

NAVAL AVIATION

# NEWS



Ferry Pilot Procedure  
Jap Camp Plan • Index  
Technically Speaking

July 1, 1944  
RESTRICTED



# 'Pop' Let 'em Have It...

Ted LeMieux, 43 years old, is one of the most unusual airmen in all the armed services

LeMieux, who manned a Jap-strafting machine gun on the recent carrier air sweep on Palau, never had an airplane ride until he was 41 years old.

"But I had always wanted to fly," he said, "and when I got into the Navy I determined *that* was what I was going to do and just pestered everybody until they let me be a rear seat gunner . . . just to get rid of me, I think."

This flying fighter after forty, a native of Ipswich, Mass., was a storekeeper in charge of aviation supplies at NAS Quonset Point. Before he joined the Navy, he worked in a factory which made wooden heels for women's shoes.

"I didn't care too much for that," LeMieux said. "Before that, I was fifteen years in the restaurant business as a cook and counterman. When I got in the Navy I wanted to fly from the first, but was afraid they would find out about that cooking experience and make a cook out of me, which I *didn't* want.

"Finally I talked so much about flying that an ensign decided to cure me of wanting to fly. He took me up in an SNJ and threw the book at me. I mean he did loops and rolls and all that sort of thing trying to make me get over my desire to fly.

"Well, I enjoyed every minute of it, and I've loved every minute I've flown since. I've never been the least bit airsick, ever."

► LeMieux believes the happiest day of his life occurred when he flew on his first raid. "It was over Tarawa and we went down to strafe the landing strip. There was a plane on the corner of the strip, and a little Jap was running toward it. I really let them both have it, and when I looked again the little Jap wasn't there. The plane after us said the Jap plane was afire when they came in, so I think we must have done some good."

LeMieux's promotion from aviation radioman 3rd class to aviation radioman



2nd class came almost at the same time as his 43rd birthday, on March 21. He has mastered the exacting requirements of his specialty as aviation radioman as well as of his other specialty, air gunner, since joining the squadron. His present pilot says "Pop" is a good dependable radioman and a topnotch gunner. "I'm glad to have him back there manning that gun when I go out to bomb or scout."

"Am I going to stay in the Navy after the war?" LeMieux said, in reply to a question. "Well, I hope so, but I'm afraid not. I would like to stay in the Navy forever, if they'll keep letting me fly. But if they won't let me fly. . . ." The prospect was too distasteful for LeMieux to finish the sentence.



**SAYS LEMIEUX:** "All the officers I've flown with have been about as old as my son. But all of them have been fine fliers and fine men, and so are all the rest of the aviators in the squadron. Each of them calls me 'Pop' for a nickname. In fact, everyone in the squadron calls me by the name 'Pop.'"



## JAP CAMP PLAN

**J**AP CAMP INSTALLATIONS on Darrit Island in the Marshall group form a typical example of the way the enemy lives at advanced bases in the South Pacific and the types of construction used. This little island was occupied by the Japanese in July 1941, but they abandoned the site in November 1942 before its facilities were completed. The structures which they had built were left intact, indicating they planned to return when conditions became more favorable.

Darrit Island is one of more than fifty low coral islands scattered around the central lagoon of Majuro Atoll in the Marshalls, most of the islands densely foliated with coconut trees. The western half of the lagoon is available only to small vessels as it is studded with shoal reefs,

but the eastern half has fewer reefs and the bottom is not so hard, making it more suitable for anchoring. The best anchorage is at Darrit in the northeast corner of the lagoon. At low tide, small boats can also land at the jetty built by the Japanese on the west side of the island.

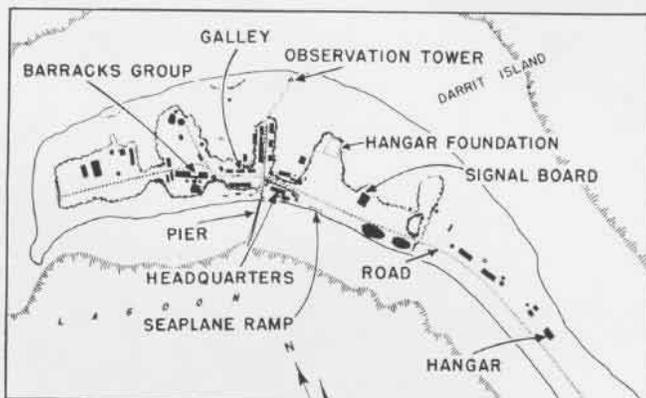
**I**T NOW IS OBVIOUS the Japs were planning to use Majuro lagoon as a seaplane base. One hangar, a foundation for another, and a ramp at the beach were constructed. In addition, a large area was cleared for aircraft dispersal and service apron. Well constructed quarters, latrines, bath houses, mess halls, warehouses and ~~and~~ units were already built when the project was dropped, although no attempt had been made to build defenses.



## AERIAL VIEWS REVEAL PATTERN

EVIDENTLY THE JAPS who built the facilities on Darrit Island had plenty of time to devote to the job. This is evidenced in the carefully executed construction of some buildings. Their ability as craftsmen and wood workers comes to the fore even in simple utilitarian buildings. In the hangar they have introduced a touch of decoration in the 20 ft. high sliding doors, with diagonal panel boards making a sort of herringbone pattern, while carefully executed wood cornices, corrugated metal roof and glass window panes add to the finished effect. The location and rather small size of this building indicate that its main function may have been a repair shop. A concrete foundation for a hangar 108' x 108' had been built near the center of the island close by the seaplane ramp leading into the lagoon.

