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Photography 38; Engine Bulletins 39.

## ANSWERS TO QUIZZES

### ● PIX QUIZ (p. 37)

1.4 2.3 3.2 4.4 5.3 6.3

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

### ● NAVIGATION PROBLEM (p. 18)

- |           |           |
|-----------|-----------|
| 1. 067°   | 4. 089°   |
| 2. 0844   | 5. 335°   |
| 3. 158°   | 6. 1112.5 |
| 7. 1150.5 |           |

(Tolerances of 2 or 3° or 2 or 3 min. in time from the ans. are considered correct)

### ● GRAMPAW'S SAFETY QUIZ (p. 8)

- No. If sufficient acceleration is applied, an airplane can be stalled at terminal velocity. Reference: Technical Order 113-44 and Flight Safety Bulletin 21-44.
- Dive head first, downward and forward, to avoid tail surfaces. Reference: Parachute Sense, pages 8 and 9.
- Three months. Reference: Aviation Circular Letter 19-44.
- 400 feet. Reference: Civil Air Regs., part 60.343.
- 900 feet. Reference: Technical Order 53-44.

### ● BEST ANSWERS (p. 14)

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

# LETTERS

SIRS:

In regard to the flight of the PBM-3, No. 5-228, which was shown on the back cover of NAVAL AVIATION NEWS, dated July 1, 1944, can you verify the flight operations of it?

There is reasonable doubt in my mind that such a flight, with the landing gear shown, ever took place. Another reason for doubt is that while article stated plane made a successful take-off and uneventful landing, it didn't show any pictures of plane in actual flight. Why?

Looking forward to an early reply and thanking you in advance, I remain,  
ENSIGN, USNR

VF-14

¶ To convince this doubting officer, NANews reproduces photograph of PBM-3, No. 5-228 as it jettisoned landing gear after desert take-off. Normal water landing was made at San Diego.



SIRS:

The Gunairstructor was invaluable to pilots of my fighter squadron in preparing them for combat action. My own experience is typical: on my first combat action over Roi airfield at Kwajalein I made a stern run on a Zeke from seven o'clock position. As I neared firing range I immediately recognized the shot as one I had seen many times in the Gunairstructor, in which the point of aim is just over the port wingtip.

Accordingly I put the pimper of my gun-sight over the Zeke's port wingtip and pressed the trigger. Results looked like a gunnery training film: my tracers streamed out in a neat curve to the right and hits from the incendiary bullets flashed along the Zeke's engine cowling and fuselage. He started down smoking and my wingman jumped in and blew him up.

The Gunairstructor practice enabled me to recognize this shot instantly and shoot immediately without any preliminary mental calculations about correct mil lead for this particular deflection problem, which is frequently under-led as no-deflection.

On another occasion I made a high side run on a Judy using all the lead I could

get for a full-deflection shot at long range. The Judy flamed at the first burst, thanks to previous practice in projecting the point of aim ahead of the airplane's line of flight in the Gunairstructor. This training device's greatest value is that it teaches a pilot where to project his point of aim when there is no tow-plane or tow-line to guide him, as in gunnery practice on a towed target.

Frequent refresher practice on a Gunairstructor would save a lot of ammunition which is wasted by not leading enemy planes sufficiently before opening fire.

COMMANDER, USN  
Washington, D.C.

SIRS:

Units of the U. S. Navy's Air-Sea Rescue Service, which frequently operates in cooperation with Mexico's West Coast military commands, was recently inspected by



General de Division Juan Felipe Rico, governor of the northern district of Baja California and commandante of Mexico's second military district.

General Rico rode as an observer aboard a Navy blimp during a flight over the coastline and several miles out to sea. The general was enthusiastic in his praise of the efficiency of U. S. Naval pilots and crews. The blimp's visit to Ensenada marked the first time that a lighter-than-air ship landed on the soil of Baja California.

PUBLIC RELATIONS OFFICER  
11th Naval District

SIRS:

It is requested that this Unit be placed on NAVAL AVIATION NEWS mailing list. This Unit is presenting Arotic-Desert-Tropic-Ocean Survival lectures and demonstrations to approximately 1,200 flying personnel per month and it is thought that much new and interesting information can be obtained from your publication.

CHARLES C. WILSON  
1st Lt., Air Corps

Columbia Army Air Base  
Columbia, South Carolina

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NAVAL AVIATION  
NEWS

# We Parachuted Into The Jap Fleet...



## Some months ago,

*four torpedo planes made an attack upon a Japanese fleet in the battle of the Eastern Philippines. When the order was given to man planes and attack, Air Group 24 had only four Avengers available—the rest being engaged in other operations. Every pilot and crewman knew the extraordinary hazards involved. One TBF was struck with AA as it lowered to a final run. Ellis C. Babcock ARM2c and George H. Platz AMM1c, after parachuting from a flaming plane and landing in the midst of the Japanese fleet, told this story.*

EVERY TIME AA got close to our TBF, we

would 'jink' and continue our attack. I told our pilot just where the fire was bursting behind us. I glanced out the port side and saw tracers getting closer. . . . Before I could say anything, we were hit.

Part of the port wing snapped off. I started to sweat! When I looked down to see how things were going with Babcock, all I could see was fire . . . smoke. I called the pilot immediately, but the radio wasn't working. For a few seconds, I worked at it. No luck, so I gave up.

LOSING NO TIME, I scrambled down out of the turret, joined Babcock, and we jumped

out of a blazing inferno. Japs shot at us all the way down, but we only had about a thousand feet to fall, and managed to escape their bullets. Drifting down, I called them everything in the book.

We landed right in the middle of the Jap fleet, and heavy AA was blowing up all around us. A Japanese battleship maneuvered to the starboard of their carrier, and nearly ran over us. We held our breaths, crossed our fingers and prayed.

OUR TORPEDOES made three direct hits on that carrier and it exploded each time with large flames following the blasts. The impact was so terrific that we flopped over and swam on our backs. A number of smaller explosions followed, and fires spread until the carrier was burning from bow to stern. Smoke obscured the island and superstructure. It was just like a Fourth of July celebration. What a show! Finally,

DARKNESS CAME, and by the light of the flames, we could see the carrier listing badly. The ship was down by the bow to such a degree that the propellers were visible. Sometime after dark, the flames disappeared. Babcock and I locked arms and drifted all night. At odd moments during the night, I wondered what would happen to us.

In the morning the enemy fleet was gone, and we spotted friendly fighters in the distance. We got out the sea marker, and they saw us. After sending word back, a torpedo bomber arrived and dropped life rafts.

SHORTLY AFTER climbing aboard, we saw someone in the water. We paddled closer. He looked like a Jap. Babcock called out, and asked him what ship he was from, but got no answer. As we moved away a little, he drew a gun. We paddled away further, and kept a safe distance from him for half an hour. Then we lost sight of the man. Later in the afternoon, we were picked up by a rescue plane, and were none the worse for our experience.

No. 12 of a series.

**Aircrewmen  
have what it takes!**

## PHOTO INTERPRETATION



## PALAU ISLANDS

SITUATED less than 600 miles due east of Davao in the southern Philippines, the Palau Islands have served a very useful purpose to the Japanese plan of conquest in the south Pacific, first during their attack on the Philippines and later as a center of supply for the New Guinea front. Palau offered good possibilities for air-field development and was best suited as a major military base and fleet anchorage of all positions in the western Carolines area. Until recent months this enemy stronghold was beyond reach of serious Allied attack, but the capture of Hollandia 700 miles to the southeast and bases in the Marianas about the same distance to the northeast have deprived Palau of its security from land-based air attack. The Navy had been pounding away at Palau for many months in repeated attacks

from carrier-based planes, with terrific destruction to Jap shipping, aircraft and important military installations guarding vital positions in the islands. Because of its importance as a naval and air base and shipping center, and because Koror town was the civil government headquarters of all the mandated islands, the Palau group was crowded with strategic military facilities. Of these, the major air base located on Peleliu was the immediate goal of the American landing forces.

THE ACQUISITION of Palau provided a great forward base from which the naval war has been carried deep into enemy waters. The loss of Palau has deprived the enemy of one of his most important bases south of the Japanese home island bases and east of Singapore.





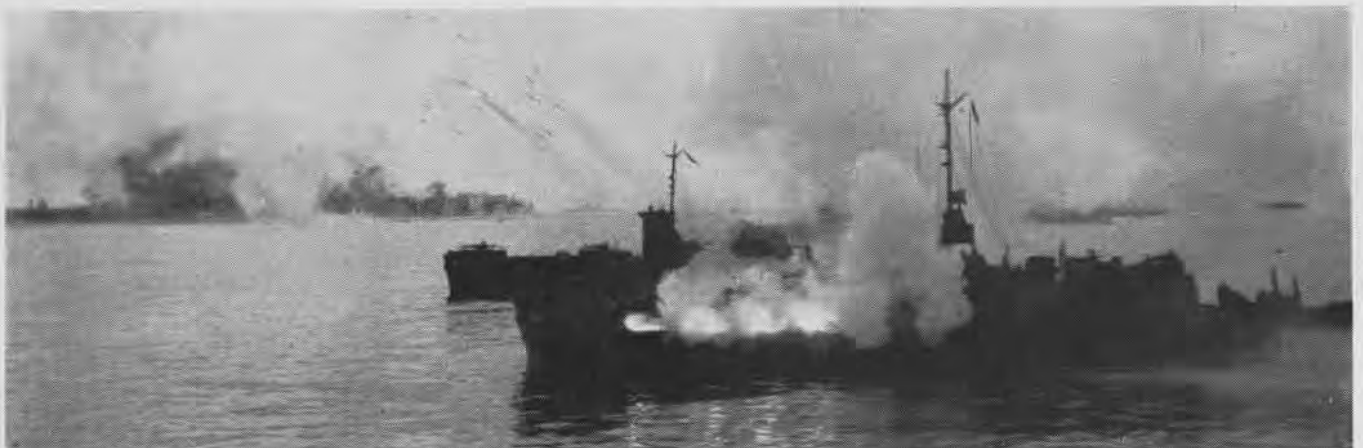
Fleet provides bombardment and air coverage as "Am-Tracks" move ashore on D-Day at Peleliu. Rocket-firing LCI's have just

ceased firing and clouds of smoke rise from the shore. This island was the first point of attack of U. S. forces in the Palau

## MARINES TOOK PELELIU IN 12 DAYS

ON SEPTEMBER 15, U. S. forces landed on Jap-held Palau, striking first at Peleliu with its heavily fortified airfield. The field was captured by the Marines during the second day's fighting and the island was in the hands of assault forces after 12 days. The Japs expected a landing here and had dug themselves into heavily fortified positions

which had been developed rapidly along the beaches and in the hills since March 31, 1944, date of the first U. S. carrier attack on Palau. Boat and tank obstacles, mines, barbed wire and anti-tank ditches were installed along beaches that offered possible landing sites. Pillboxes and personnel fire trenches backed up these installations. Palau was quickly converted from a staging point for troops and supplies en route to more southern Jap-held bases to the last bastion protecting the Philippines on the eastern flank.



A salvo of rockets flies toward objectives on Peleliu launched from LCI's in their softening up of landing beaches before troops

were sent ashore. Capture of strategic airfields on Palau was an important step in the preparation for landings in Philippines



Dense smoke rises from Malakal Island, important docking and storage center in the Palaus, as carrier-based planes soften up

Japanese installations prior to D-Day. Malakal harbor offers the best anchorage, as well as excellent dry dock and repair facilities

## CARRIER PLANES HAMMERED PALAU ISLANDS MONTHS BEFORE INVASION

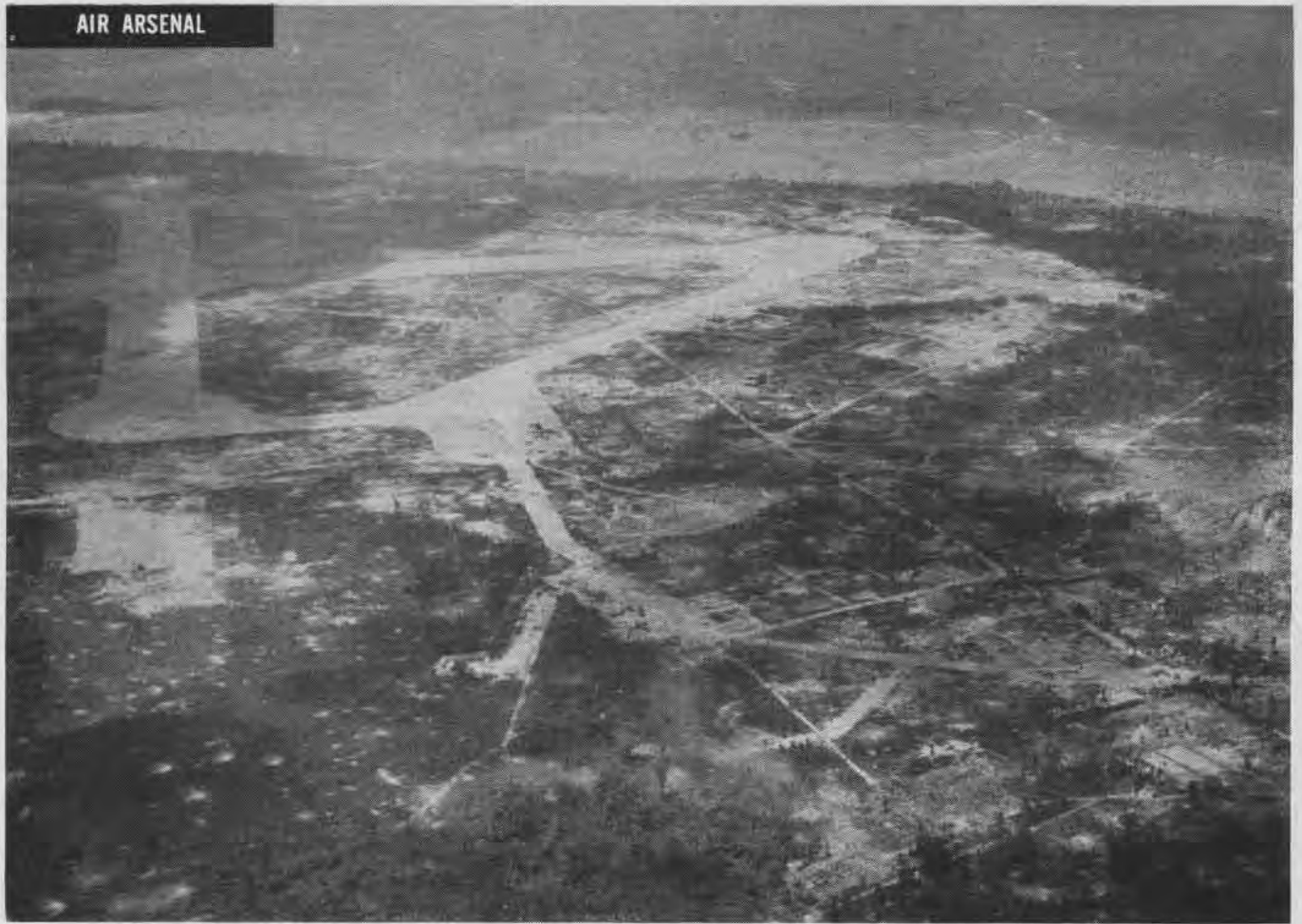
THE PHOTOGRAPH above is vivid evidence of the Navy's softening up of important installations at Palau in a series of carrier strikes at the islands several months before the actual invasion took place. The dense clouds of smoke rise from Malakal Island, which is a single high volcanic hill the Japs altered greatly by filling in the reefs to provide docking and storage facilities around the perimeter of the island. This is one of a group of islands connected by bridges and causeways that form a closely knit unit. Under both German and Japanese occupation this area was the main center of activity in the Palau group, being centrally located and in the vicinity of the best harbors and anchorages. Malakal harbor shown above is the best harbor in the Palau group. Protected from wind and waves by high limestone ridges, it offers ample and sheltered anchorage even to large ships that enter the harbor through a passage in the reefs. The island has a drydock and several excellent wharves, and was densely built up with shops and warehouses. Many of these buildings have been destroyed in bombing attacks during recent months, and large fuel oil storage tanks have been hit. The lower photograph is evidence of recent Japanese construction on the islands in their effort to make Palau a military stronghold. One of the three airfields in the islands, this strip is located on

Babelthuap, largest of the Palaus. The airstrip is only partially completed, but an area of 200 x 3,500 feet is operational. To the north of the strip, taxiways which are under construction indicate a planned dispersal area. Three fighter revetments at the west end of the strip and two large bomber revetments at the east end already have been completed. This airstrip was to be used in conjunction with the large field on Peleliu, which now is serving the Allies in their move against Japanese-held islands in the Philippines.



