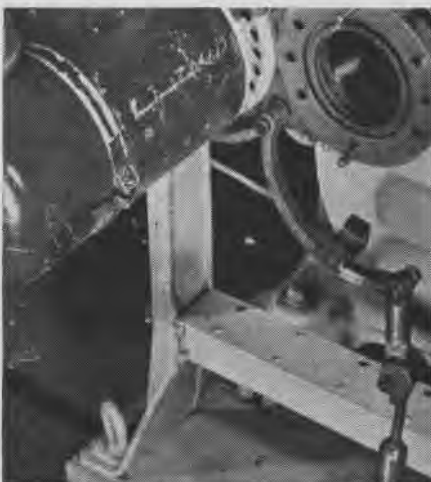
per envelope. They are decals and may be cut to any desired length and applied directly on the cover glass.

## Clamp Holds Generator for Test

NAS SAN DIEGO—A clamp designed by an electrician at this activity makes it possible to secure generators to a test-meter without use of threaded studs and nuts. The clamp, developed under the Navy's beneficial suggestion program, has resulted in substantial saving of time and labor.

Formerly it was necessary for an operator to hold the 45-pound generator with one hand while using a wrench for tightening nuts with the other. Complete plans for construction of the clamp are available from this activity.

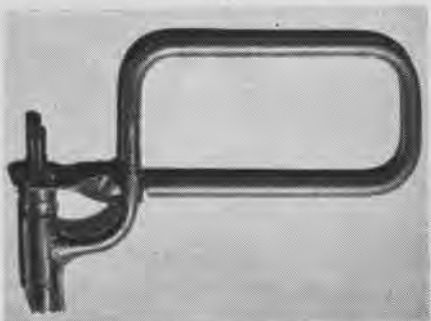
[DESIGNED BY L. A. WOODS]



OPERATOR NO LONGER HOLDS GENERATOR

## New Tool Removes Dzus Grommets

NAS SAN DIEGO—Adoption of a tool for removing dzus grommets has saved



TOOL SPEEDS DZUS GROMMET REMOVAL

half the time previously required for this operation. The tool, designed by a

civilian aviation metalsmith at this station under the beneficial suggestion program, removes dzus grommets without damaging the surface.

A special feature incorporated consists of a sleeve provided with four teeth cut in the opposite end to that of teeth on the cutter. To remove a grommet, pressure is applied through the tool's handle so that teeth on the sleeve effectively grip the grommet.

In use, the shank of cutting tool is chucked in a small electric or air drill. The tooth holder is placed directly over the grommet to be removed. Firm pressure is applied with one hand, drill is started with the other. By using slight pressure against the grommet, it can be quickly drilled out and removed.

[DESIGNED BY GUY N. MASTIN]



JIG HOLDS BRAKE LINING DURING DRILLING

## Jig Aids Brake Lining Operation

NAS CORPUS CHRISTI—A mechanic at this station recently introduced a jig for holding brake lining while drilling, countersinking and riveting operations are performed. The device, developed under the Navy employees' suggestion program, makes possible a 75 percent reduction in time required for operation. Proper alignment of shoe and lining is assured by use of the jig; an inexperienced person now may perform this operation.

Formerly the brake shoes were held by use of C clamps. The clamps did not provide an overall bearing, and there was no assurance that brake shoe and lining would be properly aligned.


[DESIGNED BY JAMES S. RAMSEY]

## CARRIER NIGHT WORK

Annals of naval aviation are full of stories telling of the heroism of Navy aircrewmembers in battle, bringing down Jap planes with their .30 or .50 cal. guns. But only a small part of an aircrewman's waking hours are spent in the rear cockpit or waist of a

Navy plane. He is a technician whose other job is the trade in which he is trained—radioman, ordnanceman or machinist's mate. This is the less-publicized side, the grimmer side of being an aircrewman, but it takes a big part of his time. He is able to help maintain the plane he flies in on missions against the enemy.