Still clearly visible in the aerial photograph in spite of considerable low overgrowth, is an interesting construction located in the center of the clearing near the seaplane ramp. It is composed of a number of concrete squares laid in the ground and was evidently to be used as a signaling board. The arrangement of the barracks group, with living quarters, bath houses, latrines and water storage tanks seems to be a typical one and makes a distinctive pattern in the aerial photo. The water tanks are placed to catch the maximum amount of water from the roofs of the surrounding group of buildings, showing up clearly as light circles in the photo.



Tucked away among the coconut trees at one end of the island is the repair shop, with sliding doors, metal roof, glass windows

A VERY GOOD COMPARISON can be made between the ground photographs and the aerial views to show the characteristics of an installation grown over through disuse. Track activity, which is a dead give-away in aerial photos, is entirely missing here. That one point could indicate to photographic interpreters that the Japs had deserted the island. Even roads with good coral gravel surface had grown over with tropical plants and vines.

Because of good photo reconnaissance, very little shelling was done and most of the buildings were in good condition when the Allied forces moved in. Thus some excellent data were acquired for future interpretation of Jap base facilities.



**LIVING QUARTERS**  
THATCHED ROOF HUTS SIMILAR TO THIS WERE USED TO HOUSE HAND TOOLS



INSTEAD OF CHIMNEYS FOR OPEN OVENS, KITCHEN IS VENTED BY LOUVERS



CONCRETE TUBS WITH RUNNING HOT WATER PROVIDE LUXURY OF A BATH



HEADQUARTERS BUILDING RESTS ON FOUNDATION OF COCONUT LOG PILING

## NIPS GET COMFORTABLE QUARTERS

JAPS ON DARRIT, as on many islands in the Pacific, depended entirely on rain as their source of water supply. The system for collecting water, pictured below, is a typical one and appears in Jap camps scattered throughout the Pacific area. These concrete water tanks, about 20 ft. in diameter with 13-in. concrete walls and 7-in. tops, are placed in close conjunction with barracks, latrines and bath houses.

Rain water is collected from all adjacent roofs in gutters and then led in pipes to the tanks for storage. There are spigots near the bottom for draining off the water and an overflow drain at the top. One of these tanks holds about

12,000 gals. of water. Fresh water is also drained into open tanks placed at the ends of larger buildings where the water is drained and piped off of the eaves. Eight-foot-square cisterns, 12 ft. deep, are often found. Brackish water is collected in some of these which are frame-lined, fresh water in others which are concrete-lined. No drain pipes are used.

BATHING is quite a ceremony to the Japanese and public baths play an important part in their social life. Cleanliness is highly important and bathing is an elaborate communal affair, where groups sit together in steaming hot pools and discuss latest events. Facilities on Darrit were simpler but still important. Bath tubs were furnished and hot water heaters in a shed provided steaming water.



**WATER SUPPLY**  
RAIN WATER IS THE ONLY AVAILABLE SUPPLY FOR DRINKING, COOKING, WASHING. IT IS COLLECTED AND STORED IN CONCRETE TANKS, CISTERNS

## TRANSPORTATION



**Coral gravel road** runs entire length of Darrit Island, but after Japs deserted island, it was quickly overgrown by surrounding jungle



**Gasoline-powered** locomotives operated on the narrow gauge track running from the warehouses to end of pier, possibly to fuel dump



**Pier runs out** to deep water in lagoon. Narrow gauge railway was used for unloading Jap freighters bringing in building supplies



**Three old type** fishing boats were beached and deserted by the Japs when they left, revealing they used every means of transportation

## JAPS EMPLOY MODERN TECHNIQUE

**I**NCONGRUOUS MIXTURES of ancient and modern influences are common in Japan. This is reflected in the methods of travel and communication—an old type Jap fishing boat side-by-side with gasoline-driven locomotives from the Katoworks in Tokyo and buildings to house modern types of radio direction finders. These buildings, set on concrete

foundations, were executed with great care and interest in detail. Interior walls were sealed. Eaves and buttresses made them look larger in aerial photos than they actually were. Although these structures were nearly completed, RDX equipment had not been installed.

The fact that the Japs moved from the island, leaving buildings and equipment completely intact, indicated they intended to return at a later date to complete the work they had begun, to convert it into an active seaplane base.

## COMMUNICATIONS



**Overhanging eaves** and buttresses made this building appear larger in aerial photographs than it actually was. It was built to house

radio direction finder and other radio equipment. Although nearly finished, the Japanese had not installed any gear in the structure



**Hangar foundation** of concrete was constructed near ramp leading to the lagoon, apparently to protect seaplanes. Size of proposed

structure was 108' x 108', fitting into definite standard pattern for such buildings. U. S. ship in background is anchored in lagoon

## CAMP FACILITIES ARE STANDARD

**W**HILE THE JAPS had made no provision to defend Darrit Island, they did provide concrete bomb shelters. Typical of their tendency toward standardization of certain types of military installations, these shelters are identical to types found in many Jap-held islands, usually grouped adjacent to barracks or quarters. A small iron door

at the center gives access to the heavily constructed shelters, the outside dimensions of which are 10' x 60' x 8'. Firing ports may be provided on both sides of the shelter.

The Japs also have standardized other types of military structures. For example, the same types of hangars appear again and again at widely scattered bases in the Pacific. Various types of prefabricated units have been developed and are shipped out to bases under construction, to expedite the building of Jap bases and simplify work in the field.



**BOMB SHELTERS**  
Protective covering quickly overgrows in the jungles, making bomb shelters less visible, hard to spot in reconnaissance photographs



**Concrete shelters** are of standard design, with thick walls and iron door at center. Firing ports may be provided in both side walls

# WEP IS ENGINE ADRENALIN

TO GET that extra *iota* of speed needed in a pinch, WEP enables pilots to needle the plane. Authorized for emergency use, WEP is for life-saving, not for skylarking. This article gives a non-technical description of the reserve power that can be drawn upon to get aviators through tight spots.