Important secondary airstrip on Babelthuap in the northern Palaus had not been completed. Annotations show vital installations





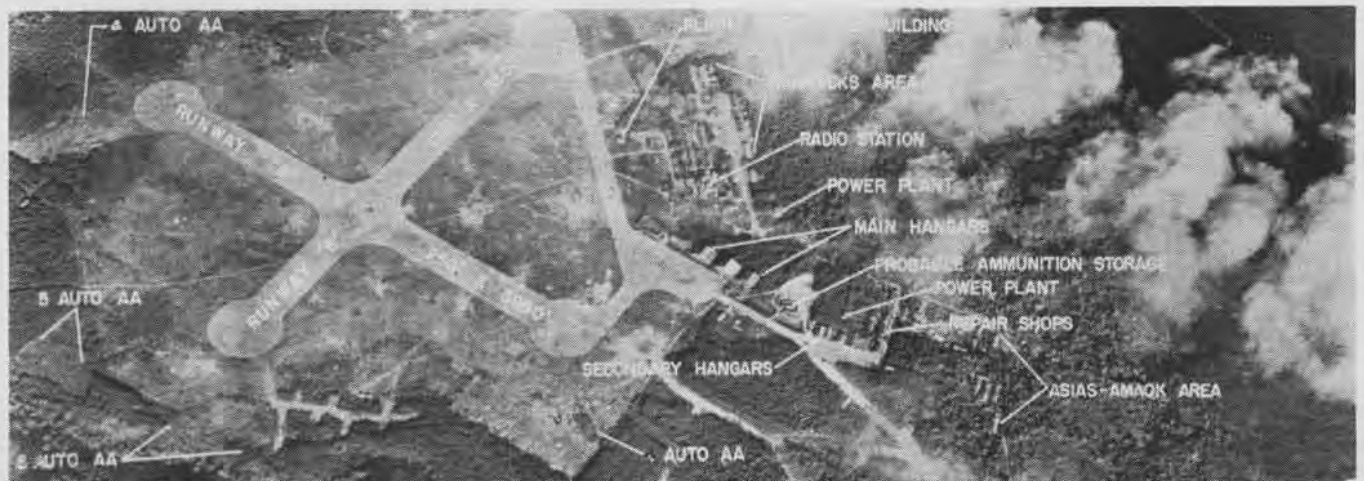
Battered by naval guns off shore and carrier-based planes, the major airfield on Peleliu shows its battle scars. Entire area is

pocked with craters and wreckage of buildings, and planes are strewn about the field, vital to enemy's ferry and repair system

## D-DAY MADE AIRDROME A SHAMBLES

THE PELELIU airdrome, classified by the Japanese as a branch air arsenal, has excellent service facilities and underground stores. It has played an important part in the enemy's ferry and repair system throughout the war. Facilities include two hard-surfaced crossed runways with extensive dispersal areas, hangars, control tower and repair facilities.

Photo Interpreters have pointed out many of these installations on the annotated photograph below. When this photo was taken, several months before the U. S. landing, the entire field was in use for plane dispersal, and extensive development of dispersal bays and revetments was under way. In the photo above, taken after D-Day, most of the airfield's installations have been flattened completely. The entire area of the airfield is pocked with craters and shell holes, and wrecked Bettys lie in the battered hangars.



NAVY PHOTO INTERPRETERS HAVE ANNOTATED THIS SCENE POINTING OUT IMPORTANT INSTALLATIONS ON AIRFIELD BEFORE THEY WERE FLATTENED



Here are the smashed remains of what was once Japan's most important airfield in Western Carolines. Taken after our forces gained possession of Peleliu, photo shows wrecked *Bettys* still inside what remains of steel hangars. A third hangar to right of these has collapsed completely. Other planes demolished on apron include a third *Betty*, two *Judys*. A *Zeke* is just off taxiway in foreground. Roofed

excavation in left foreground is typical water reservoir used by Japs at many airfields. The steel hangars are typical prefabricated types, usually measuring 101 x 140 feet, the latter measurement being span of arches. The two concrete structures in top right background are power plant and oil storage building. The two-story structure just above left hangar is typical Jap concrete administration building.



# GRAMPAW PETTIBONE

## Dive Bombing Technique

On his third dive the pilot of an SB2C-3 commenced his recovery at normal altitude, but pulled out rapidly in a steep turn. Structural failure in the right wing occurred during this maneuver, causing the plane to crash.

During their inquiry into the accident, the investigating board found that "the pilot had made it a habit to wrap up his plane while coming out of a dive in order to observe his own drop." It was believed that the pilot did the same thing on his last dive and that the application of rudder and aileron at high "g" caused the failure.

► **Comment**—The practice of observing your own drops in dive bombing is dangerous because of the following possibilities: a. pilot black-out, b. high speed stall due to acceleration, and c. overstressing the aircraft. With reference to c, the use of ailerons in dive pull-outs sets up heavy local stresses which may cause wing failure.

It is realized that in order to get the proper benefit from dive bombing practice, a pilot must know where his bombs land, but it is pointed out that this can be accomplished more safely by other means than having the pilot observe his own drops. In any event, remember that high "g's" and large aileron deflections together invite disaster.

## Haste And Waste

After using a large portion of the runway on a night take-off, a PB4Y-1 attained the speed of 110 miles an hour.



Believing the plane safely airborne, the pilot retracted the wheels. A moment later the aircraft settled back on the runway and skidded 1,100 feet to a stop. The plane was destroyed; the engines had to be sent to major overhaul. The crew was uninjured.

The Commanding Officer said, "Orders have been issued directing that the landing gear shall not be raised on take-off until the aircraft has reached at least 100 feet altitude."



Grampaw Pettibone says:  
That platform gets my vote.



Flight Safety Bulletin 3-44 also applies.

## Anti-Doping-Off Lists

Upon touching down for a normal landing on a hard surface runway, the wheels of a PB4Y were found to be locked. The starboard tire blew out and the port tire was damaged beyond repair. Only by hard application of brakes was the pilot able to keep the airplane from swerving off the runway where it would have been severely damaged.

Upon thorough inspection of the airplane, no malfunctioning of the brake system could be found; the brakes operated satisfactorily during repeated tests. In the opinion of the trouble board the plane was landed with the parking brakes on.

The co said: "This accident appears to be a direct result of doping off by both pilots. Evidently, the first pilot absent-mindedly engaged the parking brake lever when testing the brakes prior to landing. This accident again demonstrates the necessity for using the same procedure in the cockpit of a multi-engined aircraft that is used on the bridge of a ship."

► **Comment** — As the size and complexity of aircraft continue to increase, take-off and landing check-off lists must, of necessity, become more complete. These are, in effect, anti-doping-off lists.

Where certain functions are performed by crew members, it is imperative when commands are given that standard signals be employed and that commands be repeated back or acknowledged, to avoid mistakes. See Flight Safety Bulletin 19-44.

A Circular Letter on standard signals and commands is in preparation.

## Brakes! Brakes!

While taxiing slowly out to the take-off position, a PB1 pilot noticed his brakes were a bit weak. He then decided to taxi very slowly so he could stop quickly in case of an emergency. A few seconds later, while trying to turn onto another taxi-way, the brakes failed completely. Before the co-pilot could apply the emergency air brakes, the plane collided with two parked aircraft, doing extensive damage.

The accident investigating board said: "Accidents of this nature can be avoided by more completely indoctrinating pilots with emergency procedures and by demanding a more intensive check of the airplane by the pilot prior to his acceptance of the aircraft. In addition, line crews must be more thoroughly instructed as to what constitutes a complete pre-flight check. In this instance, lack of sufficient hydraulic fluid is believed to have been one of the major causes of the accident. This condition was not detected by either the line crew or the pilot in their respective checks of the aircraft."

## Slipstream Sense

While taxiing to the take-off position, an OS2U pilot needlessly exposed his plane to the slipstream of a TB1F taking off. Then, instead of allowing his plane to weathercock into the TB1F's slipstream, the OS2U pilot applied throttle and opposite brake, turning his plane



so that the TB1F's slipstream got under the OS2U's tail, nosing it over.

► **Lessons to learn from this accident:**

1. Heads up! Be careful to avoid slipstreams both on the ground and in the air. Before turning up your engine consider the other fellow. Look behind you to see that the way is clear.
2. If you should happen to get caught in a powerful slipstream while taxiing, cut the throttle and allow your plane to weathercock with minimum use of brakes. Don't attempt to resume taxiing until the slipstream has dissipated sufficiently so that you are certain of maintaining control of your plane.





Miraculous lift of jet propulsion is shown by this Mariner, virtually leaping into the air from a Pacific island harbor. Aviation Training Division photographer caught this action.

## GRAMPAW'S SAFETY QUIZ



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

1. Is flying speed alone a guarantee against stalling?
2. What is the recommended method for leaving the cockpit when bailing out?
3. What is the maximum time for which an instrument card is good without further practice?
4. With the exception of authorized formation flying, what is the minimum distance aircraft must keep from each other in flight?
5. Use of a dye sea marker is most effective when searching aircraft fly above what altitude?

Answers to Quiz on Page 40

### Attention Tow Pilots

An F6F-3 was making a low approach over the field to drop a target sleeve. The pilot apparently had difficulty in releasing the sleeve and pulled up into a steep climbing turn. The airplane stalled and spun to the ground from about 400 feet.

In the opinion of the commanding officer who investigated the crash:

1. The pilot unconsciously applied back pressure on the stick with his left hand while trying to release the tow with his right hand. The combination of climb and drag of sleeve caused an early loss of flying speed.
2. Also, it was found after careful observation and experiment with another F6F, that should the plane with target in tow be placed in a sudden climbing turn, the tow line will be forced against the horizontal stabilizer causing an up pressure on the elevator. This may very well accelerate a stall.

► **Comment**—In practically all airplanes rigged for target towing it is possible to obtain interference between the tow line and elevator under conditions of a steep climbing turn.

Stall and spin crashes while towing target sleeves are much too frequent. Most of them are caused by pulling up into too steep a climb immediately after take-off, in an effort to keep the sleeve from being damaged by dragging on the ground.

Naturally, it is necessary that targets stream properly, but it is more important that pilots and planes are not expended

in towing missions. Commanding officers should insure that all pilots detailed to this duty are thoroughly aware of the increased danger of stalling when flying with a target in tow.

### Another Safety Convert

The following excerpts are taken from a fighter pilot's account of a dive bombing mission over Palau:

"I first noticed that my electrical system was out just before entering my dive at 10,000 feet. . . . I pulled out as sharply as I could, hoping the bomb would come off, but it didn't. On the way back to the ship, I tried to shake it off by every possible means, but couldn't. . . . My tail hook wouldn't drop with my electrical system out and I couldn't work it manually either. So there I was—my bomb sticking to me like a leech; no hook; no radio.

"I circled the ship while the rest of the flight landed. Finally I got a blinker signal to climb 5,000 feet ahead of the formation and bail out. I sure sweated it out for the next few minutes, making sure my chute and harness were in good order and trying to dump my hood. . . . Damn, even the hood wouldn't release! . . . I rolled the plane over at 160 knots, swallowed a half dozen times, and pulled my safety belt.

"I was held up for a second by my chute catching the edge of the greenhouse, but I gave a hell of a kick and was in the clear. I don't remember counting (although I remembered that I should) before I pulled my rip-cord, heard a snap, and looked up to see the chute and shrouds spiralling up by me. I waited for the coming jerk. I got it all right, but it wasn't like the book said! I was jerked by my feet! First thing I knew, I was looking up at the water, and down at the chute. My harness had somehow slipped off my shoulders and miraculously managed to catch around my ankles and feet. (Thank God they're big!) It all happened so fast that even now I can't say for sure just what did happen.

"At any rate, I finally managed to pull myself up and grab the harness. . . . I hit the water 'stern to.' . . . A no picked me up ten minutes later, with nothing worse having happened to me than a twisted left knee and a few strap burns.



**SQUADRONS**  
LET NANNEWS  
HEAR  
FROM YOU!

► "I strongly urge that all pilots check their chute harness for size, and that they get together and figure out the best way to get out of a plane—at what speed and so on. Manual tail-hook releases should be checked before every carrier take-off, and hoods carefully inspected to see that they are in working order."



**Grampaw Pettibone says:**

Right you are, son! That's what I've been trying to get across, lo, these many moons!

Funny how hard it is to get aviators interested in their own safety. It often takes an experience like this to do it.

### Mid-air Confusion

Three two-plane sections of relatively inexperienced torpedo plane pilots were on a formation tactics flight. While flying in Vee, the leader ordered by radio, "Assume defensive formation." This maneuver had not been discussed and the order was not understood by either of the other two section leaders.

The second section leader asked for a "repeat" on the signal. He then noted that the third section *seemed* to be dropping back and therefore *assumed* that the signal meant he was to form right echelon between the first and third sections. While the second section was being maneuvered into this restricted position, the wingman had a fatal collision with the leader of the third.

► **Comment**—Both poor planning and a serious error of judgment were involved in this accident. The basic cause was failure of the flight leader to insure that his inexperienced personnel were familiar with all maneuvers to be attempted. Had this been done in the pre-flight briefing, the confusion which led to the accident would have been avoided.

The immediate cause of this accident was a serious error of judgment on the part of the second section leader. His initial request for a "repeat" was correct, but he should have been more persistent. He should not have executed a maneuver he did not understand.

### Administrative Reports

Despite considerable literature on the subject, some units are still confused regarding the wheres and whyfords of boards of investigation and administrative reports.

An interpretation on this subject as regards aviation casualties appears in Aviation Circular Letter 11-42. Later and more complete instructions have just been issued by the Judge Advocate General which will be found on page 15 of the Navy Department (semi-monthly) Bulletin of 30 Sept., 1944.

Careful study of these instructions should answer questions on the subject.

It is pointed out that the above reports are *in addition* to and do not replace Despatches and Aircraft Accident Reports required by other directives.





# CRASH FIRE AND RESCUE

PILOTS' LIVES CAN BE SAVED IN CRASH FIRES BY USE OF EQUIPMENT AND TECHNIQUE DEVELOPED BY BUAEER TESTS AT NAS PATUXENT RIVER

## JACKSONVILLE-TRAINED CRASH UNITS TO CARRY NEW IDEAS INTO FIELD

LESSONS learned at Jacksonville will be carried into the field by eight mobile airplane crash fire and rescue instruction detachments. Assignment of detachments will be administered by Advanced Base Aviation Training Units (ABATU), NAS Norfolk. Some mobile units will be in the field by Christmas.

Definite information concerning schedules of mobile units will be forwarded by BuAer to air activities, training commands and district commandants.

Once assigned, a mobile air crash and

rescue instruction detachment will keep moving until it has visited every aviation activity in the command. Each unit will have two fire trucks similar to crash fire equipment now in the field.

Purpose of the mobile units is to demonstrate the best methods of using equipment now available for fighting crash fires and making rescues. Methods and techniques taught will be scientifically sound.

Major air stations in districts to be visited by mobile units are requested to establish adequate fire fighting and rescue training fields for demonstrations, well in advance of the arrival date.

Mobile units consist of one officer and six specialist firemen. Each man in the unit is a qualified instructor. Demonstrations staged by training units will in no way interfere with routine crash fire and rescue work on the station. Key men in station crews can be replaced on the flight line by members of the travel-

ing unit. Every effort will be made to teach station fire crews rescue techniques perfected at Jacksonville. Special attention will be given Acorn and CASU training units. In every instance life saving will be stressed.

ABATU is charged with administration of mobile units when formed. Instruction proficiency is maintained through liaison with BuAer and ABATU. ABATU also keeps instructors cognizant of changes in crash fire fighting methods, equipment and materials.

Mobile unit personnel are trained to maintain all types of crash fire equipment in the field. Fire fighting gear must be in shipshape condition or rescue units are ineffectual. Highly trained personnel using poorly maintained equipment cannot save lives.

Personnel for the mobile crash fire and rescue units is supplied by BuPers. Movements of these units within a command are to be determined by ABATU.

## NEW TRAINING UNIT TO MAKE USE OF SCIENCE INSTEAD OF GUESSWORK

**F**OREMOST objective of every airplane crash and rescue unit is saving lives. When high octane laden aircraft crash, seconds count. Even split-second failures in rescue technique have cost lives.

With this mission in mind, BuAer, co-operating with BuPers and Chief Naval Air Technical Training, is now forming mobile airplane crash fire and rescue instruction detachments at NATTC Jacksonville. Eight of these units, each consisting of one officer and six specialists (F), will be trained during October,

November and December. Four two-unit classes are scheduled. Three weeks of intensive training will be given each class. Experienced fire fighters, civilian experts, and medical officers will instruct all detachments at Jacksonville.

A completely scientific approach to the entire crash fire and rescue problem will be made by each class. Units will train with equipment similar to that now in the field. Much of the work will be pioneering. Known methods and techniques will be tried and tested under all possible crash fire conditions.

Units in training will fight upwards of four fires each day. All simulated crash fires will burn on a specially constructed mock-up plane built of stainless steel. Approximately the size of an *Avenger*, this steel mock-up can and will be moved about on a specially set-up field to simulate all types and kinds of airplane crash fires likely to occur.

**A**LL TEMPERATURE changes during a fire are accurately recorded by a heat indicating and recording pyrometer built into the mock-up's cabin. A rise or drop in temperature of even one degree per second is indicated and recorded by the instrument. Through use of thermal couples inside the mock-up's cabin and heat-insulated wiring running to the instrument, it is possible to observe all temperature changes inside the cockpit as they occur during fire-fighting operations. Experiments now being conducted will establish which rescue methods and techniques will save personnel in burning aircraft and which methods will not.

By varying the amount of gasoline burned and positions of tanks in fires, all important types of naval aircraft may be simulated. Each officer and specialist must know size and location of gas tanks on each type of plane.



**STREAM:** Water under 750 lbs. per sq. in. pressure is projected from turret nozzle on a John Bean truck, similar to units now in field. A solid stream under pressure is used to sweep flames away and to cool cabin area. Stream is projected approximately 60 ft.