In his spare time he can learn other

types of planes, such as the fighter plane on the opposite page on which  squadron mechanics are working. Down in the bowels of a carrier these men work at night to keep it in fighting trim by adjusting its wing-gun wires or aileron cables. There can be no prima donnas on a carrier; all men must carry out their assigned jobs.





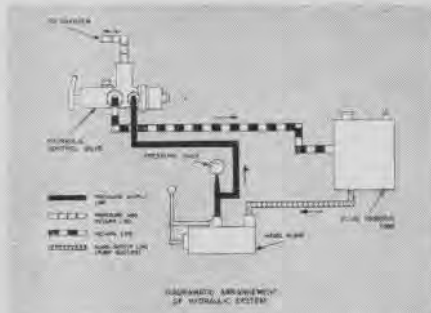
# AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

## Training Device for 20mm Aircraft Gun

A training device to familiarize pilots and ground crew personnel with the hydraulic charging system of the 20mm aircraft gun is being used successfully by a number of activities. In particular, the gun shows how to "charge" and "safety." Equipment used, consisting of parts of a 20mm Aircraft Gun AN-M2 and the hydraulic charger system, need not conform to original manufacturer's specification as long as they function properly. Where possible, equipment unsuitable for further use in aircraft should be used. If such equipment is not available, maintenance spares may be employed.

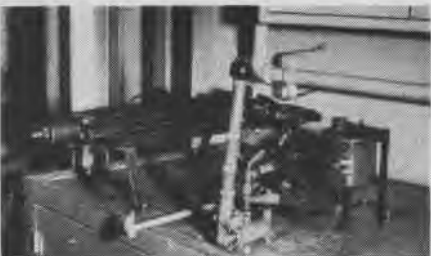
A section of the charger housing is re-



PRESSURE COMES FROM A HYDRAULIC PUMP

moved for demonstration purposes. If space for display of gear is limited, a worn barrel, cut off as desired, may be used.

In operation, belted dummy rounds of ammunition are fed into the feed mechanism in the usual manner and a hydraulic hand pump, generating a pressure of about 650 psi, moves the bolt fully rearward in the gun when control valves is set on SAFE. When control valve knob pops up, turn it clock-wise against the stop and delay an



SHOWS HOW TO "CHARGE" AND "SAFETY"

instant to allow hydraulic fluid to be pushed out of the charger cylinder assembly.

Then when the trigger switch is pressed, bolt goes forward smartly, strips the first round from the feed mouth of feed mechanism and chambers the round. By adjusting tension on the driving spring of gun, a malfunction may be simulated. If the gun is fired before the hydraulic fluid is pushed out of charger cylinder assembly, the round may or may not be properly stripped

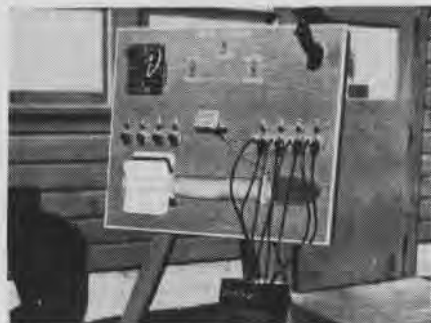
from the feed mouth and then chambered.

A more complete description of this training aid and material used is available on request to BuORD, Section MN6a.

## New Panel Tests Rocket Firing System

The portable demonstration panel shown here simplifies checking out pilots and ordnancemen on rocket firing circuits and rocket safety procedure. Incorporating the complete firing system, the panel can be manufactured readily by anyone familiar with rocket-firing systems. It includes a pickle switch, cockpit switches, distributor box arming solenoids, pigtail receptacles and lights representing rocket launches.

[See February 1, 1945 issue of NANews.]



PANEL INCORPORATES A COMPLETE SYSTEM

## Test Unit Simulates Bomb Load on Rack

These pictures illustrate a convenient means of simulating bomb loads on racks or shackles while ground-checking aircraft bomb release systems. The test unit is latched to a bomb rack or shackle (shown), and 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.