## What Is This Thing Called WEP?

WEP means War Emergency Power. Actually it is a means by which you can get the last full ounce of energy out of your airplane engine in an emergency—such as having a Zero or a Messerschmitt on your tail, or needing extra knots to close in on one that's trying to whip away from you.

The startling burst of speed and climbing power WEP gives represent a secret weapon that will make your opponent very unhappy.

War EMERGENCY Power—a precious reserve burst of energy—has been provided for you to use *when you need it ONLY*. A BuAer Technical Order states that it is to be used only in combat areas, except by special approval.



The same order recommends, however, that "pilots become familiar with its operation by employing WEP equipment for short intervals at altitudes above which the full power increase of WEP will not be imposed on the engine." It means that if the military power critical altitude of your engine is 10,000 feet in low blower and 15,000 feet in high blower, you may try out WEP at, respectively, 9,000 feet and 14,000 feet, but not at lower altitudes. Frequent operation of the equipment in this manner helps reduce corrosion caused partly by allowing the system to stand idle.

Even in combat areas, that super-super-extra power—sometimes as much as 20% above military power rating—is to be used sparingly.

Ordinary adrenalin which enables you to run a lot faster when you are scared is conserved automatically by physiological law permitting it to be poured into the blood stream only in times of danger or great excitement. In a plane the pilot is the monitor who

controls this flow, and it is up to him to exercise judgment. A rider can whip and spur a horse into increased speed for a time, but not indefinitely.

Amount of engine adrenalin you control is limited by the size of the water tank in your plane. It contains enough water-alcohol mixture to *boost or needle* the engine for about ten minutes. But structural limitations of the engine must be taken into consideration also. Exhaustive BuAer tests have shown that to subject an airplane engine to such an unmerciful pounding for more than five minutes in one stretch does it practically no good at all.



When you use WEP you are operating at the far edge of your engine's capacity. However, you can do it with confidence when you have to, for the engine has been designed to withstand this punishment and to continue operating reliably until you get back.

## Water Injected Cools the Cylinders

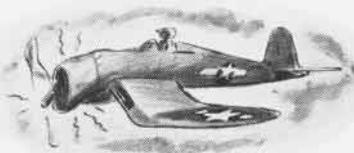
Mention of water-alcohol mixture in the water tank broaches the technical aspect of this business. All it amounts to, in simple terminology, is that injection of water into the cylinders has a cooling effect that retards detonation and permits you to get extra power out of your engine for a brief period by subjecting it to terrific strain.

It's the water that works this modern minor miracle, and the alcohol is there to keep the water from freezing at the low temperature which may be expected at high altitudes. The less alcohol you have to put into the mixture, the more water you can take along. Thus it is important to have enough alcohol to prevent freezing, but not an excessive amount.

It is a good idea to consult Aerology before a mission, mentioning the highest altitude at which you will be flying. You will learn the temperature probably prevailing there. Pass the word along to the officer of your squadron in charge of servicing the planes. He has a table giving proper mixture of water and alcohol for any given temperature.

NO DOUBT the chief knows the proper method of mixing water and alcohol, so get him in on the deal. If you don't have an experienced chief, it's a good idea to see to it yourself that correct proportions of water and alcohol are mixed thoroughly *before* being put into the tank. Don't let them pour in water then alcohol, or *vice versa*.

Specification AN-A-18 alcohol is the only one approved by BuAer for use in this system. If other alcohols are ap-



proved in the future, they will be identified by AN designations. While many commercial alcohols may be o.k., some aren't and, so far, neither BuAer nor anyone else has tested every one of them to determine which are harmful.

Play it safe. Be careful about the kind of water used. You don't like to drink salt water or dirty water. Your engine doesn't like it, either. To avoid corrosion of equipment, it is preferable to use distilled water from locally available distillation units, or pure trapped rain water, or pure, soft fresh water within pH limits of 6.0 to 8.0.

## WEP All Ready at Your Finger Tips

When you need WEP, you can get it easily by going to the full-throttle position on your quadrant. At a certain point, an electrical contact is made, starting a series of electrical and mechanical events, opening or closing various valves, pushing diaphragms, etc. etc. When you return to normal throttle, or when the water supply is exhausted, the engine automatically resumes normal operation.

WEP equipment is still in its infancy and its maintenance and operation are a new problem. The Bureau is making available all possible information on this equipment, so it will pay to keep a



close check on all sources of technical literature. The following is some of the information now available: Technical Order No. 71-44, F6F-3 Bulletin No. 40, F4U-1 Bulletin No. 52 and 68, FM-2 Bulletin No. 10, and P&W R-2800 Engine Bulletin No. 120.

# GRAMPAW PETTIBONE

## Shoulder Harness Adjustment

Although shoulder harnesses have been credited with saving hundreds of lives, their full effectiveness depends upon being adjusted individually to fit the pilot. Three recent accidents prove this point:

*Case 1.* Preparatory to making a forced landing at sea, an FM-1 pilot tightened his shoulder harness, checking the locking handle with his left hand. When the plane hit, there was enough slack in the shoulder straps to allow the pilot to hit his head against the gun sight. The deep gash required seven stitches. Had his head struck a little harder, he would have been knocked out and gone down with the plane.

*Case 2.* An SB2A pilot locked his shoulder harness when his engine failed at 300 feet after take-off. He was unable to reach down and retract his landing gear, however, because the harness was too tight. When the plane crashed, the pilot's head hit the instrument panel. What had happened was that the front adjustment on the harness was made when it was on spring tension. The front and back adjustments together were so tight that even when the pilot leaned back, the vertical rod would not go down far enough to allow the mechanism to operate. The spring tension prevented the pilot from reaching down to retract the landing gear, but it was not strong enough to counteract the sudden stoppage of the airplane. Front adjustments on the shoulder harness must be made with the harness retracting mechanism locked.