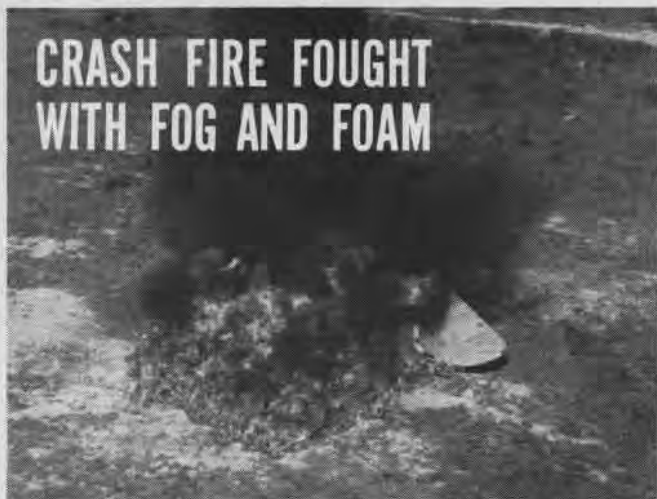
**FOG:** Markers set 10 ft. apart show projection distance of fog stream. Fog, actually water spray under 750 lbs. pressure, is used in crash fires to ready fire for foam treatment and to cool cabin of burning plane. John Bean truck is used in this test.



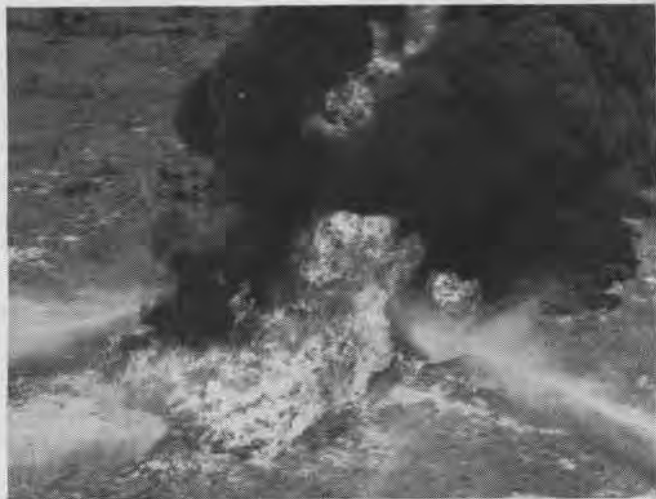
**FOAM:** Foam is projected 60 ft. Foam is utilized to smother flame and provide a path to cockpit for rescue crews. Mechanical foam is obtainable under Item No. 51-C-1060. Foam has been standardized for all ship and shore based naval activities.



## CRASH FIRE FOUGHT WITH FOG AND FOAM



Seconds after ignition, smoke and flame shroud this obsolete all-metal fighter in simulated crash landing at NAS Patuxent River. Dummy pilot is in cockpit. In crash fires like this seconds count if personnel in burning airplane are to be saved.



Crash fire and rescue crews are on job just 15 seconds after flames broke out. Two outboard streams are water under 700 pound pressure. Inboard streams are high pressure water fog. Rescue approach made from wingtip and rear of blazing fuselage.



Fire fighters in center use foam to lay down path over which rescuers will make approach. Shortest possible route to cockpit is selected. High pressure water spray is kept on cabin to keep trapped pilot cool. Fog streams cool fire to allow foam to lie.



Rescue team reaches cockpit after crossing foam path three inches deep. Asbestos suits provide protection from the heat and flames. Streams of spray and fog still play on cockpit. This action occurred 30 seconds after first stream hit crash fire.



Pilot would have escaped serious injury in this fire. With rescue completed in even 45 seconds, the dummy in the cockpit was unscorched. Rubber and leather fittings in cockpit were not damaged. Dense foam mat has smothered flames on windward side.



Foam, fog and spray are combined to extinguish last of fire. Badly damaged wing tip and empennage indicate intensity of heat. Damage to metal and plexiglas about cockpit is negligible by contrast indicating cooling power of high pressure spray.

# 25 YEARS AGO THIS MONTH

## Naval Aviation in November 1919

*November 1*—According to reports from the Air Service, training of pilots was to be resumed at Carlstrom Field, Arcadia, Florida, and March Field, Riverside, California, on or before November 1. All cadets were to be put through a standardized course of instruction including advanced military flying training.

*November 3*—An Akron aircraft company was working on a new dirigible of very small proportions, to be known as the Pony dirigible. The airship was to be powered by a 40-horsepower engine, and predictions maintained that it would attain the speed of 40 miles an hour. It was to be so easy to handle that anyone could do so after a very short period of instruction.

*November 3*—To keep within limits of the Air Service appropriation for the coming fiscal year, the Director of Air Service ordered the following prohibitions: 1. Exhibition flights of aircraft for civilians; 2. Cross-country flights, except in connection with actual training.

commended that Congress enact an aviation policy based either on a 10-year program with large annual appropriations guaranteed to stimulate commercial aeronautics, or make appropriations for aircraft development by the Post Office, War and Navy Departments. In case the former policy was adopted, establishment of a separate Department of Aeronautics was recommended; in case the latter was decided upon, a commission of co-ordination was to be appointed, headed by a Director of Aeronautics, reporting directly to the President. The board was emphatic in declaring against creation of "any military air force independent of army or navy control."

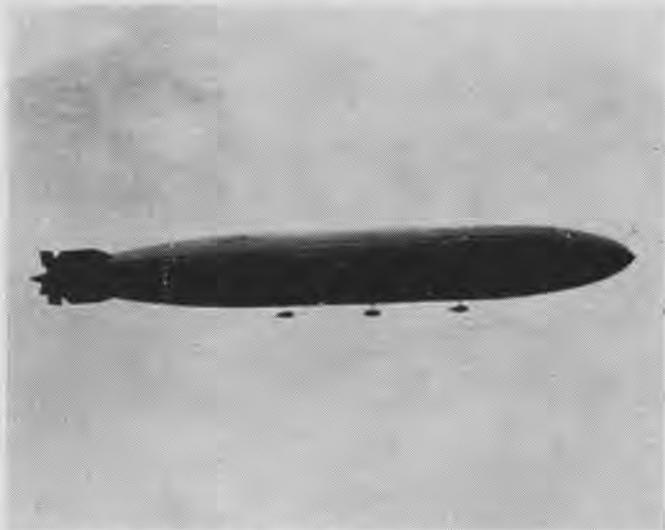
*November 10*—The Navy Department was negotiating with Royal Air Force for purchase of the dirigible R-38. This craft was somewhat larger than the R-34, which visited the United States in 1918, being 694 feet long, 86 feet in diameter, 93 feet-six-inches high, carrying a useful load of 45 tons. It was expected that R-38 would have a maximum speed of 60 knots. The Brit-

was the first water and land plane to be operated successfully in the United States.

The new machine was designed for bombing purposes to be used from the deck of a battleship. It had a wing span of 48 feet, a five-foot gap between the wings, weighed 3,700 pounds and carried a total load of 6,700 pounds.

One of the features of the new, boat-shaped plane was that the bombs could be released by levers operated by the pilots in the cockpit. Another addition was folding wheels, also operated by levers. These wheels could be dropped when a landing was made on land and folded when the machine dropped into the water.

*November 30*—A scale model one-sixteenth inch per foot was to be erected by the Navy Department at Lakehurst, N. J., for exhibition at the National Museum in Washington. The hangar was to represent the original, which was to be 800 feet long, 265 feet wide and 174 feet high, with accommodations for one ten-million-cubic-foot airship with smaller ships or two balloons of



R-38 FLIES AT BEDFORD, ENGLAND, BEFORE GOING OVERSEAS TO U. S.



NEW TRIPLE-WINGED SPERRY LIGHT BOMBING AIRPLANE IN FLIGHT

*November 5*—C. J. Zimmerman, accompanied by Richard Griesinger, mechanic, completed a 1,421-mile flight from Keyport, N. J., to Key West, Florida, in an Aeromarine flying boat. Plans then were made to use this flying boat, along with two others, in an aerial passenger line between Key West and Havana.

*November 5*—A special board, appointed by the War Department, rec-

ish Government offered to train necessary personnel to man the ship. It was expected, at that time, that a number of Navy officers and men would be sent to England for training.

*November 24*—The first official land test of a new hydro-aeroplane of the tri-plane type was made at Mitchell Field by representatives of the Naval Trial Board. The plane was produced by the Sperry Aircraft Company, and

five-million-cubic feet on either side.

*November 30*—Among those mentioned specifically in the official thanks of the British Government to several American officers for assistance they rendered the development of aeronautics were Captain Raymond E. Carlson and Lieutenant Harold H. Emmons.

*November 30*—General Pershing gave his approval of the bill which provided for a separate department of aviation.



# DID YOU KNOW?

## Photographer Gets Aerial Shots

### Boom Places Cameraman Over Scene

NAS PATUXENT RIVER—No, this photographer's mate doesn't draw flight pay, but he takes aerial photographs. Strapped in a sturdy chair bolted on the



BOOM SWINGS CAMERA TO PROPER POSITIONS

end of a crane boom he is able to take even the most difficult overhead shots. This Hollywood technique was developed here to obtain more detailed and accurate photographic records of certain test procedures and operations. In this picture the photographer was shooting action scenes in the simulated airplane crash fire and rescue drill illustrated elsewhere in NANews.

An ordinary aircraft safety belt is used by the photographer to secure himself in the chair. Proper positions for different photographs are obtained by swinging the boom either to port or starboard. A wide range in elevations is possible merely by raising or lowering the boom.

## Camera Fans Work in Hot Foxhole

### Deluxe Quarters Almost Smother Workers

Time hangs heavy on the hands of many men on outlying island bases, and developing hobbies is one way to combat boredom. Amateur photographers on Eniwetok, determined to pursue their hobby despite almost impossible conditions, worked out a darkroom in a foxhole.

The men were not accustomed to doing things the easy way but after making the foxhole light-tight they discovered they were in a bake-oven. The occupant of the hole could stay down

only a few minutes before suffocating. But all that, and the lack of fresh water and refrigeration didn't stop 'em.

The Navy photographer who found them operating in their foxhole reported "they go right on turning out fogged, blurred negatives with scratched and



ENIWETOK PHOTOGRAPHERS DEVELOP FILM IN FOXHOLE

torn emulsions, having a wonderful time in the process."

## Million Model Planes are Made

### Special Devices Program Gets Results

Six model planes constructed by school children of Guatemala have been

presented to the Navy as a "Good Neighbor" phase of a program which has already produced nearly a million such models from schools of the United States. The million models were built for both Army and Navy use through a program initiated by the Navy's BuAer Special Devices Division.

The six prize models presented by the Guatemalan embassy were built from plans originally prepared by the Navy. These plans were translated into Spanish and Portuguese and distributed by the Inter-American Escadrille, which sponsors the model building contest throughout Central and South America.

More than 50,000 model planes have been built in the neighboring republics during the past year from plans developed by the U. S. Navy. In Ecuador alone a recent school contest produced 6,000 models while the Chilean Air Force has junior air brigades which sponsor model plane building as a part of their outside activities.

While model plane building in South America is designed chiefly to stimulate private flying between and within American republics, the program in United States schools directly contributes to the war effort. Models produced in schoolrooms throughout the country are valuable as training aids to both branches of the country's forces.



FANTASTIC PATTERNS TRACED against the sky by high flying aircraft are a common sight not only at sea but also at aviation shore stations. But the intricate design etched here against the heavens by Navy Grumman Hellcats has a grim significance all its own. At this moment the Hellcats are in action against Jap pilots during the Battle of the Marianas. From the deck of a Navy warship an intent audience watches the air battle progress.

## BEST ANSWERS

### Math Miniatures

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

1. If a quadrilateral has its sides equal and its diagonals unequal, the figure is a—

- a—square  
 b—rhombus  
 c—rhomboid  
 d—rectangle

2. The value of  $(2)^\circ$  is—

- a—0  
 b—2  
 c—1  
 d—infinity

3. The length of the diagonal in a 1-inch cube is about—

- a—1 in.  
 b—1.4 in.  
 c—1.7 in.  
 d—3 in.

4. If any number, except zero, is multiplied by its reciprocal, the product is equal to—

- a—1  
 b—the number squared  
 c—the first power of the number  
 d—1 divided by the number

5. The distance around the world at the equator is 21,600 nautical miles. The distance around the world is 10,800 nautical miles (one-half of 21,600) at the latitude of—

- a— $23\frac{1}{2}^\circ$   
 b— $30^\circ$   
 c— $45^\circ$   
 d— $60^\circ$

6. On a bombing mission, the range is the horizontal distance between the bomber and the target and the range angle is the angle opposite the range. Increasing the altitude of the bomber—

- a—increases the range angle  
 b—decreases the range angle  
 c—increases the range  
 d—decreases the range

7. If Central War time at Pensacola in Long.  $87^\circ$  W is 1015, the standard time at Krakow in Long.  $20^\circ$  E is—

- a—1415  
 b—1515  
 c—1615  
 d—1715

## Stowing Away Is Made Criminal

### Culprit Causes Unknown Load Factors

Stowing away aboard an aircraft is a crime punishable by a fine of \$1,000 or a year in prison. Offenders have regarded stowing away as a "smart trick" but a recent NATS communication points out it is really a hazardous undertaking, since a stowaway handicaps the plane with unknown load factors.

Recent directives have been issued by NATS, West Coast, to prevent stowaways aboard planes operated by NATS squadrons. Responsibility of flight and ground personnel in apprehending such stowaways were to be outlined.

In recent cases of attempted stowaways, the investigation has revealed a general lack of knowledge on the part of service personnel regarding the seriousness of the offense and the consequences. Nor are many acquainted with provisions of an act of Congress, passed in March, 1944, which makes stowing away a specific misdemeanor.

The first section of the act applies to any airplane. It defines a stowaway as any person who boards the plane with intent to obtain a ride and without consent of either the owner, charterer or official in command of the plane. Even though he is apprehended before the plane takes off, the stowaway has committed a crime punishable by up to a \$1,000 fine or a year's imprisonment. The section applies to practically any flight which could be made within a state or territory, between states or territories or any other place occupied by or under the jurisdiction of the armed forces of the United States.

Section 2 of the act applies to any aircraft owned or operated by the United States. To earn himself a fine of up to \$1,000 or a prison sentence of up to one year, the offender needs only to board such an aircraft without per-

mission and with intent to get a ride. The length or direction of the flight does not matter. Only duly authorized officers or agents of the United States, or the plane commander, can grant permission.

## Aviation BM Rating Is Announced

### Four Specialists Come Under New Rate

A new aviation boatswain's mate rating ABM, aviation branch, in pay grades four to one, inclusive, has been authorized by the Secretary of Navy and four appropriate designators have been established. These designators are to be used integrally with the rating in service records, transfer orders and official correspondence. The designators and qualifications:

(AG) A specialist in the operation and maintenance of arresting gear and barriers.

(CP) A specialist in the operation and maintenance of catapults.

(GA) Specialist in handling and operating gasoline stowage, aircraft fueling systems and aircraft fire protection equipment.

(PH) A specialist in beaching, launching, handling and securing of patrol aircraft and the handling, direction, spotting and stowage of aircraft on carriers.

BuPers Circular Letter 268-44, announced that separate qualifications would be published for each of the four categories. Naval activities are authorized to advance or change qualified men to the new rating as soon as qualifications and complements arrive.

Commanding officers are authorized to change petty officers in any rating to an aviation boatswain's mate rating of equal pay grade to fill vacancies in their complement, without reference to the Bureau. Design of the rating badge has not yet been decided definitely.



MEMBERS OF THE first crew to receive PB4Y operational training at NAAS Jacksonville Municipal Airport Number One leave their plane after flight over Atlantic. Student pilots and aircrewmembers undergo preliminary operational training in the Liberator at NAS Hutchinson and take advanced courses at Jacksonville Municipal Airport Number One. This auxiliary station is the newest of four attached to the naval air station at Jacksonville.





Pilot must hold his breath in high-altitude bailing out if he wants to remain conscious. To escape freezing and Jap strafing, free fall to 20,000 feet altitude is recommended

## HIGH-ALTITUDE BAILING OUT

### Gulp Oxygen, Make Free Fall to Safer Altitude

PILOTS AND aircrewmembers who bail out at altitudes above 22,000 feet without special oxygen equipment should make a free fall to 20,000, an altitude where normal breathing is possible, to avoid unconsciousness and freezing, according to a technical study by BuAer.

In a low pressure chamber, at a simulated altitude of 25,000 feet, sitting quietly breathing atmospheric air, a person can remain conscious but not alert from four to six minutes and at 30,000 feet from one to two minutes. The violent exertion of bailing out at these altitudes reduces the time intervals to less than a third of those times. Jumping free at 30,000 altitude, a man falls 18,000 feet in one minute; with a chute it would take him 6½ minutes, plenty of time for freezing or anoxia.