JACKSCREW COMPRESSES SPRING ON UNIT

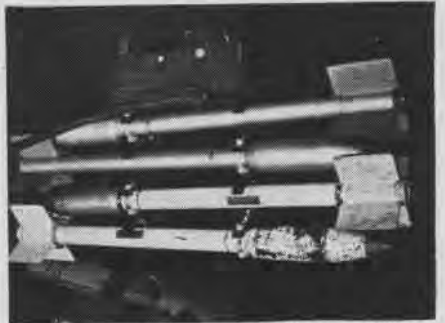


SHACKLE BOMB LOAD IS TESTED IN PLANE

## BuOrd Will Procure Bomb Skid Adapter

The bomb skid adapter developed by ComFair West Coast has been designated Mk 3 Mod 0 and is being procured by BuORD for distribution to activities concerned. Designed as a carrier and assembly stand, the adapter is capable of carrying eight 5" or 3".5 aircraft rockets (3".5 motors), or six 5" HVAR's (5".0 motors). The adapter attaches to bomb skid Mk 1 Mod 1 by means of four toggle pins. Rockets are supported by curved metal brackets that may be positioned to suit type of rocket to be used. One end of each rocket is secured by the lug band which extends through a slot in the support bracket.

With the lug band securing the rocket against turning, each adapter becomes an assembly bench enabling one ordnanceman to prepare six or eight rockets on the hangar deck or in the bomb handling space and have them ready to be wheeled directly to the plane that is to be loaded.



BOMB SKID ADAPTER CARRIES 8 ROCKETS

While the rocket adapter is capable of carrying either the 5".0 HVAR's, or the 5".0 or 3".5 aircraft rockets, it is necessary to change location and number of carrying straps used when it is desired to change from rockets of one size motor to rockets of the other size motor. The bomb skid adapter, Mk 2 Mod 0, now being distributed, is specifically designed for carrying rockets with 3".25 motors only on the Mk 1 Mod 1 bomb skid, according to BuORD.



CURVED METAL BRACKETS HOLD ROCKETS

## Correction In Service Change

It has come to the attention of BUAER that errors in dimensioning appear in Figure 5 of model SBD-5 Airplane Service Change No. 46. Dimension, 5½, at the top of figure should be 2%, radius of curvature dimension of upper tube 1¾ should be 1¾ and dimension 15/16 at upper end of ¾ o.d. tube should be 15/32. It is recommended all copies be corrected in ink. A formal revision of this change is not contemplated.

## The Word on Oxygen Regulators

Standard Navy oxygen breathing equipment is of the diluter-demand type. The air-valve lever on the No. 2851-A10 regulator is adjustable to two positions marked ON and OFF. On the new model regulator, No. 2858-A1, these two positions are marked NORMAL OXY-



2858-A1 REGULATOR HAS NEW MARKINGS

GEN (same as ON) and 100% OXYGEN (same as OFF). With the air-valve lever set to NORMAL OXYGEN (ON), the regulator delivers proper mixture of oxygen and air up to approximately 30,000 feet. Beyond that altitude it delivers 100% oxygen automatically, without moving the lever.

On the other hand, with the air valve set 100% OXYGEN (OFF) the regulator delivers 100% oxygen at all altitudes. The

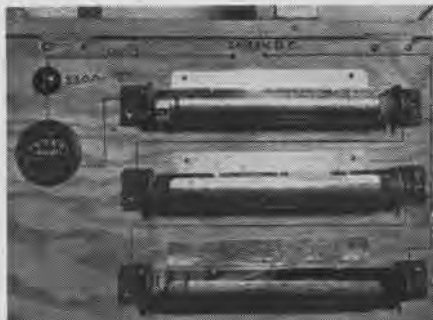
100% OXYGEN (OFF) setting is extremely wasteful of oxygen and greatly reduces the endurance of the oxygen supply, as may be noted by reference to the graph attached to T.O. 18-44. This setting should be used only under abnormal conditions such as when presence of carbon monoxide is suspected.

Under all normal flight conditions DAY and NIGHT, the air valve lever on the diluter demand oxygen system should be set to NORMAL OXYGEN (ON).