*Case 3.* An SBD-5 had a serious landing accident. In his report the commanding officer said: "The shoulder harness undoubtedly saved this pilot's life. This example has deeply impressed the squadron with the importance of wearing the harness drawn tight when landing or taking off."

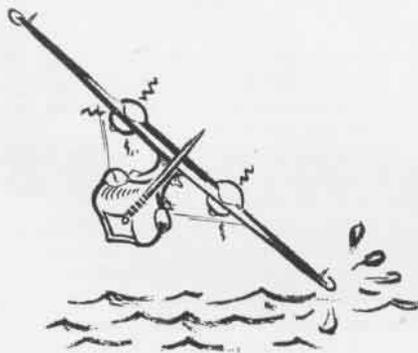
## Go Ahead and Live

*Case 1.* Shortly after take-off, the engine of an F4U-1 was heard to commence cutting out, followed immediately by complete failure. The pilot (366 hours) started an approach to a clearing within easy gliding distance but apparently changed his mind and began a steep, nose-high turn toward



another field. The airplane stalled and spun in; while the F4U pilot was killed.

*Case 2.* A PBY-5A patrol plane commander with 1,800 hours' flying time was on a practice anti-submarine bombing mission. While in a climb after a low-altitude drop on a downwind run, he experienced a loss of power on one or both engines. Upon becoming aware of the mechanical failure, he knew that he would have to land, but apparently



became disconcerted and tried to turn back into the wind. He had insufficient altitude to complete the turn and one wing hit the water, causing a violent crash. The entire crew was killed. Sea and wind conditions at the time were favorable for a downwind landing.



*Grampaw Pettibone says:*

You always have two possibilities if your engine cuts out at too low an altitude to make a safe turn:

1. You land in the general direction you are headed—and live to tell about it, or—

2. You start a steep turn during which you either fly into the ground for lack of altitude or you lose flying speed and spin in while trying to keep from hitting the ground. Usually fatal!

Notice I didn't say *how much* altitude was needed to make a power-off turn. As you know, this varies for different type planes and even for the same plane, depending on such things as excess speed, nose up or down, plane loading, etc. It's up to you to know these answers for any airplane you fly to keep from guessing wrong in an emergency. Read up on it, ask questions, and make a few tests, only make them up high and read the answers from your altimeter.

Another thing—just because you make a mistake and start a turn doesn't mean you have to be stubborn and finish it. Straighten out while you still can and remember, *never lose flying speed.*

Statistics show that if you once contact the ground or water in normal landing attitude, you are practically certain to survive, usually without any injury, but if you lose flying speed and spin in or fly into the ground or water while maneuvering in your approach, your survival chances are very slim.

A steep turn at low altitude after engine failure has been the last maneuver for many a good pilot!

## Go! and Sin No More

Toward the end of his landing run, the pilot of a TBF-1C reached down to raise his flaps but, in so doing, moved the landing gear retracting lever. The wheels retracted and the plane received extensive damage while sliding 150 yards on the bomb bay doors.

► **COMMENT**—Pilots must exercise particular care to operate only the control they intend to operate, and to refrain from automatically, and blindly, grasping a lever, hoping it is the right one.

The present safety lock, designed to prevent accidental retraction of the TBF (M) landing gear, operates only when the left landing gear strut is compressed at least half way. Over-inflation of shock strut, a sharp left turn, landing bounce, or the "roll" of a carrier, frequently causes the strut to extend beyond the effective range of the safety lock. At this point, the landing gear can be retracted if pilot inadvertently operates retracting lever.

The contractor and the Bureau of Aeronautics are at present investigating a re-design of the safety lock which will greatly increase its effective range. Until this re-designed lock is installed, maintenance personnel must be careful to inflate struts in accordance with *latest* BuAer instructions.

## Hands Off

After travelling approximately 50 feet from the line, the port landing gear of an SBD-5 collapsed, causing considerable damage to the port wing and bomb rack.

Evidence indicated that some time after the previous flight some person had moved the landing gear lever to the "up" position and, upon realizing his mistake, had put it back in the "down" position without telling anyone. The locking pin did not go back into place, however, because the plane had been stopped in a turn and the strut had moved slightly when the pin was released.

 *Grampaw Pettibone says:*

This was a costly mistake and further proves that anyone who is allowed to fiddle around an airplane must first be given a cockpit checkout. This includes ordnance-men, radiomen, and mech strikers. These men are not malicious, but they do have a natural curiosity about the intricate workings of an airplane. In order to forestall any damage which may be caused by their combined curiosity and ignorance, the purpose and operation of every handle, lever, switch and gadget must be fully explained. All taboos must be heavily stressed, including the major one, "Unless you know exactly what you are doing, keep your god-damn hands off!"

## A Modern Fable of Folly

Once upon a time there was a very smart aviation cadet who was a joy to his instructor's heart for he did everything just as he was told through the gosport. There grew up between these twain a beautiful companionship, based on mutual faith and trust. As each went through the countryside that spring, he boasted of the other.

Spring passed.

On a lovely summer's day when these two were completing a highly satisfactory hop, the instructor said, "Take her to the barn."

To himself, the instructor said, "Of course, my bright student will put the wheels down." The student mused, "My instructor has lowered the wheels, because he didn't tell me to do it."

So neither checked.

As the trainer scraped its belly on the runway, screams of rage and violent oaths arose from the cockpits. Each felt he had been swindled in his trust.

## Don't Gamble on the Horses

An SBD-5 engine checked okay before take-off but began to sputter and lose power after the plane became airborne. The pilot immediately put the mixture control in auto lean for about five seconds. Then he pushed the control to the full rich position, cut the

throttle, landed, and ran off the edge of the mat where he overturned.