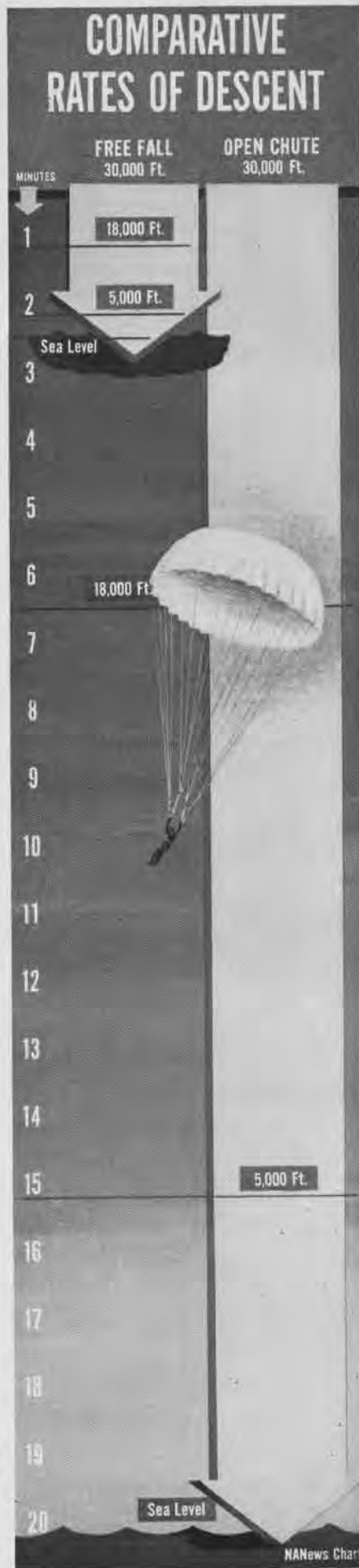
A safe descent can be made from altitudes below 35,000 feet without use of oxygen equipment if proper technique is followed. Just before going

over the side, and before disconnecting from the oxygen supply, one deep breath of oxygen should be taken. From this point on, holding the breath is the only protection against lack of oxygen.

At the peak of breathing in, the lips should be closed and pressure built up by trying to exhale. This closes the small throat valve and forces air into lung spaces, thus enriching the blood with added oxygen. The plane should be abandoned immediately and a free fall made to a safer, warmer altitude.

**A** FREE FALL has several advantages: It lessens the time exposed to freezing temperatures, decreases chances of strafing by enemy planes, eliminates danger of pulling rip cord too soon and fouling chute on the plane, and decreases possibility of the chute ripping from sudden stress.

The rate of fall slows down with decreasing altitude due to increased air density. This also decreases the stress on the chute when it opens. The urge to breathe the first 30 to 45 seconds after jumping becomes almost unbearable but can be abated by swallowing or exhaling half the air in the lungs.



## Marines Get Aircraft Carriers

### Squadrons Will Cover Ground Troops

A number of Marine Corps air squadrons are training to operate off carriers in support of amphibious and ground movements. The move has been made possible by availability, for the first time since the invasion of Guadalcanal, of Marine flyers over and above the number which has been needed for land-based operation.

Operation of Marine Corps groups from carriers was begun in peace time as a means of providing support for Marine and Army ground forces in amphibious operations. Until the present, however, Marine squadrons available have been needed to provide offensive and defensive land-based air operations from island installations which have been taken.

The carriers upon which the Marine air groups will be based will continue to be manned by naval personnel.

## Damage Control Men Wear Red

### Colored Hats Are Given Traffic Priority

NOB, NORFOLK—During inspection recently of a ship by Fleet Operational Training Command, it was noted that the Damage Control and Repair party personnel wore red hats and were given priority in traffic under all conditions of general drills and emergencies. These were the standard Navy-issued white hats dyed red with a commercial dye. The hats are worn at all times aboard ship except for formal inspections of personnel.

It was noted that this particular organization was outstanding, which it is believed was due not only as the result of careful instruction in drills and damage control but also to the fact that the ship's company knew that men wearing red hats had a definite job to do and must get through.

## Pearl Harbor Day Bond Drive

### Packs Extra Wallop Against the Japs

The third anniversary of Pearl Harbor will be fittingly commemorated by an extra cash war bond campaign.

The campaign will swing into action on December 1 and wind up on December 7. Both uniformed and civilian personnel will participate, with all ships and stations putting their weight behind the bond campaign to provide extra momentum in the all-out effort against the Japanese Empire.

Last year's Pearl Harbor Day bond sale contributed \$23,000,000 to the nation's war chest. The July 4, 1944 extra bond sale total of almost \$48,000,000 was more than twice that amount. It is expected the new campaign will top even the July Fourth total and set an all-time high for a single bond drive.

# Marines Downed By Enemy AA

*STRUCK BY heavy anti-aircraft, Marine Major T. and his gunner, Sgt. A. were forced to leave their sub for the salty sea. Their experience provides excellent background for a few basic rules. Since all combat pilots are potential survivors, they can accumulate many tips from those who have taken to the 'chute, lived to tell.*

I WAS ASSIGNED to lead an SBD and TBF strike against enemy gun positions. We took off at 0935 and the flight proceeded normally to the target area. I was somewhat shallow in my dive and pushed over at 8,000 ft. Enemy AA opened up with intense and accurate firing. Unfortunately my fixed guns didn't fire, but my two wingmen vigorously strafed the position in their dives.

At about 4,000 ft. the plane was hit in the left wing by heavy fire. That really jarred us. At 3,000 ft. our plane caught another heavy shell in the right wing, knocking out a chunk of the gasoline tank. I continued on in the dive and released at

but he was about a mile farther out. I abandoned my chute, inflated the life jacket, and began swimming. SBD's circled overhead for about one half hour and I saw them drop a raft which was meant for Sgt. A. Two PV's were also circling and continued to do so after the SBD's left. Others who were in the air reported that automatic and machine gun fire was seen hitting in the water very close to my position, but I was unaware of this.

After about 45 minutes, one of the PV's dropped me a rubber raft. The CO<sub>2</sub> container broke on contact with the water so I was unable to use it for inflation. Thanks to my hunting knife, which was an invaluable aid, I got into the pockets of the raft and extricated patching materials with which I repaired the raft in several places where it had been broken in hitting the water.

I also found the hand pump and used this to inflate one side of the raft. The pump stem pulled out of the valve and the other side had to be inflated by blow-



about 2,000 ft. All bombs got away. We were right over the target and they should have done some real damage.

I pulled out to the east and attempted to get away as fast as possible. Our altitude was about 1,000 ft. and the plane would not exceed 120 knots. The main right gas tank was on fire and smoke was pouring into the cockpit. My radio was out but the VHF interphone was working and I told Sgt. A., my radio gunner, that we would have to bail out. I'm not sure he heard me as he kept calling out that the gas tank was on fire.

Although we certainly were not as far out as I had hoped, I was afraid the plane might blow up. When the engine stopped, I told Sgt. A. to bail out. Still hearing nothing from him, I climbed out on the left wing and jumped under the stabilizer at about 900 ft. The parachute opened up and then I saw that Sgt. A. had jumped. His chute had opened up much lower than mine.

Sgt. A. and I hit the water about 1130,

ing into it. Climbing into the raft, I relaxed, using the oars to paddle out from the shore. The sea was calm with waves of no more than two feet high. The wind was moving me out to sea. At the end of the first hour, the Japs put out a line of five to seven shells from probably six-inch guns which hit a little short and slightly beyond me.

From time to time the circling PV's dropped smoke markers. The first one was dropped up wind, and I had trouble in getting out of the fumes. *Dumbo* arrived shortly and they threw me a lifesaver on the end of a rope. I was towed out a short distance and then picked up. We taxied around looking for Sgt. A., but no success.

To any man who finds himself in the same circumstances, I would say the most important single asset is a strong will to live. A good physical condition and particularly one conditioned to some swimming in the ocean is also a must. In order to avoid panic and depression, one should try to keep busy to make the time pass.



# SHORE STATIONS

▶ **NAS MEMPHIS**—"Zoomin' High," with a cast of over 100 and 18 original tunes to add a sparkle, was acclaimed a hit not so long ago at this station. Chief among the vocal entertainers was the spoon king, Frank Notsototra.

▶ **MCAS MOJAVE**—A welcome addition to station recreational facilities was the opening of a bowling alley. Leatherneck keglers who had been languishing since the town's only bowling emporium burned down a few months ago, rushed to take advantage of the place. There are four regulation alleys, three for enlisted personnel and one for officers. Comfortable lounges are provided for kibitzers.



▶ **NAS OTTUMWA**—Marital statistics here decry the general opinion that sailors and WAVES don't get along. During the first nine months of 1944, 24 of the more than 300 WAVES, stationed at Ottumwa, have been married. Of this number, 20 have married Navy men; two have married soldiers; and two, civilians, underscoring the decided preference of Ottumwa WAVES for the men in blue.

▶ **NATTC MEMPHIS**—NATTC brides and grooms will probably wait a long time before anyone starts them on the marital way by tossing an old shoe. The salvage department recently gathered together 3,000 pairs of shoes by means of combing the barracks with a fine tooth comb. This represents one month's collection. Thus far, the shoe salvage drive has netted 45,792 shoes for a total revenue to the Navy of about \$2,800.

▶ **NAS DALLAS**—Check rides look more formidable to student aviators here since the "Upcheck Special" has been taken off the flight line. The "Upcheck Special" may look just like any other N2S-3 airplane, but flight students and Training Squadron personnel swear it has that certain something which makes it different. The record bears them out. For the last four months this airplane has been used almost entirely for check rides, and all but one have been "ups." Personnel of the A&R Department modestly attribute the plane's superior performance to the major repair they gave it last May. The plane was in the shop again in June, as the result of a soloing student's briskly executed nose-over, but was repaired again with no loss of its special ability to inspire students, hypnotize check pilots, or whatever it does to defy the law of averages. This remarkable yellow trainer is now in the A&R shop for a major overhaul, after 22 months in service, and flight time within an hour of the 4,000 mark.

▶ **NAS MINNEAPOLIS**—A Navy training film, "Instrument Flight," has been completed on this station. An SNJ was used in the film which stresses the importance of a thorough knowledge of instrument flying for pilots. The photography was done by a civilian movie company; the acting, by a professional actor. What was formerly the A&R shop at Fleming Field, outlying field in South St. Paul, was turned into a studio, and station personnel were used in bit parts in the picture. Other scenes were made in the air over the station, in Link Trainer, in operations and on the flight line. The picture will be distributed by BuAer as a visual aid wherever instrument flying is being taught.

▶ **NAS ST. SIMONS ISLAND**—Down there in "Muddy Hollow," members of the Crash Boat units are stubbornly fighting a losing battle against aerial attacks that nightly go all out, after the day's fight has them all in. They got used to mosquitoes with flashlights. Now, however, the gnats are returning during the day in formation, and getting vector corrections from mosquitoes!

▶ **NAS MEMPHIS**—The squadron buildings have been changed so radically inside that instructors and cadets are wandering around madly pounding on walls for secret panels, so they can get out. The same utter confusion reigns in the instructor training division. Just recently they scheduled two carpenters and a painter for an instrument hop.

▶ **NAS JACKSONVILLE**—Some youngsters have burning ambitions to be firemen or train engineers, but one little fellow in Jacksonville not only knows that he wants to be a Navy flier, but also knows what kind of a plane he wants to fly. The following letter, printed in a childish hand, was received recently by the Commandant's office:

*Dear Navy:  
When I grow up let me fly a torpedo bomber.*

The message was not signed. There was no stamp on the envelope, but a faint pencil drawing to resemble a stamp was found in the upper right hand corner, and this drawing was cancelled in the regular manner. The envelope was addressed simply, "Navy From David," but it straightaway reached the Commandant's office.



▶ **BLIMPON ELEVEN**—The September hurricane created the problem of securing a large number of aircraft in South Weymouth's blimp hangars, resulting in one of the largest plane movements in New England's history. Since the gale was expected around midnight, the first planes started arriving at 1230. For six hours a plane landed every minute until at 1830 there were 326 planes secured.

▶ **MCAS MOJAVE**—The group stationed here has a 100% American fighting mascot, an eagle; however, a Captain nearly lost his pants securing it. The eagle was found at the foot of a cliff in the mountains by a Colonel and a Captain on a hike through the great unknown.



While the Colonel made passes at the young bird, whose right wing was broken, the Captain took off his trousers and crept up behind the eagle, throwing his pants over it. Although snared, the eagle handed out a number of deep scratches to show for the fracas.

▶ **NAS CORPUS CHRISTI**—NATB has followed suit of other stations by installing "glory boards"—scoreboards of the "Naval Order of Wise Old Owls" established for flight instructors. Upon completion of 500 hours of instruction without an accident or violation of training rules, an instructor becomes a "Wise Old Owl" and is issued a certificate. As he accumulates safe flying hours, he earns various emblems and symbols in accordance with a scale. These data are placed by his name on the board.

▶ **MCAS EL CENTRO**—Many new recreational facilities for both men and women, enlisted and officers are planned for this station, some of which are under construction at the present time.

Provisions are now being made for a larger library to house the 6,000 books now en route. A recent survey indicated that male Marines check out over 600 books a month, averaging 80 books a day. Poetry and mystery rate high with the men.

▶ **MCAS EL CENTRO**—In addition to millions of crickets, silver fish, black widow spiders, scorpions, vinegaroons, and the many other nondescript varieties of crawling creatures found in this desert country, this station is just recuperating from a butterfly invasion. Feasting apparently on alfalfa, the butterflies flitted about like falling snow, and were pests for several days.

▶ **NAS FLOYD BENNETT FIELD**—Mimi is the pet mouser of the Chief's crew in the flight salvage shack, also the *cherchez-la-femme* in a triangle that has more "cute" angles than right angles. Hounded by two ardent suitors, a sharp-witted salvage shack mech solved Mimi's problem by squaring his hypotenuse and rigging her a hammock. The hammock, cut from a piece of canvas, was GI in everything but size. He slung it between the lines on the salvage rack and tucked Mimi therein with a blanket fashioned from an old suit of dress blues.

▶ **NAS CLINTON**—Puzzled personnel in one office did some investigating after a dignified examining officer wrote "NUTS" in his report of their office. They found the initials stood for "NOT UP TO STANDARD."

▶ **NATTC NORMAN**—Aerology at NAS had an amusing surprise last week when the phone rang and a woman's voice asked for a weather report. The aerologist gave the usual string of technical information. When he had finished, the lady said, "You don't need to go into all of that. What I want to know is whether or not it will be good enough weather to hang out a wash."

True to the Navy's imperturbability, the aerologist replied, "Madam, this is Oklahoma. If I were you, I should most certainly put a chair out on the lawn, and watch the sky while the laundry's drying."

▶ **NAS CORPUS CHRISTI**—A S1c pitched 19 innings, batted in the winning run, batted in two other runs and made one run himself in a game that wound up the Navy baseball season, when the Corpus Christi Naval Air Training Bases All-Stars defeated the Pensacola Naval Air Training Bases All-Stars, 5-4, at Corpus.

▶ **NAS HUTCHINSON**—With many hundreds of enlisted men scheduled to go to sea under the rotation program in the next six months, the education officer is gearing training to the need of men about to get sea duty for the first time. Part of this training is a compulsory education course on Ship's Construction, Water Tight Integrity and Damage Control. The course is given to all men on the 18 months' shore duty survey list, regardless of rate.

▶ **BLIMPRON ONE**—The entire literati of LEA are standing by breathlessly awaiting appearance of their new publication. Somewhat akin to the noteworthy Dale Carnegie's famed book in that it will present the correct formula for doing something, it probably will be called *How to Chase Torpedoes and Frighten Friendly Submarines*. A huge corps of writers, technicians and editors is hard at work in production of this tome which they hope will become the Bible for all blimp outfits in handling their utility work.

▶ **NAS CORPUS CHRISTI**—A training course for civilian chauffeurs and enlisted drivers is to be conducted at the main and auxiliary stations of NATB and will include: physical examinations for civilian chauffeurs, preliminary driving tests, lectures on safe driving, traffic regulations and preventative maintenance, safe driving films, written examinations and the final driving tests.

## TOKYO TALKS

—TO THE UNITED STATES

Tokyo radio claimed recently that American news agencies had maintained "complete silence" concerning the fighting off Formosa, despite the fact that "all this had been announced and broadcast to the world by Japanese information organs." Although the Japanese naval air forces have so far achieved "brilliant war results in the battle east of Taiwan" (Formosa), the only thing released by American news agencies has been a communique from Admiral Nimitz's headquarters at Pearl Harbor saying, "Japanese and American air forces are engaged in battle."

### SHOW ME THE WAY TO GO HOME



### Relative Sector Search

You depart at flight altitude of 4,000 ft. from over your base, Newport Torpedo Station, Lat. 41° 29' N, Long. 71° 20' W, and fly to Fleet Guide, arriving there at 1000. At 0900 Fleet Guide was bearing 045°, distance 84 miles, from Boston Navy Yard, Lat. 42° 22' N, Long. 71° 03' W, on course 124°, speed 22 k. From Fleet Guide you are to search a relative sector from 130° to 160° to a maximum distance, returning to Fleet Guide at 1230. Your wind is from 093°, force 28 k. TAS 125 k. Mean variation is 16° W.

1. What is your MH to Fleet Guide?  
.....
2. At what time must you depart from over your base to arrive at Fleet Guide at 1000?  
.....
3. What is your MH, 1st leg of search?  
.....
4. What is your MH, 2nd leg of search?  
.....
5. What is your MH, 3rd leg of search?  
.....
6. What is your TTT at the end of the 1st leg?  
.....
7. What is your TTT at the end of the 2nd leg?  
.....

(Answers on page 40)

—TO THE UNITED STATES

The Philippines recently celebrated their first anniversary of "independence." Congratulatory messages were received from both Emperor Hirohito and Japanese Premier Kuniaki Koiso. Both expressed joy over the cessation of dominance under "the American yoke."