## CASU 27 Reclaims Flashlight Cells

CASU 27 reports successful reclamation of flashlight cells, following procedure recommended in *Airborne Electrical Maintenance Notes* (General Section, pp I-9 and I-10).

A 24-volt system powered by an AN aircraft battery in the CASU's radio-radar shop was used. Flashlight cells

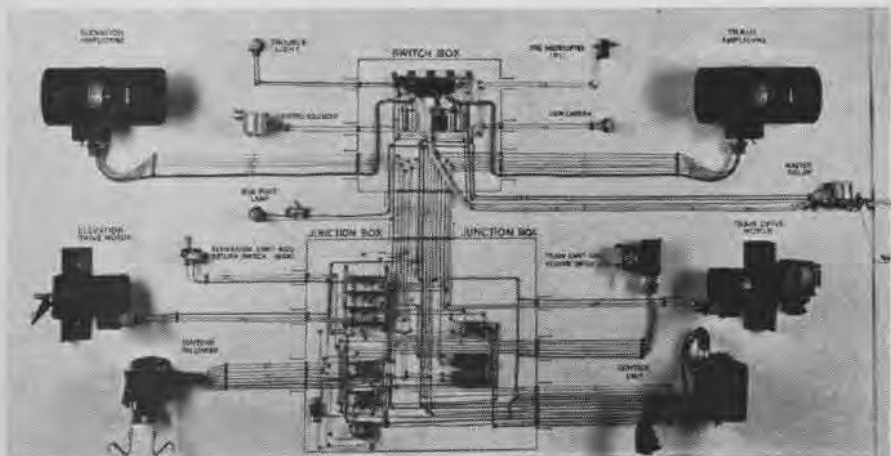


CASU RECHARGES WORN OUT BATTERIES

are connected in series and are "charged" at 60 milliamperes for 24 hour periods.

Early results indicate that cells thus rejuvenated will operate a standard Navy two-cell flashlight from two to five hours continuously. So far, flashlight cells have been reactivated four times.

Activities which do not now receive *Airborne Electrical Maintenance Notes* may order the publication, designated NAVAER 08-5-107, directly from BUAER.



THIS TBF turret maintenance demonstration board developed at NAS SEATTLE has proved valuable by permitting students to see the operation of and relation between various electrical units of the turret. Device is similar to turret trainers developed by BUAER's Special Devices Division. All the units, made from salvaged materials, operate like those of the actual turret. [Developed by Lt. (jg) R. F. Wagle and J. M. Culpepper, Sp(G)1c]

## 87th & ANTHONY

"Let's cutaway the outside so that the students can really see the moving parts—." And so began the assemblage of scrap and discarded parts to make up what is now a masterpiece insofar as a teaching aid is concerned—a cutaway Pratt & Whitney R-2800 engine located in the engine course at NATTC, 87th at Anthony, Chicago.

With the aid of shop instructors and supervisors, John T. Bell, AMM1/c accumulated enough old engine parts to start cutting and assembling. After four months of "spare time" filing and sawing, Bell was ready to "turn 'er up" with the aid of a 2 H.P. electric motor driving through a J.&H. starter at about 50 R.P.M.

Exposed to full view are the creeping



CUTAWAY ENGINE SHOWS INTERNAL WORKS

deslugger-type clutches driving the auxiliary supercharger; the main impeller with its fuel discharge nozzle in position to show the injection of fuel into the fuel slinger ring; the crankshaft exposed to show the operation of the two-piece, puck-type dynamic dampener; the secondary counter-balances offsetting the vibrations of the master rods; the valve operating gear and mechanism on a cutaway cylinder; the nose section showing the nose-mounted dual magneto and distributors, and housing of the reduction gears which reduce speed of the shaft to ½ crankshaft speed.

All minute details are brought out from cutting away of the compensating oil relief valve to the exploded view of the supercharger selector valve. The meshing gears with its positive driving action displays the power that gives out 2000 H.P. developed by the Pratt & Whitney R-2800. The engine is used on such popular aircraft as the F6F, F4U, JM-1, PV, etc.