The Trouble Board said: "After noticing loss of power, the pilot erred in waiting too long before deciding to cut throttle. Placing the mixture control in the automatic lean position during take-off power operation was very poor procedure since the only effect it could possibly have would be to introduce detonation with accompanying power loss."

 *Grampaw Pettibone says:*

This pilot did just about the worst thing he could when he leaned his mixture. Had he read General Engine Bulletin No. 2, he would have known what to do about his loss of power.

Take a tip from this pilot's experiences with his "iron horses" and read these bulletins. It's always a good bet to find out all you can about your engine. It's your best friend in the air, you know.

## More Downdrafts

Previous items warning against dangerous downdraft currents on the lee-side of land areas have made particular mention of the vicious downdrafts which occur in the Alaskan area. In reporting a recent fatal accident in the South Pacific which was attributed to turbulence on the leeside of an island, the squadron commander commented to the effect that Alaska has no monopoly on downdrafts.

True! These vertical downdrafts are found on the leeside of any obstruction. The following rules for avoiding downdrafts are equally applicable to all flight operations—from the Arctic to the Tropics and all places in between:

1. Stay away from cliffs, peaks, and valleys.

2. Remember that turbulence is less on the windward side of land masses, such as islands or mountains. If your mission permits, fly on that side.

3. Don't forget that on the leeward side the winds grow gentler as the distance from land increases.

4. Keep enough altitude so that a sharp downdraft will not force you to mush in.

5. Watch the water for indications of downdrafts. White caps may be traffic cops in disguise to warn you of the danger.



# SURVIVAL QUIZ



Correct answers  
on page 40

1. If you are lost on land, you should—

- a—immediately worry about the future
- b—sit down and think the situation through
- c—immediately push on toward your base
- d—force yourself to eat and drink

2. Rafts are best constructed from—

- a—green woods
- b—hard woods
- c—palms
- d—dry, soft woods

3. The most important single factor in determining survival is—

- a—food
- b—state of mind
- c—warmth
- d—climate

4. On the ocean, large numbers of birds indicate—

- a—the arrival of a storm
- b—clear weather and calm seas
- c—some kind of land nearby
- d—shore waters

5. Cones and terebras are—

- a—edible mollusks
- b—phosphorescent mollusks
- c—the only two groups of mollusks that should be avoided
- d—edible succulent plants

6. Only four fresh water fish are at all dangerous to man and all four are found in—

- a—Africa
- b—United States
- c—Australia
- d—South America

7. The best cooking is done over a—

- a—bed of glowing coals
- b—smoky fire
- c—fire with flames
- d—soft-wood fire

8. To obtain water from vines one must—

- a—cut out a section of the vine
- b—cut out a section of the vine, cutting the top first
- c—make one cut close to the base
- d—cut at top of vine only



CREW MEMBERS OF BOMBER FORCED DOWN IN THE ARCTIC ARE SNUG IN THE IGLOO WHICH THEY HAVE IMPROVISED BENEATH WING OF THE PLANE

# SUBSISTENCE IN FAR NORTH

## It Requires Skill to Get Meat, the Food of the Arctic

AS YOU TRAVEL north or south from the equator, disease-transmitting insects, parasites, diseases, poisonous snakes, plants and animals decrease; physical hazards such as snow and cold increase. Trees become scattered and stunted, finally giving way to tundra, grasses and seas of ice. Plant and animal food grows less abundant while the body requires more nourishment. Living off the land is difficult, but it is possible with a gun, fire, equipment and suitable clothing. The explorer Stefansson lived on the meat of land animals killed during every month of the year as far north as 80° latitude.

In general the plants and animals of the arctic and of the subarctic forests

are circumpolar in distribution; that is, the food you can find will be much the same in Alaska, Northern Canada, Labrador, Greenland, Iceland, Siberia.

### SURVIVAL HINTS—NO. 12

*This is the twelfth in a series of articles condensed from How to Survive on Land and Sea, U. S. Naval Institute textbook issued by Aviation Training Division of CNO. Individual copies may be purchased from the U. S. Naval Institute, Annapolis, Md.—Ed.*

Although plant and animal food is present in the arctic, it is not always easily available. Vegetation is scattered, but is most plentiful along the banks

of rivers and lakes. Game may be abundant over a large area yet scarce in local areas at specific times.

You can live on meat alone if you eat both fat and lean. In the arctic are such animals as musk ox, wolves, polar bears, foxes, muskrats, lemmings and seals; and such birds as ptarmigan, gulls, owls, hawks, geese, crane, loon, ducks and snow bunting.

MANY OF THESE ANIMALS migrate south in winter. Some ptarmigan remain in the arctic. They can be shot, clubbed or snared. Hare are found in the same regions the year around. Lemming also can be trapped or clubbed along the natural wild life runways.



**Forced landing** in the far north. Arrow points to wrecked plane. Note bleak terrain in which pilot made successful crash landing



**Roughed grouse**—A tasty bird that can be shot, snared or clubbed in timbered areas. Excellent eating when broiled over hot coals

## WHEN ANIMAL FOOD IS SCARCE YOU EAT THE PLANTS OF THE FAR NORTH

**F**ARTHER SOUTH where trees occur, a greater diversity of birds, mammals and plants is found. Many of the deer family are in this area. The porcupine is often encountered and can be clubbed on the ground or shaken from a tree. Porcupines feed on bark. Limbs stripped bare are signs of their presence. To avoid their sharp needles, pick them up by the loose skin under the chin.

In summer, birds and bird eggs will abound in certain areas. Gulls, terns, murrets and dovekeys nest in colonies along the coast, while ducks and geese can be found in the vegetation along streams and lakes.