—TO THE PHILIPPINES

Japanese informed the Filipino people that Allied landings in the Philippines were nothing but a "bluff." "American claim of having effected the landings with an armada of 600 ships and 250,000 men was nothing more than a propaganda fantasy, far removed from reality."

—TO THE UNITED STATES

Domei hastened to assure the American people that the landing on Leyte island was of "no strategic consequence from the standpoint of general defense."

—TO JAPAN

Imperial Japanese Headquarters announced that Emperor Hirohito had granted "a gracious Imperial rescript of commendation" to three top-ranking officers for their part "in defeating the enemy fleet" off Formosa.

—TO JAPAN

The Japanese Domei agency said recently that some of the leading Japanese daily newspapers, as well as Domei itself, planned to send their crack war correspondents to metal factories throughout the country to entertain laborers with the latest eyewitness accounts of the war. The newspapers have planned this move as their share of the contribution toward the drive for increased munitions output, and were supported in their venture by the Munitions Ministry, the Board of Information and the Control Associations of the mines and factories.

—TO JAPAN

Justice Masataro Miyake of the Japanese Supreme Court, speaking over the domestic radio, said that he was deeply disappointed with a letter which had recently come to his attention.

The letter, it was disclosed, contained such comments as, "Taxes are constantly increased," "We are forced to buy war bonds," and "We are dragged out for air raid drills."

"To know that there are such words spoken among us, although it may be only among intimate friends," the jurist declared, "is very uncomfortable and ugly."

—TO JAPAN

Despite an intensive Japanese food self-sufficiency drive that has led the government to cultivate land along railways and in vacant lots, the Tokyo home radio disclosed a short time ago that Osaka, Japan's second most-populated city, is undergoing an acute shortage of vegetables. Although the present supply of greens in Tokyo and other large cities is not sufficient, the shortage is worse in Osaka, an important industrial center on Shikoku. More vegetables, bamboo shoots and potatoes will be shipped to Osaka, but the vegetables will be supplied only very gradually.



# TECHNICAL TRAINING

Aviation mechs, ordnancemen, metalsmiths, rubberized equipment repairmen, radar and line maintenance crews leave Norman NATTC in constant flow for combat duties with fleet and shore bases





ENLISTED MEN GO THROUGH CLOSE ORDER DRILL FORMATIONS ON APRON AT NATTC NORMAN; HAY SHOCKS OUTLINE ADJOINING GRAIN FIELD

## Norman Supplies Steady Flow of Mechs

**N**IGHT AND DAY, six days a week, service schools at the Naval Air Technical Training Center, Norman, operate to supply naval aviation with a constant flow of trained mechs, ordnancemen, metalsmiths, rubberized equipment repairmen, radar and line maintenance crews, to keep Navy planes ready for combat, afloat or ashore, around the world. Well over 50,000 graduates perform these vital tasks while many others are now in training in the Navy's aviation service schools.

NATTC Norman was commissioned in September 1942, when facilities of three West Coast schools were consolidated to form the technical training center. AMM and AOM schools at NAS San Diego, AMM and AM schools from NAS Alameda and AMM and AOM schools from NAS Seattle moved to Norman, complete with instructors, equipment, supervisory personnel and trainees, and the school went into operation a month later. The first graduates completed the course in December and nearly every Saturday since another class has finished while every Monday morning sees a new group enroll.

To handle the large numbers of trainees, schools op-

erate in two shifts. Reveille for the A shift sounds at 0500 and class periods start at 0630, secure at 1345. After that, enrollees get an hour each of military drill, physical exercise, and primary gunnery, with taps at 2100.

Meanwhile, reveille for the B shift sounds at 0640 and trainees spend the morning with these extra-curricular activities, going to classes from 1400 to 2115 and hitting the sack when taps sound at 2230. Every four weeks the shifts alternate.

In the past, large classes of WAVES and Marine Women Reserves have graduated from the schools. Quotas in both of these groups have been filled for the present.

**M**OST of the trainees in the AMM, AOM and AM Class A schools of the center are fresh from boot camp, carefully selected for these specialties because of their high rating in mechanical aptitude and general classification tests. Enrollees in the Class B radar and line maintenance schools and the Class C rubberized equipment repair school include men with Fleet experience. Graduates of all six schools leave the center for new assignments with the Fleet or shore-based activities.





PRECISION, TIMING AND ENDURANCE ARE REQUIRED TO STAY TOPSIDE ON THIS NARROW RAIL WALK IN WELL DESIGNED OBSTACLE COURSE

## RUGGED PHYSICAL PROGRAM FITS NORMAN TRAINEES FOR COMBAT

WHILE AT NATTC, trainees devote an hour of each crowded day to the rigorous physical fitness program. Divided into three phases, the program utilizes facilities of a large and completely equipped gymnasium, an outdoor field with two obstacle courses, two enclosed and one open swimming pool, and a natural hazard course. Testing exercises given during the first and last week prove that the average class shows a general improvement of 25 percent.

First phase of the program includes general conditioning exercises. After that comes competitive games to toughen muscles for air and sea fitness, with workouts on the trampolines and instructions in combat swimming. The third phase stresses aggressive combat fitness such as boxing, wrestling, hand-to-hand combat and methods of disarming adversaries who "attack" with leather daggers, clubs, wooden guns, and pistols. Methods of taking and searching prisoners also are stressed to prepare men for combat duty.

The natural hazard course simulates nearly every obstacle found in actual combat. Located in a creek valley on the station, men cross the 40-ft. stream by rope ladder, hand over hand, swing across on a vine rope, climb steep banks, leap rock and log piles, racing against time over the course.

Every physically qualified man is taught to swim. Not one has ever left the station without passing the BuAer D and C tests, a majority taking B and A tests, about 20 percent the AA or AAA. Water survival training is included.

AFFECTIONATELY known as "Pandemonium, Inc.," the center's Welfare Department rounds out the entertainment and recreation program with a never-ending series of special events. Such activities as a wildwest rodeo in which enlisted men participated, a Billy Rose-type aquacade, even a full-fledged wild animal circus are among the more unusual events. Others include numerous big name bands, stage and screen personalities, USO and home-spun stage productions. Washed-air motion picture auditoriums in three of the center's four ship's service buildings show first run movies three times a day to accommodate the various shifts. Recreation rooms with libraries, lounges and game rooms are numerous. Weekly dances are held in the auditorium.



RESCUE TECHNIQUE IS FITTED INTO RIGOROUS PHYSICAL FITNESS PROGRAM AT NATTC NORMAN IN THIS ENDURANCE BUILDING RELAY RACE



SHOTGUN RANGE IS IMPORTANT PART IN TRAINING; INSTRUCTIONS ARE GIVEN OVER PUBLIC ADDRESS SYSTEM IN SKEET, TRAP FIRING DRILL

## GUNNERY COURSE PREPARES ALL AOM'S, AMM'S FOR FLEET DUTY

**B**ASIC GUNNERY, an additional required subject at NATTC Norman for all physically qualified trainees, prepares AOM's and AMM's for the day when they will be with the Fleet, while AM's take only part of the curriculum.

This subject is broken down into five phases and differs to some extent for each of the three major Class A schools. For example, AMM's start with basic ordnance, learning to field-strip the .50 caliber machine guns. Signaling comes next, and they do blinker and semaphore until they attain a proficiency of eight words a minute. The shotgun range is an important part of the training. Here they shoot 50 rounds on trap, 100 rounds on skeet, then 150 rounds of skeet with the ring sight. At the same time they are learning sighting, and complete the course with recognition.

AOM trainees follow the same curriculum except for basic ordnance which they get in the Class A school. AM trainees take basic ordnance and recognition only.

Previously this training was given only to men who had volunteered for aircrewman specialization but now is offered to all men as a necessary part of the curriculum.

Special devices of all types are used in the primary gunnery program, many of which were devised by officers and men in the new school. Graduates who have continued in the aircrewmen program have found this phase invaluable while, at the same time, those who have not continued with gunnery have obtained fundamentals which may be useful.



Norman trainees go through flag hoist ceremony. Signalling is valuable part of all future AOM's AMM's and AM's training.



## AVIATION MECHS LEARN JOBS IN FOUR PHASES OF SHOP TRAINING

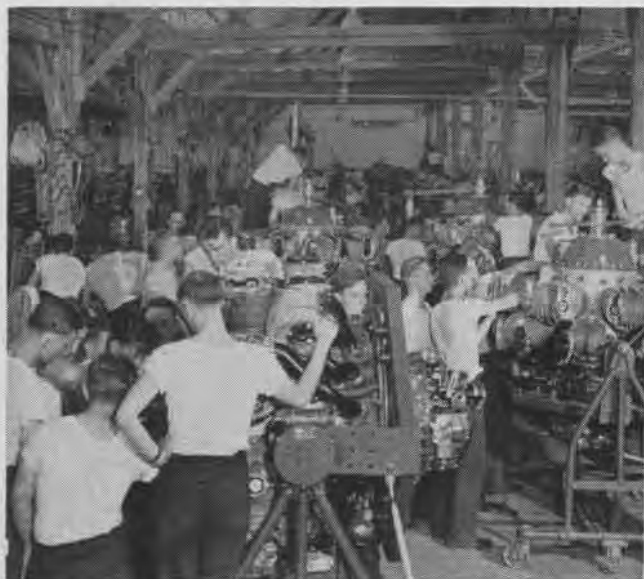
ONE OF THE LARGEST of the NATTC service schools, the aviation machinist's mate training program equips men to serve naval aviation in many capacities, both as ground and aircrewmembers. AMM's learn their jobs by doing them, spending approximately 80 percent of their time in the shops.

In basic, the first of four phases, trainees learn the tools of the trade and related shop practices. With hand tools, they fashion, cut and finish simple jobs, such as Dzus keys and water-tight patches, sharpen tools, grind drills, learn to read precision instruments. Safety wiring, how to remove broken studs, shop arithmetic, drawing are other subjects.

Going into the airplane phase, trainees study emergency gear, learn to cover, dope and patch fabric control surfaces. Nomenclature and controls, with a general understanding of the theory of flight and the action of various controls which are removed and reinstalled, occupy the early part of this phase with more advanced subjects such as hydraulics, landing gears, brakes, shock struts, flight and engine instruments, basic and advanced structures, fill the period.

Classes enter engine shop in the next phase, studying each of the various power plants used in Navy planes. They remove and install spark plugs, cylinders and pistons, accessories, adjust valve clearances, check timing, inspect and test ignition harness, synchronize magnetos. Fuel systems and all types of carburetors, including water injection, the ignition system including generators, magnetos and starters follow in the phase as well as electric and hydromatic propellers, with trouble shooting on live planes.

Practice in squadron procedures occupies the trainees in the final operational phase. Here they learn handling and securing of land planes, signals, maintenance, fuels, oils, engine preservation, instrument precautions, fire, cold weather operation, reports and records and squadron organization. Assigned to late combat-type aircraft, trainees change engines, removing and assembling accessories, then take their planes out on the line and run them up. They perform periodic inspections, and in the final week, spend three days on line operations, go to the ordnance school for a quick familiarization course, and prepare for graduation.



AMM students spend 80 percent of their eight-hour school day in actual shop work, learning proper line maintenance procedure.



Plenty of planes and plenty of work in Norman shops provide trainees with practical knowledge required for AMM ratings.



Hours of practice on the ordnance range is required for all AMM trainees during intensive 18-week course at Norman NATTC.

## AVIATION ORDNANCEMEN TAKE COMPREHENSIVE 18-WEEK COURSE

SHOP work and operational drills account for 70 percent of the time aviation ordnancemen spend in service school training at NATTC Norman. The course, which formerly required only 16 weeks, has recently been lengthened to 18 weeks to provide additional time for the introduction of new items of ordnance equipment, such as the self-computing sights, 20 mm. M-3 aircraft guns, .50 cal. package guns and others.

The curriculum is divided into four groups, basic, aviation ordnance equipment, aircraft munitions, and ordnance-

man operations. After indoctrination, subjects studied in the basic group include electricity, mathematics, blueprint reading, small arms, hand and small power tools, tool making, safety wiring, wire splicing, soldering and connections.

In the small arms course, trainees field strip and assemble, make adjustments, learn group nomenclature, cycle of operation, safety precautions and practice the care and cleaning of the .30 cal. rifle, .38 revolver, .45 automatic pistol, .45 Thompson sub-machine gun, .30 Browning automatic rifle, .30 Carbine M-1, and Marines the .45 Reising.

Subjects covered in the aviation ordnance equipment group include the .30 and .50 cal. BAM and 20 mm. aircraft cannon with accessories, installations of fixed turret and flexible guns in service type aircraft, maintenance, safety precautions, care and servicing. Boresighting of all types of equipment, harmonization, synchronization and test firing, malfunctions and stoppages, occupy several weeks.

OPERATION and maintenance of gun and torpedo cameras, the various types of sights and their installation on the airplane, finishes the work in this group.

The munitions group includes a study of all types of explosives and ammunitions for ordnance equipment. Considerable time is devoted to aircraft rockets and launching devices, installation of destructors of secret equipment.

Pyrotechnics, flares and smoke tank installations and operations come next in the curriculum, followed by a thorough study of bombs and fuzes, mines, bomb racks and shackles, hoists and hoisting bands. Field stowage, targets and towing equipment complete the work in munitions.

In the operations group, students conduct rearming drills on operational types of aircraft, the F6F, F4U, SBD, TBF, SB2C, SB2U, PBV and others. Here they install ordnance gear, boresight the guns, synchronize them in some cases, and fire them on the range. This includes the complete rearming of aircraft with the various types of loads including bombs and torpedoes in preparation for operational flights.

During the final week of the course, trainees spend two days in the AMM school where they get a brief indoctrination in cockpit checkout, plane handling, signalling, reports and records, securing, Saturday being devoted to graduation.



THEIR TECHNIQUE PERFECTED BY LONG PRACTICE AT NORMAN, THESE MEN WILL BE QUALIFIED TO ARM AND SERVICE CARRIER-BASED AVENGERS





Every aviation ordnanceman spends two days in AMM school prior to graduation. Here on the Norman AMM school ramp, AOM's are indoctrinated in cockpit checkout, plane handling, signalling, reports and records, proper methods of securing aircraft and other duties they may have to take over in combat emergencies. Every AOM studies blueprint reading, safety wiring, and wire splicing.



Boresighting guns is one of the jobs AOM trainees learn to do well during their training in operation group at NATC Norman. Students conduct rearming drills on F6F, F4U, SBD, TBF, SB2C, SB2U, PBV and other operational-type naval aircraft. Trainees get valuable experience installing ordnance gear, synchronizing guns, rearming aircraft with various type loads, and range firing.



Aviation metalsmith trainees learn proper technique as they polish and repair plastic turrets in the shops at NATTC Norman.

## AM'S SIMULATE REAL SQUADRON OPERATIONS AT NORMAN SCHOOL

**T**HE NAVY'S ONLY Class A aviation metalsmith school now operating is located at NATTC Norman, where students spend 21 weeks in intensive study to learn the basic principles of the specialty. Eighty percent of this time is spent in well-equipped metalsmith shops and in simulating actual squadron operations, the remainder in classrooms and lecture demonstration periods.

The course of study for the AM starts with basic bench metal work, continues with aluminum sheet metal, aircraft welding and finishes with squadron repair operations, erection and maintenance practice on combat type planes.



Under watchful eye of instructor, this future AM makes a section skin replacement during on-the-job NATTC training course.

In the basic metal work block of the curriculum, trainees study shop mathematics, blueprint reading and mechanical drawing while learning the use of hand tools. Practical jobs involving use of galvanized iron and aluminum give trainees experience in riveting, stretching, shrinking and forming operations.

Block 2 of the course gives practical application of the earlier work when students start working on airplane cowling, empennage and wings, removing dents, patching, cutting inspection holes in metal skins, fitting plate covers.

**C**ONTINUING in the third block, trainees make waterproof repairs on floats and hulls, make skin replacements on fuselages, do minor repairs on self-sealing fuel cells, study airplane plumbing including flaring, beading and bending. Fabric and plastic repairs come in this section of the curriculum. Trainees learn to make repairs on fabric control surfaces as well as repair cracks and holes, drill, saw, cement and polish transparent plastics.

In the welding shop, students start with mild steel, learning to run a bead, do butt and lap welds, continuing to more complicated welds. Advancing to stainless steel, they are introduced to use of flux and finally complete this block by doing aluminum welding, the most difficult of all aviation welds.

On-the-job training has been found to be the only practical way of teaching aircraft welding.

Student metalsmiths prove their worth in the erection and maintenance block where they practice squadron repair operations under the supervision of instructors, most of whom are returned from Fleet activities. Inspection, removal, repair and installation of flight controls occupies a week of the time while the next three weeks are devoted to a variety of individual repair jobs on live operational-type aircraft.

During this operational block, trainees put into practice all the skills they have been taught, working on combat plane types including OS2U, SB2C, F4F, SBD, SB2A, F6F, FM, F4U and TBD.

In the final week, students learn assembly and disassembly of various Navy planes, spending two days in AMM school for indoctrinal course, graduating on Saturday.



AM's master "know-how" of all aviation welds by actual job training. Aluminum welding is most difficult type to learn.



# LINE MAINTENANCE GRADUATES ARE QUALIFIED PLANE CAPTAINS

THE NAVY'S FIRST line maintenance school, established at NATTC Norman less than a year ago, combines a number of factory schools into an organization designed to train personnel in service, removal, installation, inspection and maintenance of equipment and its preparation for flight.