## Device Saves Time On Instrument Work

A device that facilitates soldering of vanes on the pendulous vane assembly of an artificial horizon indicator has been designed and constructed by an aviation machinist mate (instruments) in the advanced Instrument school.

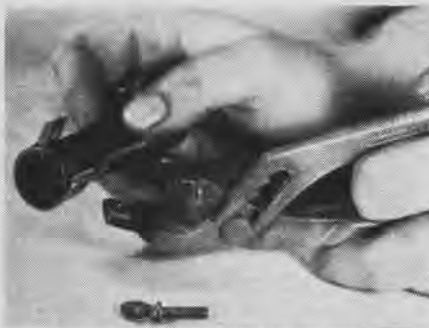
With this device, vanes now can be held securely in position and properly spaced correct to the thousandth of an inch. This fixture is one of seven or eight devices developed by the same inventor that are used daily in the Gyron Shop school. Write center for the specifications.



### Pliers Aid Hose Clamp Installation

NAS SAN DIEGO—Use of commercial type water pump pliers, modified in design by a civilian employee through the Navy's beneficial suggestion program, materially facilitates installation of open type hose clamps.

The modified pliers contain three additional parts, plate holder, forked plate and retainer spring. Holder plate and forked plate are welded to jaws of the water pump pliers. In operation hose clamp nut is placed in holder plate,



RETAINING SPRING CLAMPS NUT SECURELY

nesting in a shallow depression, and held securely in place by a retainer spring. Pliers are adjusted to fit diameter of hose clamp. After clamp is installed on hose, jaws of the pliers are placed over the two hose clamp wings. The user squeezes pliers sufficiently to allow clamp screw to enter threads.

Retaining spring on the pliers holds the hose clamp nut securely in place so that pliers can be used in any position without losing the nut.

(DESIGNED BY H. A. SEYBOTH)

(Succeeds List Dated 20 Jan. 1945)