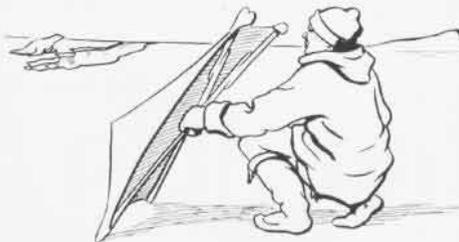
Seals are the staff of life in the arctic, but it requires exceptional skill and knowledge to spear them. Even with a gun they are not easily obtained. In winter they are hunted where there is an even layer of ice over water of fair depth. They can be expected in numbers where the ice is broken by current holes and tidewater cracks. Where the ice is thick and unbroken they will remain scarce. Seals snort at their water holes and remain for some time taking air. Sneak up to the hole while the seal is taking a breather or dozing. Flatten out and remain silent when it looks around. Move slowly and silently. They can hear slight sounds through the ice. Construct a white shield of parachute silk and, using this as a blind, slip up on the seal. Try for a brain shot; otherwise he may escape into his hole.

The walrus comes up to breathe, but does not scratch breathing holes and is thus harder to locate. It is prob-

ably the most dangerous animal of the arctic region.

The polar bear is found in practically all arctic coastal regions. Caribou and reindeer are the most abundant of arctic land mammals. Their presence can be located by tracks, but careful stalking is necessary for a shot.

Fish are plentiful in small northern



**STALKING SEAL**

streams. Salmon can be found from early spring to fall in coastal streams and rivers, from Oregon through Alaska, and from the New England states northward. When they are traveling upstream to spawn, they can be picked up by hand or clubbed. Salmon die after spawning in the headwaters. The farther they get from salt water the more their flesh deteriorates. The flesh of these dying salmon may be poisonous. Watch for white salmon and let the pink ones pass.

When animal life fails and even such food as mice, fish and grubs are not available, you can still find plant food that will stave off starvation. In summer there is no great problem finding plant food, and in winter berries and roots are available beneath the snow, if you know where to look for them. In arctic

and subarctic regions you may safely try plants with the assumption that none of them is likely to be poisonous. The water hemlock is in most cases the only seriously poisonous plant, but but-tercups also should be avoided. It is important that you be able to distinguish the relatively few nutritious plants from the far greater number that have no food value.

The bark and buds of certain northern trees that are eaten by animals also can be eaten by man. The bark and buds of aspen can be eaten raw or cooked. They are preferable boiled to a gelatinous mass. The buds of basswood, poplar, maple, the shoots of spruce, tamarack, and the inner bark of willow, alder, hemlock, basswood and birch are all edible. The leaves of mountain sorrel, young willows and fireweed also can be eaten when boiled.

**T**HE MOST WIDESPREAD and surest source of emergency food is the lichens, some of which are moss-like in appearance. Often these small plants cover large areas, growing on rocks, trees, logs and in sand and gravel. The lichens are gray, brown or black in color and are rich in carbohydrates, furnishing food for many northern animals. None is poisonous, but some contain a bitter acid that causes internal irritation unless they are cooked in water, dried until brittle and then powdered and boiled.

Plant life above tree line in the high mountains of the temperate and even tropic zones is similar in many respects to that in the far north and the arctic. If it is necessary to live off the land in such regions, proceed as you would in cold, arctic regions of the far north. Use northern know-how to survive.

**IN NEXT ISSUE: ENVIRONMENTAL HAZARDS**

## BERRIES



**CROWBERRY** is a small evergreen. The berries are a brownish black, single seeded, juicy and sweet.



**SALMON-BERRY** is the most important of the northern berries. Fruit is yellow, looks like a raspberry.

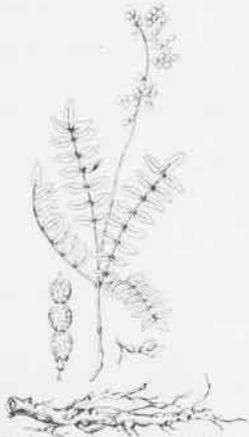


**CRANBERRIES**, as well as currants, blueberries and raspberries, are found where vegetation is good.



**MOUNTAIN CRANBERRIES** are found in favorable spots in timbered regions, hillsides, along streams.

## ROOTS & GREENS



**LICORICE ROOT** has pink flowers. It is found as far north as the Arctic. Raw, it tastes of licorice.



**ALPINE KNOTWEED**, or wild rhubarb, grows three to six feet high. Leaves, stems are cooked.



**SLAKEWEED** is common in dry tundra. It has white or pink flowers. Edible raw, palatable cooked.

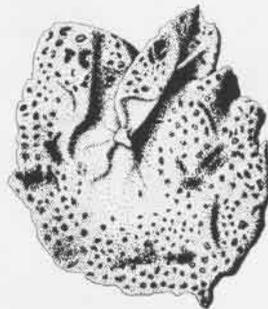


**WOOLLY LOUSEWORT** is to be found in dry tundra. It has rose-colored flowers. Eat root raw, or cooked.

## LICHENS



**ICELAND MOSS** is among the most useful of the lichens. It grows best in sandy soil and resembles a brown seaweed. It should be boiled for an hour or more before eating.



**ROCK TRIPE**, or famine food, flat leathery lichen that grows on rocks. It is smoky-colored if dry. It tastes bitter. Dry it thoroughly before boiling or will cause diarrhea.



**REINDEER MOSS** is the most abundant of the food lichens. It is gray-green and has a small globular "fruit." It should be washed free of all grit and then boiled or roasted.