This Class B service school features a four weeks course on each of four different plane types, the FM, TBM, F4U and F6F, giving specialized training to personnel with a background of a Class A school or the equivalent. Actually, most of the students are rated men and non-commissioned Marines who have seen Fleet action and are sent back for more specialized training.

Students spend eight hours a day in school, approximately 80 percent of which is in actual shop work and operation work. Most of the men come from ComFairWest, ComFairLant, Marine Operating Units, CNAOp and FAW-2. Upon completion, they return to their respective commands.

In each of the four schools, three weeks are devoted to learning the specific model plane being studied. The final week is devoted to operational phases, daily and periodic checks.

FOR EXAMPLE, in the FM school, trainees take up structures in the first week, wings, fuselage, wheels and brakes, arresting gear, landing gear, control surfaces, flaps. In the second week, emphasis is placed on the electrical system, propellers, starters and instruments. The third week is devoted to power plants, the R1830-86 in the FM-1 and the R1820-56 in the FM-2.

The curriculum is changed to meet the needs in each of the various schools. In F4U school, hydraulics is a much more important subject, consequently the entire second week is devoted to these installations. This is true to a lesser extent in the F6F and TBM schools.

During the course, every trainee gets three or more cock-



On-the-job training these men receive in shops at NATTC Norman adequately prepares them for future mech duties with Fleet.

pit checkouts, and by the time he leaves, is qualified to act as a plane captain. Ordinarily only five or six men are assigned to an instructor; thus by working in small groups, individual attention can be given. However, these classes may be increased in size when necessity arises.

IN EACH SCHOOL, the final phase is devoted to operations where trainees do every job they could be expected to tackle aboard a carrier or at an air station. Engines are removed, and while on quick change stands, stripped of all accessories, the various parts checked and reinstalled. With the engine back on the plane, trainees start them, run them up, check and adjust as necessary. Daily and periodic inspections on the line are stressed. All trainees get a limited indoctrination in ordnance subjects so that in an emergency they will be able to install and remove guns on the plane.



TBM cutaway gives these aviation machinist's mate trainees an opportunity to study the construction, design and operation of aircraft they will maintain and service in actual combat operations with the Fleet. Many trainees have already seen action.



REPAIR OF BULLET-PROOF TANKS, SELF-SEALING CELLS, PART OF TRAINING PROGRAM AT NAVY'S RUBBERIZED EQUIPMENT REPAIR SCHOOL

## RUBBERIZED EQUIPMENT REPAIR IS NORMAN'S NEWEST SCHOOL

THE NAVY'S RUBBERIZED equipment repair training program is the newest of the center's service institutions and the only Class C school at NATTC Norman. It was established to train men in correct procedure for maintenance and servicing of self-sealing cells, commonly known as bullet-proof tanks, and Plaskon sealing tanks for LVT's (Land Vehicles Tracked) and PT boat fuel cells. In addition to the cells, considerable training is given to cover maintenance of flotation gear, including life rafts and vests.



Instructor demonstrates proper methods in repairing flotation gear to trainees at Norman's rubberized equipment repair school.

The course originally was only two weeks, with the school located at Cuyahoga Falls, Ohio, near the rubber center of Akron. Need for intensive conservation of all rubberized equipment dictated removal of the school to Norman and enlarging the curriculum.

The five-weeks course is divided into four phases. First is fuel cell repair, where students learn the proper manner in which the various types of fuel cell injuries can be repaired. Second phase of the school teaches the proper manner to inspect cells and the correct procedure for storage and handling. The third phase deals with flotation gear of every description.

The fourth and final phase, and one of the most important, is the period of instruction on the proper manner of removing and installing fuel cells in planes. Here the men make actual removals and installations in all Navy type planes. In the past many cells have been damaged, some beyond repair, because of improper handling. Methods of removal and installation vary with each plane type and it is during this phase that, under careful guidance, correct procedures are learned.

APPROXIMATELY one-third of the trainees come from the AM school, the balance from various aviation activities and the Fleet. Amphibious activities also provide some personnel for training in repair and proper handling of cells used in LVT's and PT boats.

The objective of the school is to turn out trained craftsmen who can furnish important service in conservation and maintenance of rubberized equipment.

Approximately 800 Navy personnel have been through the RER school since its beginning in the fall of 1942. Today these men are scattered in all corners of the world and most of them are in forward areas helping to keep their equipment operating, to save the lives of the men serving in naval aviation. Rubberized equipment has become an increasingly important factor in this naval war. The Norman rubberized equipment repair school has kept pace with new developments and procedures in relation to actual use.



# TECHNICALLY SPEAKING

## Plane Model Aids Celestial Study

NAS OTTUMWA—A hobby horse model of a plane has been found by the navigation department to be a helpful aid in teaching visual bearings, radio bearings, and relative bearings of stars. This device is merely a table with folding legs that is shaped like a plane.

A magnetic compass is mounted in front. Toward the rear it has a post and mounting for an astro compass. On one wing is the mounting for a radio compass. By using a Mark III board, visual bearings can be taken in class-



PORTABLE TABLE IS SHAPED LIKE AN AIRPLANE

rooms. The Astro compass can be used in the same manner with celestial bodies outside classroom. The Radio compass consists of an extremely directional portable radio mounted so it can be turned in any direction with a pointer indicating relative bearing. Radio bearings are taken on standard broadcast stations.

► **BuAer Comment**—Radio bearings on fixed broadcasting stations do not offer much variety. Believe this device's best use is with the stars.

## Baseball Caps for CASU Crews

BuAer has procured baseball caps for CASU personnel operating in tropical areas. Action was taken to provide men with headgear suitable for working around planes and at the same time afford protection from glare.

Each CASU is allowed 175 blue caps for engineering crews, 150 red caps for ordnance crews, and 150 green caps for operation crews. Service tests revealed that sun helmets were not suitable for

working in and around airplanes.

Although the baseball caps were procured specifically for CASU crews, they also may be ordered by other activities from BuAer on Contract NXsa-68238.

BuAer also has initiated procurement of baseball caps for pilots. These are tan, with beaks that are long and wide.

## BuAer Lists Stock Number of Links

To assist service activities in ordering shoulder strap connector described in the October 15 issue of NAVAL AVIATION NEWS, the ASO stock number of this item is 37-C-2555.

Connecting link is designed to prevent shoulder straps from slipping off the wearer's shoulders. New shoulder straps now being procured by BuAer have a permanent connecting link built into the strap. The detachable link connectors will be used on straps previously issued.

## Vise Grip Jaws Hold Metal Parts

NAVY YARD, PUGET SOUND—An attachment for vise grip to hold rectangular work has been developed at this activity under the Navy Employees' Suggestion Program. The new tool pays for itself many times over since certain types of sheetmetal holding jobs which were previously difficult now are easy.



METAL CAN BE HELD CORRECTLY FOR WELDING

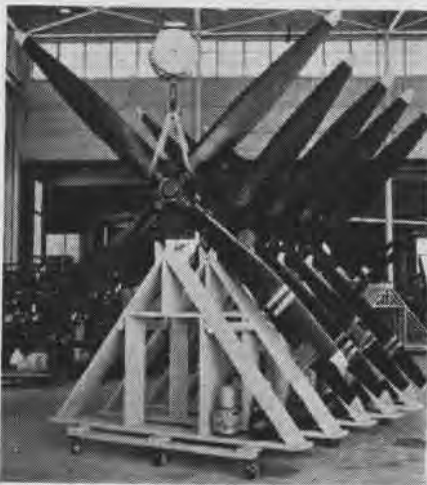
This attachment is in effect a substitute pair of jaws of special design which adapts the plier vise to certain applications on sheetmetal work. It is simple in construction and inexpensive. With it the handling of rectangular

work such as ventilation ducts, metal furniture and the like is greatly facilitated. The jaws hold the sheetmetal together at right angles for tack welding, spot welding or riveting. They are easily mounted on the tool and just as easily removed.

[DESIGNED BY HOWARD J. BEHYMER]

## Prop Stand Saves Storage Space

NAS TRINIDAD—An acting pay clerk, storage officer at this station, has devised a four-bladed propeller stand which has proved satisfactory for storage and handling props used on PBM's.



PROPELLER STAND IS MADE FROM SPARE LUMBER

By use of these dollies, made of scrap lumber and casters already on hand, 15 propellers can be stored in the same space six formerly required. The log book of each prop is taped to one of the blades. The motors, stored at the lower right-hand base, are wrapped in used airplane plicofilm bags for protection. All attaching parts necessary to installation of the propeller are packaged and stored within the cone shown in black next to the motor.

[DESIGNED BY L. P. GIRARD, ACTING PAY CLERK]

► **BuAer Comment**—In using this stand, it is important to position the propeller blades so that the blade cuffs are not required to support the weight of the assembly. When a propeller is being lowered on the stand, it should be held in a vertical plane to permit proper entry of the anti-icing slinger ring into the recess provided. This ring may be easily broken if allowed to support any appreciable portion of the total weight of the assembly. As an additional safety feature, it is suggested that users provide a retaining board on either side of triangular storage space.



# SCREEN NEWS

**Float and live.** Nothing seems more useless, out of water, than a device for keeping afloat. Contrariwise, when a ship goes down and that old solid deck is no longer under foot, anything that will keep a man's head above water suddenly becomes a matter of life or death. Two new motion pictures describe equipment and techniques for staying out of Davy Jones' locker:

- MN-2829a *Emergency Rescue Equipment—Part I—Life Jackets and Belts* (Restricted, 20 min.)  
 MN-2829b *Emergency Rescue Equipment—Part II—Floats and Floater Nets* (Restricted, 11 min.)

The first film gives the low-down on the stay-up qualities of four types of naval life-jackets and belts—kapok lifejacket, kapok knapsack lifebelt, oral inflation lifebelt and rubber vest. Attention is given to those fine points of checking, adjusting and proper wearing of equipment which are so essential to survival of the well-dressed castaway. The close of the film is a demonstration of jumping techniques, with a repetition of the old warning that floating on the back gives protection against concussion from explosions.

The second film has to do with floats and floater net equipment—inspection, launching, maintenance. *Sample cautions:* checking release mechanisms, looking for entanglements, making certain it's "all aboard" for rations, water paddles, signaling equipment, first aid and fishing kits. *Other points covered:* technique of launching, importance of being lashed to equipment and staying in groups, need for keeping water and rations fresh, and various maintenance features.

**Ocean cocktail.** Water, water everywhere—and plenty of it to drink, if you use the equipment described in the recently released movie:

- MN-2612 *Making Seawater Drinkable* (Unclassified, 13 min.)

This film first shows how sodium chloride present in salt water plays hob with the saline balance in the human body, making ocean water unfit to drink, even as a last resort. Then the newly developed desalting kit is introduced. The idea is simple, as indicated in the recipe for de-brining: pour seawater into filter bag up to indicated line; drop in one chemical briquet (for removing sodium chloride) and slosh for 20 minutes; knead mixture for 10 more minutes; filter through bottom of bag and drink. Care in handling and in using equipment is underlined.

**Wheels.** Of interest to aircraft maintenance crews is the following movie showing various types of Goodyear airplane wheels in use:

- MC-3749 *Wheels Down* (Restricted, 10 min.)

The film describes materials and characteristics of a typical wheel, and illustrates assembly, inspection and servicing.

**Robot target.** Further evidence that scientific developments of this war have relegated Buck Rogers to the limbo of a small-time tinkerer is found in the successful operation and use of the TDD-1, radio-controlled airplane target. The new film describing the pilotless plane is:

- MN-3119 *Operation of the TDD-1 Aircraft* (Restricted, 23 min.)

The motion picture covers:

**Assembly**—mounting propellers, landing gear, control surfaces, parachute, radio receiving equipment; and trimming and balancing the aircraft.

**Launching**—mounting in catapult, cocking catapult, starting aircraft engine, going through check-off list.

**Flying**—operating by remote control pilot, with description of control box, transmitter and accessories.

**Recovery**—opening of parachute which lands aircraft safely.

Remote control operation of the TDD-1 is shown at a shore base, aboard ship and on small craft, demonstrating use of the robot plane target in training Navy gunners.

**To kill or not to kill.** "Shoot first and check up later" was a fashionable axiom in the days of Wild Bill Hickok. Not so in this war—in which recognition has become a major science for the duration. Among the new Quizcraft releases is:

- MB-14320 *Recognition of Airplanes—Quizcraft #15* (Restricted, 11 min.)

The film, intended for personnel of all services who have already received basic training in aircraft recognition, has an introductory sequence showing five problem aircraft—the *Albatross*, *Firefly*, *York*, *Me 109F*, and *Warwick*. Each aircraft then is taken up separately. First, distant and difficult shots are shown, without revealing the name. This is the "Quiz" section of the film. A diagrammatic answer then is given, followed by a sequence of easier shots with comments on both recognition and general interest features of the aircraft.

Three other recent films are dedicated to the proposition that it is best to know whom you are killing:

- MN-3197b *Aircraft Recognition Tests—Test #2—U. S. Army Aircraft* (Restricted, 11 min.)  
 MN-3197c *Aircraft Recognition Tests—Test #3—U. S. Navy and Army Aircraft* (Restricted, 20 min.)  
 MN-3197d *Aircraft Recognition Tests—Test #4—U. S. Army and Navy and British RAF Planes* (Restricted, 20 min.)

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

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

## Life Raft Testing System Speeded

NAS ALAMEDA—A device to speed up inflating and testing of life rafts is resulting in great savings of time at this activity. Designed by two civilian workmen under the Navy's beneficial suggestion program, this tester through its construction combines features of an inflator and tester in much the same manner as "back pressure" air gauges for automobile tires.

This is accomplished by containing in the instrument a suitable air injection line which discharges into a high pressure connection leading to the life raft. Air is admitted through the instrument into rafts and at desired intervals, a



GIRL DOES WORK OF SIX TESTERS WITH DEVICE

reading on pressure is obtained by simply closing inlet valve and opening valve discharging into pressure gauge line. Pressure from raft feeds through this gauge line and registers on gauge which is hand calibrated in inches of mercury. When proper pressure is obtained as shown on gauge, the line is closed off and the operator closes raft connection before removing connection hose.

Provision is made for protecting gauge against buildup of a high back pressure by introducing in gauge feeder line a standard suction regulator valve which is adjusted to 6" of mercury, full range of the gauge. This tester is constructed from a surveyed airspeed indicator, using a surveyed altimeter diaphragm. Gauge is calibrated to 6-0-6 inches of mercury and is used extensively at this station to replace mercury manometers formerly in operation for gauging purposes. This tester obviates necessity of using a mercury manometer when inflating and testing life rafts and, as a result, speeds up the operation. One employee using this device can inflate and test approximately three times as many life rafts as two employees formerly did.

[DESIGNED BY C. S. BOONE AND W. F. HUNT]





MORE THAN 30 UNSAFE LANDINGS HAVE BEEN PREVENTED AT QUONSET POINT IN THE PAST YEAR BY USE OF THIS WELL-EQUIPPED SAFETY TRUCK

## YANK TRUCK

Bad Landings Reduced  
Through Quonset Plan

**G**UARDIAN ANGEL of the runways at the Naval Air Station, Quonset Point, is YANK, a special control truck which in the past year, with its predecessors, has prevented more than 30 unsafe landings. Operated during flying hours, normally 24 hours a day, it is manned by WAVES. The truck is built to control take-offs and landings from the leeward end of service runways.

YANK is easily seen by incoming pilots. Protected by shatterproof glass, the lookout sits in elevated tower with all the needed signaling equipment. Hand swing bar and emergency escape doors assure her safety. In rear compartment is the motor generator with batteries giving power for a radio, obstruction lights and Aldis lamp. Radio equipment and signal flares are kept handy.



Asbestos-lined walls provide insulation to protect compartment in which is housed 32-volt Kohler motor with batteries to give power



Wave operator seated high in glass-enclosed observation tower has vantage point for observing planes and warning impending crash

# AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

## Second Revision of O.P. 865 Delivered

Distribution of the new Aviation Ordnance Equipment Catalogue, Ordnance Pamphlet 865, Second Revision was completed early in September. Activities failing to receive copies or desiring additional copies may request them from one of the publications distribution points listed in OCL V15-43 (Revision No. 1).

## Bomb Loading Device Cuts Risk Factor

A practice bomb loading device has been designed and built by C. E. Walker, ACOM, who is attached to VPB2 Operational Training Unit No. 3. It provides a wide margin of safety from accidental blast fragment damage to personnel engaged in loading miniature Practice Bombs Mk.5 Mod.1.

Essential features of the miniature bomb loading table are: wooden construc-

During loading, two Mk.5 Mod. 1 miniature practice bombs with fins down are placed in the two receptacles on top of the table and are locked in place by a notched steel retaining bar which is operated by foot pedal. Since bombs are held rigid by pedal control allowing both hands to be used in inserting cartridges and cotter key retainers, less time is consumed in loading each bomb. It has been found by test that a case of 25 practice bombs can be loaded in five minutes.

Accidental explosion of these bombs while loading can be avoided if bombs are loaded according to instructions. BuOrd, therefore, does not feel it necessary to furnish this table to aviation activities.