## LATEST BULLETINS ENGINE, PROPELLER

20 February 1945

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
<b>PRATT &amp; WHITNEY</b>				
R-1830	323	Rev. #1 2-10-45	Conversion of P&W R-1830-45 Model Engines to P&W R-1830-65 Engine or Vice Versa	To correct part numbers for ordering of spares.
R-2000	94	Being issued	High Tension Jumper Leads for Trouble Shooting Ignition Failure	Information on use of auxiliary high tension jumper leads, which permit more accurate trouble shooting
R-2800	95	1-8-45	Knuckle Pin Fits	To inform activities of new oversizes in knuckle pins
	183	1-18-45	Liner—Center Main Bearing	To give new pinch fit in crankcase for subject liners and information on how to obtain new fit with old parts
	184	1-17-45	Magnetos, Scintilla DF18R N or LN—Modification of	Instructions for elimination of safety gaps, for checking oil seats, for modification of high tension outlets
	185	12-28-44	Thermostat Assembly and Seal Clutch Selector Valve Assembly	To delineate the application of a more positive seal between outside diameter of subject thermostat assembly and inside diameter of its recess in the selector valve housing by incorporating a neoprene oil seal
	186	Being issued	High Tension Jumper Leads for Trouble Shooting Ignition Failure	Information on use of auxiliary high tension jumper leads, which permit more accurate trouble shooting
	187	1-16-45	Impeller Shaft Front Oil Seal Ring Liner—Replacement Of	To provide a more positive oil seal between the blower case and the blower case liner.
<b>WRIGHT</b>				
R-1820	379	2-7-45	Aircraft Magnetos—SF9LD and SF9LD-1, -2, -3—General Overhaul Instructions and Change Information	General overhaul instructions and information on changes for Edison-Splittdorf magnetos SF9LD and SF9LD-1, -2, -3.
	380	1-23-45	Edison-Splittdorf Magneto, Type SF9LD-1	To correct condition of loose cable outlet on subject magnetos
R-2600	155	Being issued	Limits for Engine Test after Overhaul of R-2600 and R-1820 Wright Engines	To provide activities with overhaul engine test limits
	156	1-13-45	Sleeve, Impeller Shaft Oil Seal Rear, WAC Part Nos. 116024, 116549 and 116644—Rework of	To eliminate interference between ring lands of the sleeve and the inside diameter of the impeller shaft bearing support
	157	2-10-45	Carburetor, Stromberg PR-48A1 and PR-48A2—Reworking to Incorporate a Throttle Actuated Accelerating Pump	To improve the accelerating characteristics of the Wright R-2600-20, -22 engines by incorporating a throttle actuated accelerating pump
<b>GENERAL ENGINE</b>				
	14	Rev. #3 2-0-45	Valve Clearances—Aircraft Engine—Interval Between Checking of	To modify the valve check interval
	21	Supp. #1 1-24-45	Ignition Sealing Compound—Instructions for Application of	To make instructions outlined in original bulletin mandatory. To delete use of carbon tetrachloride
	43	Rev. #1 1-30-45	Oversize of Piston Rings Available	To list oversizes of piston rings which may be stocked in the future.
	58	Being issued	Conduits, Ignition Shielding—Pressure Testing of	To permit testing of the subject conduits on engines below the R-1820 class at discretion of the activities concerned.
	59	1-19-45	Magneto Coils, American Bosch—Repair of	To provide method of aligning high tension electrode on coils in the 14 cylinder American Bosch magnetos. To provide method for replacement of high tension electrode on coils in the 14 cylinder American Bosch magnetos
	60	1-11-45	Spark Plugs—New Out-of-Flush Electrode Tolerances and Minimum Shell Electrode Thickness—Dimensions for	To establish new out-of-flush tolerances and minimum shell electrode thickness for overhauled spark plugs
	61	1-5-45	Corroded Condition of Aircraft Engines—Reporting of	To provide instructions for the reporting of corroded aircraft engines
	62	1-13-45	Bearings, Lead-Indian Plated—Removal of Oxide from	To alleviate high rejection of new bearings.
	63	1-25-45	5 MM High Tension Ignition Cable Installed in Engines Procured from the Army	To limit the use of 5MM diameter cable
<b>PROPELLERS — HAMILTON STANDARD</b>				
	27	1-26-45	Hamilton Standard Service Bulletins—Approval of	To approve use of Service Bull. No. 94 issued by Hamilton Standard Propellers, Div. of United Aircraft, in connection with the repair and maintenance of propellers on naval aircraft.
<b>GENERAL PROPELLER</b>				
	9	1-12-45	Hydromatic Type (23E50) Test Clubs—Overhaul Period for	To establish the overhaul period for the subject test clubs



NEW MODEL ZOOT SUIT SLIPS ON EASILY



SUIT IS SIMILAR TO ORDINARY COVERALL



INFLATED SUIT IS STILL COMFORTABLE

# NEW ANTI-BLACKOUT SUIT

**Improved, Light Nylon Zoot Suit Prevents Blackout When Fighter Pilots Pull High G's in Combat**

NEW MODEL anti-blackout suits are being issued to VF and VMF pilots with the fleet. VF and VMF aircraft are being equipped with the necessary tubing and "g" valves to provide air pressure for the suits.

After testing both in training and in combat, anti-blackout suits were found to have considerable tactical value. They increase by approximately two "g's" a pilot's ability to maintain clear vision under high accelerations encountered in combat maneuvers. They also prevent fatigue caused by frequent application of "g" forces.

Early models, however, were uncomfortably hot; were difficult to adjust for size; were troublesome to put on and take off. Metal fittings corroded and the cloth deteriorated rapidly.

Designated as *Aviator's Coverall*

*Type Z Flying Suit*, the new anti-blackout suit overcomes these objections. It is a coverall of 3-oz. nylon. It is cool, durable, easy to put on and take off. It weighs less than three pounds complete. In external appearance it is similar to ordinary summer coverall-type flying suits.

Inside the suit there are five air bladders of plastic-impregnated cloth, two over the calves, two over the thighs and one over the abdomen. There is a short length of flexible tubing extending from the left side with a quick-disconnect fitting for attachment to the aircraft installation. Air is furnished from the pressure side of the instrument vacuum pump through a "g"-operated valve which pressurizes the suit in proportion to "g's" pulled.