# TROPICAL CYCLONES

## This Type of Storm Is Most Destructive of All; Its Wind Velocities Are Topped Only by Tornadoes

TROPICAL CYCLONES include hurricanes, typhoons, baguios, cordonazos cyclones and willy-willies, the only difference being the geographic location in which they occur. A fully developed tropical cyclone is the most destructive of all storms, its wind velocities being exceeded only within the relatively narrow limits of the tornado.

The tropical cyclone is an area of low barometric pressure. An area of clear weather and comparatively calm winds nearly always is found at the center of the storm. This is known as the *eye* or *vortex*. The dark bank of nimbostratus clouds that is seen best as it comes over the horizon is called the *bar* of the storm. Two theories are advanced:

► 1. *Convection Theory.* Under this hypothesis, when the air becomes sufficiently warm and moist, local convection starts. Under favorable conditions the convection continues to such a degree that a low pressure area is created, and as the process continues,

an inward flow of air is initiated over a wide area. When the incipient storm is sufficiently distant from the equator, the inward flow of air is deviated to the right in the northern hemisphere and to the left in the southern, thus causing a spiral flow around the center of the storm. The deviation is caused by the rotation of the earth and the apparent force which brings it about is called the "Coriolis Force."

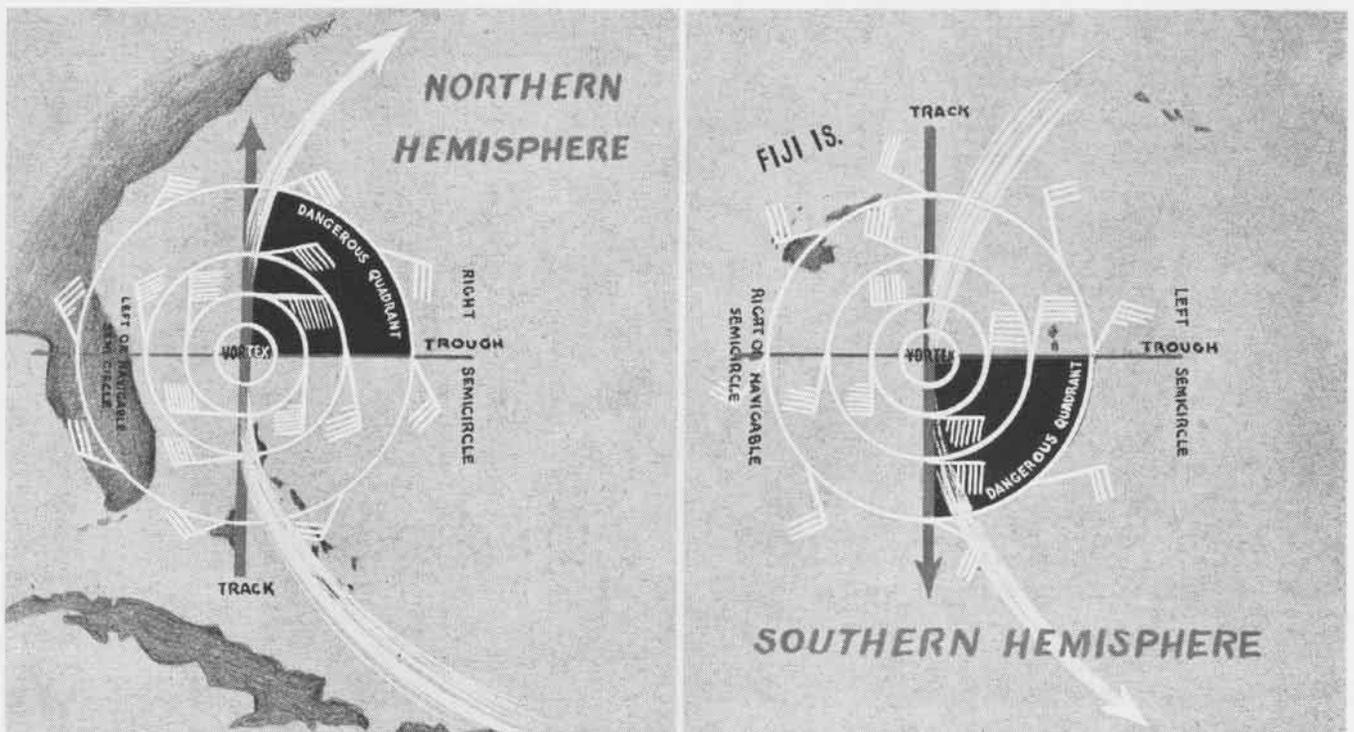
This restrictive force which prevents a direct flow of air to the storm center thus acts further to lower the pressure at the center. In addition, as the circulation becomes sufficiently strong, centrifugal force acts in conjunction with the Coriolis Force. The air, being very warm and moist, releases torrential rainfalls as it is lifted in the central portions of the storm. Loss of weight caused by rainfall again acts to lower the pressure. The whole storm action is cumulative and keeps on growing until a violent tropical cyclone is set up.

► 2. *Mechanical Theory.* Under this

hypothesis, the storm results from a disturbance in the balance between opposing air currents such as between the northeast and southeast trades or between one trade wind system and the doldrums. Thus, the initial lifting and starting of the storm is of a mechanical nature. This theory supports the contention that the storms first originate as waves on the equatorial front. Some support is lent to the mechanical theory in that tropical storms do not form in the South Atlantic where no such opposing air streams are to be found. Owing to the construction of these storms, some mechanism is required whereby large quantities of the inflowing air may be carried away aloft. This process is not well understood because of the difficulty of obtaining upper air soundings within the storm.

### Average Wind Area Is 300 Miles

Tropical storms vary greatly in size, but the average diameter of the area over which winds connected with the storm system may be encountered is about 300 miles. Diameter of the area of winds of hurricane force is much smaller. Diameter of the center calm area or eye averages about 15 to 20 miles but may be as small as seven.