## Early Bomb Carriers Are Made Safer

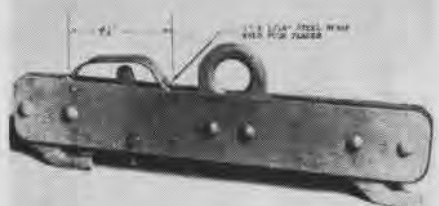
A simple and effective means has been suggested by the USS *Tangier* for prevent-



OPERATOR IS PROTECTED BY SHIELD OF GLASS

tion, two bomb receptacles, two shields of protective armor and a screen of bullet proof glass. Materials were secured locally from scrap metal and wood.

Construction is very simple and no complicated movements are required in its operation. Practice bomb receptacles are located on top of the table and immediately under these is a 6" steel pipe to afford a safe outlet for the blast of any accidental explosion. Over the receptacles and attached to the table top is a hood made of armor plate and notched at table top level to accommodate operator's arms. Covering the end of the hood nearest the operator is a shield of 1 1/2" bullet proof glass which was obtained from a surveyed F6F. Through this the operator can see clearly without danger to face or body.



STEEL STRAP PREVENTS INADVERTENT RELEASE

ing inadvertent release of bomb loads from early type bomb carriers, Mk.4, which were not provided with a safety locking pin.

The device used by the USS *Tangier* consists of a metal guard welded over the release lever of the carrier to prevent the lever from being actuated accidentally. The majority of the bomb carriers Mk.4 now in service are provided with a satisfactory safety locking pin which is inserted through drilled holes in the side plates after the carrier is latched. This prevents inadvertent release of bomb loads. However, the first several hundred of the carriers which were issued do not have the safety locking pin. Use of the guard as illustrated should provide increased safety in handling bombs with these carriers.

## Bomb Nose Fuze Mark 221 Is Reworked

The bomb nose fuze Mk. 221 has been reworked so as to reduce the body diameter to fit the nose fuze seat liner of AN-standard G.P. bombs. This provides a nose fuze with .01 second delay for AN-standard G.P. bombs. In all other respects, the fuze Mk. 259 Mod. 0 is identical with the bomb nose fuze Mk. 221 described in O.P. 988. The modified fuze is suggested for use as a crash-proof delay nose fuze pending availability of the nose fuze AN-M103A1 which will incorporate crash-proof facilities as well as selective action setting.

## Chromate Crystals Stop Corrosion

Several instances of injurious corrosion of aluminum alloy fuel tanks in naval aircraft have been brought to the attention of BuAer recently. Although in some cases these tanks had no paint coatings in them, all were supplied with cartridges for potassium chromate crystals. Experience indicates that corrosion should be absent in unpainted aluminum alloy fuel tanks when these cartridges are kept filled.

In view of the foregoing, the only assignable cause for the corrosion noted is failure to maintain the potassium chromate crystals as prescribed in Technical Note 19-42. Paragraph seven of this TN states:

"Potassium chromate goes into solution in water to the point of saturation, giving the water a yellowish color. Therefore, when clear water can be drained from the sump, it is a definite indication that the potassium chromate is exhausted and requires immediate renewal. Inspection will show when the crystals have been dissolved and consequently when a refill is required. Frequency of replacing the chromate crystals depends upon the size of the tank, hull or float and the rate of water precipitation."

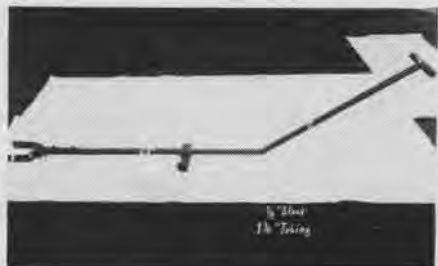
## Chief Metalsmith Designs Tail Bar

CVE-57-A tail steering bar which greatly facilitates handling TBF planes aboard a carrier, particularly on the hangar deck where clearances are close, has been developed by this unit. Actual use of the device has proved it to be a time-saver of practical value.

The bar is constructed of 1 1/2" tubing and 3/4" stock and is mounted on two swivel casters at approximately its balance point. The clamp which secures to TBF is welded to a horizontal section of the tubing 6' 5" long. To the horizontal section is welded, at an angle, a 51" section of tubing rising to a convenient height from the deck. Handle at end is "T" type, 12" in length.

[DESIGNED BY K. W. FIRESTONE, AUM]

► **BuAer Comment**—The Bureau considers this tail towing bar a very practical implement with many uses to which tail towing bars commonly utilized by aircraft carriers cannot readily be adapted.



SWIVEL CASTERS ARE USED FOR THE FULCRUM



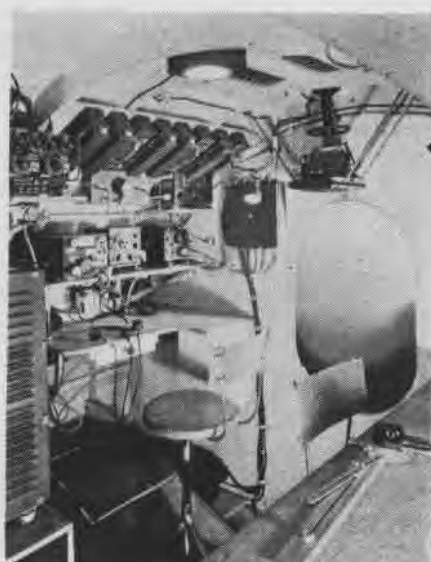
# NEW SPECIAL DEVICES



**Crew Navigation Trainer.** Practice and training in crew procedure, radio operation and D/R navigation for a crew of three are provided in this new development of BuAer's Special Devices Division. The pilot flies a Link Instrument Trainer, while the navigator and radioman work in a nearby cubicle. Cubicles are constructed to simulate arrangements and equipment of the PBV-5, PBM-3, PV-1, PBJ and PB4Y-2.



The navigator's position is equipped with remote reading compass, altimeter, and airspeed indicator automatically controlled by the Link Trainer. A drift meter is provided so the navigator may take drift sights at any time over land or sea areas. This device works automatically from the Link wind-drift mechanism. A plotting table is built into the navigator's space, and one set of standard navigation instru-



ments goes with each device. Radio D/F bearings may be taken on two simulated radio stations. These bearings are set up automatically by the recorder on the Link desk to coincide with the plotted position of the plane in the air. Photo at left shows complete assembly. The navigator's station in the cubicle is shown in the center picture, and the radioman's station is shown in the photograph at left. (Device I-JJ).



**Mobile Teardrop Turret.** Aviation free gunnery schools are using mobile and semi-mobile mounts developed by Special Devices Division for the Erco 250-TH turret to provide thorough training in manipulation and maintenance of the "teardrop" PB4Y-2 turret. For firing, a 1½-ton truck is equipped to transport the turret, ammunition and personnel from station to range and from one range to another. Truck is Device 3-C-12-e-1. For maintenance training only, a dolly-mount, Device 3-C-12-e-2, has been designed for use where a semi-mobile support is needed.



**Post Mount Self-Assessing Camera Gun.** Assessment of free gunnery films is made simple and more accurate by use of this new device. It may be mounted in waist positions of PBV-5's and PB4Y-1's, and in tunnel position of PV-1 and PV-2. Camera gun takes a picture which includes not only a central fixed reticle pattern representing the point at which the gun was aimed, but also a second movable reticle pattern showing the lead that should have been given to allow for the motion of the gun platform when target plane is in pursuit curve. (3-C-16-c).

### T Fitting Secures Aircraft Tails

NAS MIAMI—To avoid the possibility of a TBF or TBM-type plane falling off a jack when the tail section is raised, a simple fitting was designed and manufactured by the A&R Department here. Width of pipe used for the horizontal piece in the picture was 6 $\frac{1}{2}$ " and the tail of the T extends 4" below the joint.



FITTING KEEPS TORPEDO PLANES UP ON JACKS

Four holes bored in the cross-bar will take a pin for securing.

► *BuAer Comment*—Use of this tee-shaped fitting will prevent lift tube supporting the airplane from falling off the jack ram. This use will be rare as most stations have dollies for this hoist. The scheme requires the two jacks to be tied up while the tail is raised. This is sometimes necessary for long periods in A&R shops. The tee would be desirable in operating units for quick repair to tail wheels provided jacks are available.

### Trace Projector Helps in Gunnery

Chief of Naval Operations has directed that the standard basic gunnery syllabus be modified to include instruction on the Trace Projector Trainer, an adaptation of the familiar 3-A-2 gunnery trainer, which will give students practice in tracer fire.

Gunners of the fleet are using and will continue to use tracer ammunition. While there are certain errors inherent in tracer fire, instruction in its use points out those errors and tells gunners how to get around them.

The Free Gunnery Standardization Committee has recommended that tracer fire not be used to determine the opening burst. The accepted system for determining the opening burst is position firing for pursuit curve attacks and the two-thirds-of-a-second method against planes not attacking. Tracer can be made a definite aid in correct tracking after gunner has opened fire.

The tracer trainer enables the student to fire by tracer control only, then fire by approved sighting methods

without trace, comparing his two scores. It may be demonstrated graphically to the student how tracer may aid him to track along the correct line of apparent motion of the target.

### Model Rude Star Finder Is Used

NAS GROSSE ILE—A demonstration model rude star identifier for class room



MODEL IS LARGE ENOUGH FOR CLASS ROOM USE

use has been developed at this station. Specifications call for a model 36" in diameter, this size being an even four to one projection of the H.O. 2102C as issued. Base is made of 5/16" plywood painted with a flat coat of white paint upon which stars and other features are painted in black. Seven-eighths-inch plywood should be used to exclude any possibility of the base warping. Template is of 1/8" plexiglas cut to 36" diameter with a band saw.

Grid and stars were projected on the template and base with an opaque projector having lens extended to give an exact four to one projection from small template and base. Projection and marking on the plexiglas template was accomplished by leaving adhesive paper covering on and marking upon it.

Afterward lines were cut through this paper with a razor blade. In order to get ink to adhere to plexiglas in was necessary to groove each line and figure. Grooving can be done by a sharp instrument or sand blast. The grommet hole was drilled in the template and base, a 1/2" x 1" belt inserted. After paper was removed from plexiglas and India ink applied to grid, the device was assembled and ready for use.

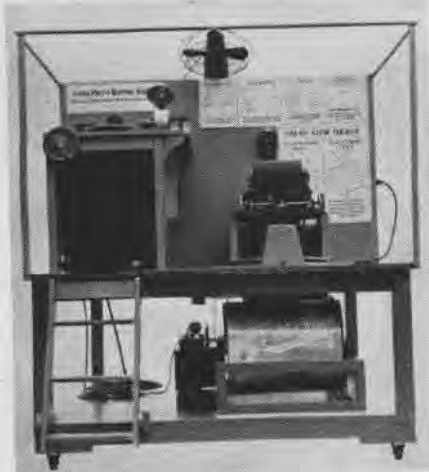
This demonstration model was designed for Lat. 35°N. to correspond with latitude of problems in the syllabus. Specifications and prints of this model may be obtained from station Public Relations Office.

► *BuAer Comment*—This is an excellent idea for demonstrating use of the Rude Star Finder. One commercial company

manufactured a model similar to this which was used by the Army and, to a limited extent, by the Navy. If there is a demand it can be produced reasonably in quantity.

### Aerial Photo Technique Improves

NATB PENSACOLA—A new and improved photo-mapper trainer has recently been placed in service here at



NEW DEVICE IS LESS CUMBERSOME THAN OLD

the photo school for training Navy photographers in the technique of aerial mapping without leaving the ground. Chief value of this trainer lies in its ability to give a student practical experience in correction for tilt, drift, and crab of mapping aircraft.

This device consists of two principal parts, a strip photographic map and a platform simulating mapping installation in a photo plane. The strip photographic map, mounted on a continuous belt beneath the platform, represents an area four miles long and 20 miles wide. Speed of this belt is rheostatically controlled so that the map, when viewed by the student above, simulates ground speed of an airplane flying 100 to 250 miles per hour.

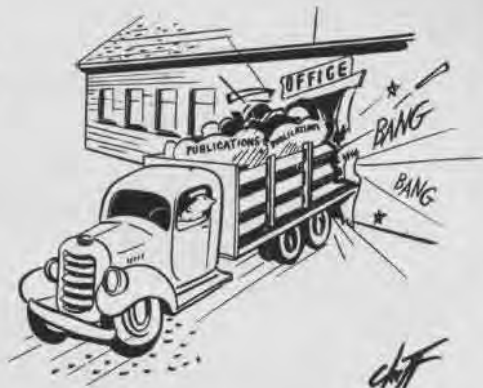
On the platform is mounted a standard electrically operated mapping camera with a vertical viewfinder installed directly over strip map. Student handles camera and viewfinder, with his instructor sitting alongside at a table on which are situated controls for simulating tilt, crab and drift of an airplane.

Also located on control table is an automatic device which records the track of a plane over ground on a one-tenth map, enabling instructor and student to determine success of mission.

The old trainer was a cumbersome affair composed of an actual airplane fuselage mounted about 10 ft. above a screen on which was projected a motion picture of terrain supposedly being flown over and photographed by student. This film was too far away from sights of the photographing machine.



# HAVING TROUBLE WITH PUBLICATIONS?



IN SPITE of a cynical remark that the damned war would have to be over by 1948 because all the paper in the world would be used up, we are going to take some of that dwindling commodity to explain what continues to be a difficult and often misunderstood problem.

There are still a great many who don't seem to have got the word and don't know where they are "at" regarding BuAer's technical information. A plane can nose over and its valuable prop get a beautiful permanent or it might be used as a buzz saw on the carrier deck and it's "too bad," but give someone printed matter he doesn't want and he turns into a Scotsman and starts chipping his teeth about WASTE.

THERE ISN'T a plane or any important part of one that doesn't have something in printed form about it. There are over 13,000 technical publications of this sort now listed and they grow and change at the rate of about 500 a month. When you consider this and then think of the number of activities that must get them, you may be a little less impatient when you wonder why the mailing list is not always tailored to suit your own outfit.



Odd as it may seem to you, that red-tentacled monster back in Washington is really very anxious to see that you get what you need, not what you don't.

*New Technical Aeronautical Publication "Bill of Rights."* If you have had technical publications worries, read *Aviation Circular Letter 90-44*. Read it carefully, for it is a real publications Bill of Rights for Naval aviation activities. Activities that read this letter—and act upon it—CAN tailor technical publications they will receive to exact activity needs.

New, up-to-date records of custody of aircraft have allowed BuAer to take a step it has long desired. In the absence of sufficiently reliable data, it has heretofore been necessary to play safe; i.e., to send all publications for all fighters to each

**Useful tips on how to get Navy publications, given by officer at an advanced publications center, who knows the answers to this problem**

outfit operating, servicing or maintaining any fighters, and similarly for other types of aircraft according to their mission.

Now, however, if F6F's are all you have, F6F publications are all you will receive.

The commissioning allowance of publications your activity received initially was determined by the Section "K" Allowance List of Aeronautical Publications and by a confidential planning directive issued by CNO, which indicated the planes which the activity would be assigned.

As soon as the commissioning allowance has been forwarded, the activity is placed on distribution lists to receive all applicable publications or revisions as issued.

This system gives you a steady flow of publications, which is comparable to that ready-made suit you may try on when the war is over. It fits fairly well, but chances are it will need some alterations.

It provides a form letter for the activity to use in ordering "alterations" (Enclosure B to ACL 90-44). But changes cost "money" (time and work), so they should not be requested unless necessary.

FROM NOW ON, if your activity gets more *Erection and Maintenance Manuals* than it needs, but not enough *Pilot's Handbooks*, it is the activity's own fault. To change the quantity of any particular type of publications, all that is required is a letter from the CO to Chief, BuAer (Publications Section). But such a letter must be written—wishful thinking won't do the job! ACL 90-44 provides such a form letter as its Enclosure (B).

There is nothing occult about the Bureau's publications. The boys back there have sweated to make it easy for you. In

the front of *Naval Aeronautical Publications Index* there are helpful suggestions on how to order and how to file material intelligently. You'll find it fits better into an alphabetical arrangement than in the standard Navy filing system. If this be treason, make the most of it. It'll be easier.

Don't think for a moment, that in procuring information on new equipment, those back there are not more aware of its necessity than anyone else. The trouble is, with several thousand contractors to deal with who are more interested in getting out the goods than writing handbooks and parts lists on them, some equipment arrives in the field ahead of the information on it. This lag between the two is something the Bureau always is trying to cut.

There is one nasty little habit we might bring up here and that's a practice some people have of removing from new planes the instructions that come with it. Then when a plane gets sent to an advance base, there is nothing in it to help tell how to operate, service and maintain it. Somebody en route has thought it would be nice to have a pilot's handbook for his own sweet self, just in case he ever might have to fly it, but doesn't think of the guy who's got to fly it as soon as he gets it. If you ever feel that urge, subdue it!

Now when you receive the commissioning allowance, don't be floored by the size of it and growl sarcastically about not having been supplied with a WAVE to put it in order for you. The job of sorting that usually falls to Engineering Officer and Supply Officer. Most of the material is of technical interest to Engineering but there is a whole lot that Supply must have out of it too. We emphasize the "and" because it seems that too often one would be led to believe that Engineering and Supply in a given outfit



consider each other as questionable allies in the Cause and not two departments actually trying to fight side by side [Cont.]

**T**OO OFTEN either one, if it can lay its hands on the material first, snatches off and hides what it wants and lets the other guy shift for himself. You'd think sometimes from talking to these fellows that there was a fence around each with an armed sentry outside. This is all wrong. Any activity is supposed to get enough copies to take care of all its departments. There's no need of filching and sequestering.