Indoctrination and training are necessary to avoid possibility of overstressing aircraft through over-enthusiastic use of the suit. Pilots first must become thoroughly familiar with their aircraft and with their own "g" limitations. Then, during initial trials with the suit,

visual accelerometers installed in accordance with SR-74B, must be used so that pilots learn correctly to estimate the feel of varying "g" forces in all maneuvers while wearing the suit. Pilots also should learn to take full advantage of the suit in squadron tactics.

APPROXIMATELY 4,000 suits and installation kits have been shipped to squadrons or allocated to fleet commands. Further requests should be made to the Bureau of Aeronautics via the appropriate command, stating size of suits and types of planes used.

The suit is available in seven sizes: 36 short, 36 long, 38 short, 38 long, 40 medium, 42 medium, 44 medium. Pilots must be sure to get the correct size, allowing for the fact that they will wear only skivvies under the suit.

Installation kits are available for F4U-1, F4U-1D, F4U-4, FG-1, FG-1A, F6F-3, F6F-5 and FM-2 aircraft. Kit contains valve, quick disconnect fitting, tubing, lines and other necessary parts and material for the installation, and accelerometer.

Kits for suit maintenance are available on the basis of two per squadron. Kits for maintenance of the installations and kits for testing the "g" valves are now available one each per squadron.



# LETTERS

SIRS:

I have failed to see anything mentioned in your publication concerning the value of the dye marker (bronze powder) as contained in emergency kits, in connection with crash landings on snow.

While at a northern station some time ago we made several experiments with the dye spread with the use of wind over a large area of snow and found that a brilliant yellow-green effect resulted.

If this suggestion is of no value, disregard it as I am definitely not seeking recognition—just hope that the idea might help some flier and/or crew.

NAS LAKE CITY

CSP(G)

¶ NANews published a story (Feb. 1, 1945 issue) about a mixture of purple aniline dye, denatured alcohol and water being used at NAS BUNKER HILL to color snow-covered circles and runways. BUAEB states the chief's idea is good. However, bronze powder is an obsolete item and its availability is limited, as compared with the now semi-obsolete powdered fluorescein dye in cans, which could be used for the same purpose.

SIRS:

Reading the "Did You Know" section of NANews, December 15, 1944 issue, I noticed the article on "Sea Squatters." My crew, eight men and mascot ditched our plane, a PB4Y-2, 500 miles off the coast of California, on January 12, and had to take to rubber rafts and were on them for ten hours in a very rough sea. We have the distinction of being the first survivors to be rescued by a jet-fitted seaplane, a PBM.

The rafts and Mae Wests saved our lives and we would like to know how to join the club and secure the membership emblem. Maybe our mascot, "Turbo" by name, will be the first dog to have a membership.

I was one of the ones who helped search for the crew which had the two women Marines aboard. The plane was from our base.

We will soon be in the war zone again, but my crew is still interested in the membership of the club.

We will appreciate it very much if we hear from some one on the subject.

ENS. L. M. B.

¶ Headquarters of the Sea Squatters Club for air personnel who have come down at sea and taken to rubber life rafts is at 140 Cedar Street, New York 6, N. Y., where applications for membership should be addressed. Walter Kidde & Co. is sponsor.

SIRS:

Grampaw Pettibone's column is good stuff, but I think he's a bit low on his answer to question 3 in his Safety Quiz, NAVAL AVIATION NEWS, 1 February 1945.

I've always understood the minimum altitude to cross an airport without regard to existing traffic was 3,500 feet.

Right or wrong, I'm still playing on Grampaw's team.

CECIL FIELD

ENSIGN, USNR

¶ Grampaw was technically correct. CAA regs: 60.344 specifies 1,500 feet as the minimum. He might have elaborated a bit, however, to point out that this does not prohibit any military station from raising the ante to cover local flight safety requirements. Accordingly, if your station requires you to have 3,500 feet, make no mistake—3,500 feet it is. Only at military stations where no higher limit is set, or at civilian airports on cross-country flights, is the minimum 1,500 feet.