And once more, as we've said, if an activity is not getting enough copies, it can always write for more. Refer to Section K—that's a letter to conjure with. It's your ration of printed matter. It's the allowance list that shows what your outfit gets. If ACL 90-44 is your Bill of Rights and the *Naval Aeronautic Publications Index* your publications Bible, as it should be, Section K is your prayer book.

**N**OW THE BEE in all this lands right on the Skipper of your unit. All these publications are sent c/o him. He is the one who has to see that provisions are made for the proper routing and distribution of what his outfit gets. If he is smart he will do as it has been suggested, i.e., appoint a publications officer. It will be that officer's job to see that what is received checks with the Section K allowance.

He will be in charge of maintaining the Technical Library and will make sure that each department has what it needs. If the allowance is not enough, he will be responsible to see that an official letter is sent to the Bureau requesting more. (One is already printed up and needs only to be filled in. It is Enclosure B of ACL 90-44.)

The importance of the publications officer's job cannot be over-emphasized. The complexity, both theoretical and mechanical, of aircraft and associated material has increased tremendously in the past few years and will inevitably continue to do so at a rapid rate. The experience level of personnel responsible for operation and maintenance of the material has not improved. Specialized schooling of greatly improved character has assisted in qualifying inexperienced personnel for difficult operational and maintenance duties; nevertheless, the place where a person finally perfects himself is right on the job operating or working directly on equipment that immediately concerns him.

To achieve this on-the-job perfection, it is vitally necessary that those who need to know have the information easily accessible. Smart outfits do this.

They post the extra copies of changes and bulletins in line shacks where the mechs can read them, and they are made to do so. But that's not their only source of information. That same outfit, looking toward advancing good men in their rates, has the technical library to which they can go and study up on the planes they work on every day. You can't say this won't pay divi-

**H**ERE is a check-off list:

1. Check your Section K and ACL 90-44 to see that you are getting what you should, and request any changes needed to bring distribution in line with the needs of your outfit.

2. Be sure you have the latest *Index*. It comes out December, March, June, and September with supplements for intervening months.

3. Read (besides official notices) *NAVAL AVIATION NEWS*. It has something about publications in every issue, in a special column.

4. When you are in Norfolk, San Diego, Alameda, Pearl Harbor, or Espiritu Santo, pay a visit to the Aeronautical Publications Center, and catch up on anything you may have missed.

tends to the service, to your outfit and to your men, because it does—everywhere it's put into effect.

**Now look and see** what happens when the Skipper does not take a positive attitude toward publications. The mail arrives. Somebody slits the envelope, peers inside and says "Jeepers, more Curtiss Electric Bulletins! We have only Hamiltons," and slings it in the corner, little realizing that underneath are some plane bulletins that really are wanted. Later on, it's sent bodily down to Engineering, who sort out what they want. But they are busy, and can't be looking out for Supply, or Radio and Radar, or Ordnance. Those poor guys have to scratch for themselves, and right then you breed a crop of Private Library Collectors.

These bibliophiles come into Publications Centers and, looking for a soft touch, want to build up their own exclusive little library. If the Center keeps any kind of records at all, it will soon discover that only six days ago a guy named McGlorgski got a copy of that same manual. What's the story? "Oh,"

the answer will be, "that was for line maintenance. We are overhaul." So the answer is "Nuts!" There just are not enough copies to go around, if everyone thinks he can get one for himself.

**T**HE PRIVATE library hound is, often as not, a Dilbert. It's not his fault entirely, because he hasn't had access to pertinent sources of information. He often hasn't seen or ever heard of *Naval Aeronautic Publications Index*, he may never have seen a *NAVAL AVIATION NEWS*, but he comes in and makes a pronouncement to the effect that his outfit never gets anything it wants. He's the kind of guy who wants to know, "What have you got on carburetors?"



That's like calling up Central and trying to locate a Blonde you don't know the name of. If his outfit handled what it got intelligently, he wouldn't be vaguely looking for it for himself. His publications officer would have seen to it that he had a copy, or that one was available to him.

It's the job of department heads to make known to their Commanding Officer, through the publications officer, their need for technical information and their means of putting this information into the hands of those men who need to know it.

This goes not only for what is needed from Bureau of Aeronautics, but also from Bureau of Ordnance, BuSandA, Communications, Hydrographic Office or any other source. The publications officer should know where and how to get any kind of publications for his unit.

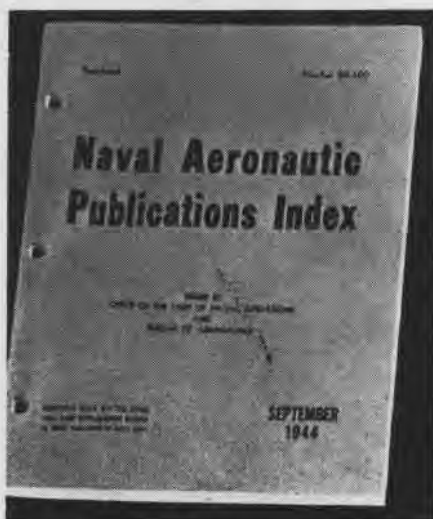
There is another thing that needs clearing up, and that is disposition of excess publications. It is inevitable that the Bureau's intentional policy of sending too much rather than not enough will cause an accumulation of material that is not used. A carrier need not give up valuable squadron space to publications it has no

use for. A squadron obviously can't go traipsing around with a big technical library.

They must not clutter their files with need-



less data just because it once was mailed to them. It's up to these mobile units to decide what they want and are likely to need in the future. Obsolete or superseded publications should be destroyed. Carriers should turn over their excess publications to the nearest Aeronautical Publications Center, squadrons to the nearest HEBRON or CASU, or to a Center. Centers are in a position to give this material to other commands. Whatever you do, don't send your excess publications back to NASD Philadelphia or to the Bureau. If you can't turn them over conveniently to one of the activities indicated, destroy excess publications in accordance with security regulations. The *Index* will help you determine whether you actually need a particular publication for planes assigned.



**Naval Aeronautic Publications Index** gives latest word on what's printed about planes



# PIX QUIZ What Do You Know About SURVIVAL AT SEA?

When your current address is a life raft somewhere in the Pacific, it's good to know the facts of life (preservation). Observance of a few simple survival rules has saved many a forced-down flier. Test your knowledge of this subject, then see correct answers on page 40.

(QUESTIONS FROM BUÄER SPECIAL DEVICES VISUAL QUIZZER FILM No. 58, SURVIVOR AT SEA. ALSO SEE MOVIE MN-2306A, "CASTAWAY.")

Write your answers here

- |        |        |
|--------|--------|
| 1..... | 4..... |
| 2..... | 5..... |
| 3..... | 6..... |



**Question 1**

Seawater should—

1. Be boiled for drinking.
2. Be mixed with fresh water.
3. Be de-salted with iodine.
4. Never be drunk.

**Question 2**

DON'T eat food—

1. When sea is rough.
2. For 48 hours after dunking.
3. When fresh water is not available.
4. When land is sighted.

**Question 3**

Partly-digested fish found in large fish are:

1. Poisonous.
2. Excellent eating.
3. Rich in iodine.
4. Disease-ridden.

**Question 4**

DON'T assume land is near if you see:

1. Large numbers of birds.
2. Floating vegetation.
3. Lagoon glare.
4. Tropic birds.

**Question 5**

To cushion yourself in dunking—

1. Unfasten safety belt, clasp hands overhead.
2. Lie athwartships against bulkhead.
3. Sit facing aft, head and back against bulkhead, hands clasped behind back.
4. Lie on back, feet apart against bulkhead.

**Question 6**

When you are dunked—

1. Discard all clothing.
2. Discard shoes, keep other clothes.
3. Discard anything unless necessary.
4. Retain clothes only in shark waters.

## PHOTOGRAPHY



### Navy Gets Medallion for Newsreel Work

A medallion for outstanding newsreel photography for 1943-44 was awarded recently to the Navy by the Headliners Club meeting at Atlantic City. The awards were presented after judging outstanding work in photography, news writing and filming. Normally given to civilians, the awards were presented this year to the armed forces for outstanding work.

### Japs Have Handy Camera for Hand Use

Pictured is a captured Japanese aerial camera similar to the Fairchild F-8. This equipment was captured on Roi Island. It is equipped with a 25 cm. f.8 lens, takes 5x7 negatives, and has an open, glassless



finder. Besides hand-held work, this camera has been used by the Japs for small mapping jobs.

▶ Much of the electric shock encountered while printing on the Abrams Argon Printers can be avoided merely by reversing the contact points in the outlet receptacle.

▶ An officer has been assigned recently in BuAer to the sole job of providing instruction manuals on all cameras and equipment. Army Technical Orders will be used where applicable.

▶ New contracts for equipment will require manufacturer to provide a manuscript for an "AN" Instruction Manual and a Spare Parts List. Photographic officers are invited to keep an eye on the *Naval Aeronautic Publications Index* for additions to important photographic publications.

### FAW 7 Uses Its Salvaged Parts

FAW 7—To speed maintenance work on hydraulic systems and instrument calibration, headquarters squadron has



LARGER UNIT MAY BE MOUNTED ON SHOP BENCH

developed two hydraulic test units from salvaged parts of wrecked aircraft.

An unusual feature of the larger unit is that it may be placed in any part of the aircraft for trouble shooting, checking and adjusting of valves of all types. It also may be mounted on the shop bench for overhaul and testing of hydraulic parts. This unit has been equipped with a complete set of adaptors and pressure gauges.

The smaller unit has proved con-

venient and accurate for calibrating and checking all pressure instruments (high and low) such as oil and fuel instruments, and also pressure transmitters.



FAW 7 USED SALVAGED PARTS TO BUILD UNITS

▶ *BuAer Comment* — The pressure gauge tester issued with Instrument Mobile Field Test Set FSSC No. 88-T-901 or FSSC No. 88-T-902 is recommended for field testing of fuel, oil and hydraulic pressure gauges. The set has facilities for calibrating air pressure gauges also.

The pressure gauge tester developed by FAW 7 is satisfactory for testing fuel, oil and hydraulic pressure gauges, however. It would be more efficient if a micron filter were installed for use when testing.

BuAer praises FAW 7's resourcefulness.

## THAT 15¢ WHISTLE MAY PRESERVE YOUR SKIN

IF you are bobbing around in a life raft waiting for a passing ship some black night, whistling in the dark may accomplish more than keeping your courage up.

Or, to imagine the situation really bad: Suppose you are a survivor *sans* life raft, flashlight, *sans* any workable pyrotechnical equipment. Then suppose you see the darkened shape of a *DD* prowling around the vicinity where your plane was observed to have gone in. You are only two hundred yards away. You hail the *DD*. But you are not heard. What do you do then? Brother, you are in for a damp night unless you have your WHISTLE!

Even if you are a mile away, you have a chance of being heard if you blow your whistle. (Save your voice—it won't drill through the air like a police whistle.) Likely a lookout will be alerted. And the average American indoctrinated in cops and robbers does not remain apathetic when he hears what sounds like a police whistle.

Normally, whistles are as dependable as claw hammers, but it has been re-

ported by one actual survivor that the ball in his whistle became swollen through contact with the water, and the whistle would emit no sound.

### Test your whistle!

If aboard ship, it is not necessary to outrage the boatswain by a 1200 test of all whistles. The same results can be accomplished by checking to see that clearance between ball and ball cavity is sufficient to preclude possibility of obstruction due to a slight swelling.

▶ The value of the whistle to the survivor heretofore has not been emphasized. Two points are worth remembering: *First*, as the emergency signal kit now stands, whistle and signal mirror are the only two items that cannot be used up. After firing six Very's shells and igniting six smoke grenades, the normal supply is exhausted. Even the signal mirror (effective as it is) depends on sunshine. But you can whistle round the clock and keep your whistle.

▶ The *second* point is that the whistle is the only audible signal aboard a life raft. And whereas the eye traverses only the sector the lookout is observing, the ear hears a fifteen-cent whistle 360°.





## BuAer Lists Raft Modifications

BuAer has announced life raft modifications which increase survival potentialities and reduce the total weight of the raft. The new series designation of M-3r covers the Mk I, IV and VII rafts. Major alterations are:

1. The hull has been changed from boat-shape to scow-shape to provide more room inside the raft.

2. The bulkhead within the flotation tube has been changed from a horizontal to a vertical construction. This reduces the total weight of the raft and insures a certain amount of airtight integrity. If only one end of the raft is punctured, the other end will remain inflated. In earlier series the operation of patching the bottom of a raft equipped with a horizontal bulkhead presented difficulties. The new athwartship bulkhead makes it possible to fold the punctured compartment back in the lap of the raft occupant where he can



MODIFICATIONS INCREASE SURVIVOR'S CHANCES

patch the bottom like any other free-board surface. Other alterations are:

1. All non-rubberized fabric, tapes and lines are mildew-proof.
2. Corner radar reflector holder is

installed in the stern of Mark IV and Mark VII rafts.

3. CO<sub>2</sub> cylinder has been moved to the outboard of the flotation tube, providing more room inside raft.

4. Retaining lines have been added to prevent raft from getting away during critical inflationary period.

5. More effective signaling and sustenance items are included.

6. Sea anchor of cotton cloth, weighing less and having more holding power than former type, is provided.

7. Hammock-bed stretches across the gunwhales, assisting occupant to keep feet dry when spray comes over the side in rough weather.

8. Life raft paulin, blue on one side and yellow on the other, can be battened down for protection against cold, utilized as a rain-catching device or employed as a panel signal to communicate specific instructions to rescue aircraft nearing. [See NANews, 11/1/44.]

## LATEST BULLETINS

ENGINE, ACCESSORY  
19 OCTOBER 1944

(Succeeds List dated 21 September 1944)

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
<b>PRATT &amp; WHITNEY</b>				
R-985	None			
R-1840	None			
R-1830	376	9-12-44	New Rubber Oil Seal for Impeller Shaft Liner	Describes new part
R-1830	377	9-21-44	Supercharger Fuel Drain Valves	Describes New Type Drain Valves
R-1830	378	9-20-44	Counterweight Bolt Torque	Information on reassembly of counterweights, bolts
R-1830	379	9-25-44	Reduction Drive Pinions, Fitting of	Information on corrected overhaul for assembling reduction drive pinion
R-2000	86	9-20-44	Counterweight Bolt Torque	Info. on reassembly of counterw't bolts at overhaul
R-2000	87	9-25-44	Reduction Drive Pinions—Fitting of	Information on corrected overhaul for assembling reduction drive pinions
R-2800	148	9-15-44	Impeller Shafts and Desludger Gears	Change in design and interchangeability of subject parts
R-2800	153	10-10-44	Stromberg Model P. J. -15 Carburetor Setting Change	Increase combat radii of above aircraft by 1. Improving operations of enrichment valve 2. Reducing Fuel Consumption 3. Improving Cooling in auto lean
R-2800	155	9-21-44	Supercharger Fuel Drain Valves	Same R-1830-377 Bulletin
R-2800	156	Being issued	Governor Drive Bushing, Pinning of	
R-2800	157	Being issued	Emergency Power Regulator Assembly Data Plates, Restamping of	To incorporate correct parts list number on subject plate
R-2800	158	Being issued	Supercharger Pressure Regulator Pad Hole	To describe method of pinning subject insert
R-2800	159	9-28-44	Main Sump Attaching Screw Insert	Information & Instructions on Fabrication of Subject Protector
R-2800	160	10-10-44	Propeller Shaft Thrust Bearing Studs—Protector for	Information on procedure for securing subject inserts
R-2800	161	10-2-44	Fuel Feed Valve Cover Screw Inserts	
<b>WRIGHT</b>				
R-760	None			
R-975	None			
R-1820	368	9-16-44	Instructions For Grit Blasting Counterweight Pins	Increase service life of counterweight pins by providing for improved lubrication between pins and bushings
R-1820	372	9-26-44	Rework of Rear Crankchecks to Provide Oil Passages to Counterweight Bushings	To provide pressure oil passages in rear crankchecks of 3-hole crankpin
R-2600	122	Revision No. 1 8-17-44	Starter Couplings—Change in End Play of	
R-2600	139	9-28-44	Modification of R-R-48A Carb. to Improve Vapor Elimination	To improve vapor elimination from the subject carburetor and to prevent sticking of the poppet valve in the closed position
R-3350	15	Revision No. 1 8-17-44	Inspection of R-870 Crankshaft Bearings before Engine Installation	The Army Air Forces no longer require that defective new bearings be sent to Air Force Command, Patterson Field; therefore, disposition instructions for rejected parts in the original bulletins have been revised
<b>GENERAL ENGINE</b>				
	8	Revision No. 1 8-17-44	Reclamation of Worn or Broken Engine Parts	Conservation of spare parts to avert stock shortages
<b>POWER PLANT ACCESSORIES</b>				
	59 61	Being issued 9-11-44	Fuel Pump D-16 Thompson Products Co. Fuel Pump Engine Driven—replacement of Thrust Washer	To provide more positive engagement of relief valve adjusting screw locking tang

NOTE: No New Auxiliary Power Plant or Propeller Bulletins Issued Since September 21, 1944

NAVAL AVIATION

# NEWS



Technical Training

Crash Fire Rescue

Palau • Bailing Out

Nov. 15, 1944

RESTRICTED