SIRS:

Let's you people get hot and get some shoulder straps for the tunnel gunner (radioman) in TBF's and TBM's.

Also I think you should look over the possibility of strengthening the radioman's seat, as I know of a couple of instances where the whole seat tore loose in crack-ups.

If some action were to be taken on this, I think it very likely that fewer life insurance policies would have to be paid off at face value.

READER

¶ Let's you get hot and read *TBF-TBM Airplane Service Change No. 196* published last July 29 directing installation of standard Navy lap and shoulder belt to give greater protection. *TBF-TBM Aircraft Bulletin No. 150*, dated February 1, 1945, suggests additional measures of protection some may prefer.



"Amazing what you can get in this Scapack luggage"

## CONTENTS

Jap Aircraft Factories . . .	1
Grampaw Pettibone . . .	8
Did You Know? . . .	11
Death of a Jap Cruiser . . .	14
Squadron Notes . . .	17
Av. Storekeeper School . . .	19
Uncle Kim Tussie . . .	23
Winged Target . . .	24
Twenty-five Years Ago . . .	25
Aerial Mine Spotting . . .	26
Technically Speaking . . .	29
Integrated Aero. Program . . .	31

Grampaw's Quiz 10; Best Answers 12; Flight Safety 13; Publications 18; Navigation Problem 18; Screen News 30; Pix Quiz 32; Aviation Ordnance 36; 87th & Anthony 37; Engine Bulletins 38.

## ANSWERS TO QUIZZES

### ● BEST ANSWERS (p. 12)

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

### ● NAVIGATION PROBLEM (p. 18)

- |               |               |
|---------------|---------------|
| 1. 135°       | 6. 28° 58' N  |
| 2. 126°       | 79° 50' W     |
| 3. 142 k      | 7. 130½°      |
| 4. 1019½      | 8. 129°       |
| 5. 28° 04½' N | 9. 1022       |
| 78° 24' W     | 10. 28° 05' N |
|               | 78° 14' W     |

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

### ● PIX QUIZ (p. 32)

7.4 2.2 3.4 4.3 5.4 6.1

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.

### ● GRAMPAW'S QUIZ (p. 10)

- Bank increases and prolongs "g," thus increasing possibility of a blackout, b. high "g" stall, c. structural failure. Ref: TN 22-44 and TN 72-44 and "G" Sense.
  - By calling the nearest traffic control tower, airway communication station, or by picking up special broadcasts from nearby stations. Ref: TO 7-45.
  - Yes, subject to the restrictions set forth in Aviation Circular Letter 4-45.
  - Yes. It is against regulations to fly into a danger area without first obtaining specific authority from the agency having the jurisdiction over the area. Ref: CAA Regs. 60.3481.
  - Latest issues of:
    - CAA Weekly Notices to Airmen.
    - CAA bi-monthly Air Navigation Radio Aids.
    - Coast and Geodetic Survey, Sectional and Regional Aeronautical Charts.
- See also Flight Safety Bulletin 2-45.

# How Tussie

# Became an

# ANGEL



Guess who



AT 7 YRS.

Guess who



AT 17 YRS.

Guess who



AT 22 YRS.

Guess who



AD INFINITUM

IDENTIFY when approaching friendly ships





# SAIGON STRIKE

Reaching out ever farther for Jap targets, planes from carriers of the Third Fleet strike enemy shore installations and shipping on the French Indo-China coast. This action was the first Allied intrusion into the South China Sea in nearly three years. The attack, spearheaded by fighters from the fast carrier task force, cost the Japs heavily in transports and warships damaged

CARRIER PLANES SET FIRE TO A JAP OIL STORAGE TANK AT SAIGON



↓ FIVE JAP SHIPS, ALL AFLAME. DOT THE SMOOTH SURFACE OF CHINA SEA BURNING JAP SHIP IS A SIGN POST ON THE AERIAL ROAD TO SAIGON ↑