These diagrams showing storm movements illustrate terms used in describing tropical cyclones. The right semi-circle lies to the right when looking along the track in the direction of the storm, and the left semi-circle to the left. Semi-circles are divided into quadrants

# Floods Cause Greatest Damage in Hurricanes

THE USUAL TRACK of cyclones resembles a parabola. In the northern hemisphere they almost invariably move westward from their place of origin at a speed of about 10 to 12 knots, gradually curving to the northwest as they progress. When they reach about 20-25° latitude they swing to north and finally northeast. This process is known as recurving.

In the southern hemisphere, the movement is initially the same. However, the storm gradually curves to the southwest and finally recurves on its parabolic course into a southeasterly direction. The speed is the same as for the northern hemisphere.

Of all the damage wrought by tropical cyclones, the maximum has been caused by floods in coastal areas as a result of the sudden inundation by storm waves. These waves are proportional to the wind velocity and the time the wind has acted upon the wave.

## Elements Foretell Storm's Approach

Fortunately for man, nature warns of approaching tropical storms, and these are the elements that should be watched:

1. *Clouds.* The cloud pattern surrounding a tropical storm may extend for hundreds of miles so that clouds may be one of the first indications of an approaching storm. In many cases the sky becomes covered with a thin cirrus haze causing lurid sunsets and halos or rings about the sun or moon.

2. *Weather.* As a storm approaches, the air is usually sultry and oppressive. Visibility is extremely good. Later the weather may become unsettled and squally. The preliminary unsettled weather is experienced as much as 24 to 48 hours in advance, but on occasions gives only a few hours' notice.

3. *Sea.* Probably the first sign of an approaching tropical storm will be a heavy sea swell. Provided there is no intervening land, this swell may be felt as much as 1,000 miles from the center and can be relied upon to be felt at about 400 miles.

4. *Barometer.* As the cyclone approaches, the barometer begins to fall slowly but steadily, but diurnal variation is still apparent on the barograph trace.

5. *Wind.* The position and track of the storm may be plotted most accurately by observers by noting change in direction and increase of the wind.

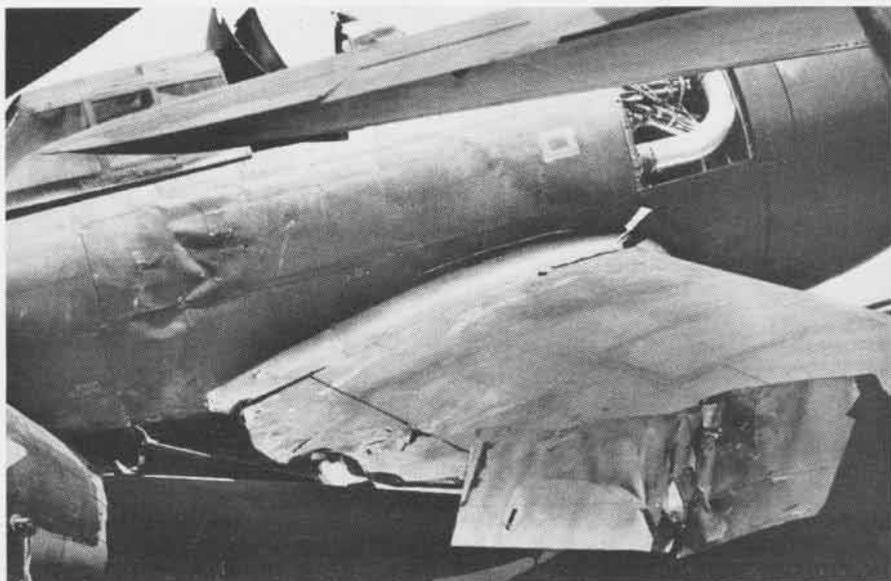
[CONDENSED FROM T.N. No. 44-43, TROPICAL CYCLONES (HURRICANES)]



THE NEW ENGLAND HURRICANE OF SEPTEMBER, 1938, CAUSED GREAT DAMAGE ALONG EAST COAST



STORM AT SEA WROUGHT DESTRUCTION ON THUNDERBOLTS BEING TRANSPORTED BY BABY FLATTOP



THIS COMBAT PLANE TOOK A TERRIFIC BEATING IN HIGH WINDS ENCOUNTERED BY ESCORT CARRIER

# BUAER GIVES INSTRUCTION ON MOORING PLANES FOR ORDINARY AND EXTREME WIND CONDITIONS

**D**AMAGE to aircraft from high winds emphasizes the importance of proper handling and staking of moored planes. Major windstorm losses and sudden squall damage may be classified as 1. Inadequate or absence of moorings for planes, resulting in aircraft being blown from parked positions; 2. Damage to planes with adequate anchorage but improperly moored, and 3. Damage caused by loose objects and debris being blown against planes.

► To obtain maximum protection and safety, planes should be moored in a position facing into the prevailing wind with the lift of the wings reduced to approximately zero; securely anchored to prevent lateral and perpendicular movement; main wheels blocked and tail wheel locked in a fore and aft direction; parking brakes and controls locked.

The wing lift may be neutralized by the use of spoiler board or by placing the major axis of the plane in a horizontal position. Under unusual advanced base conditions, or in the absence of mooring facilities, wing lift may be neutralized by placing the main wheels in pits so that the fuselage will be about level and the wheels blocked; or the tail wheel or skid may be placed on a securely anchored pedestal or earth mound of sufficient height to make the

fuselage approximately level. Use of wheel pits is preferred.

Planes moored in the open always should be spaced to permit changing their position in the least possible time. Mooring lines of  $\frac{3}{4}$ " wire cable or  $1\frac{1}{2}$ " manila or equivalent should be used and secured to stakes. Attachments should be made to the tie-down fittings provided on the plane or to structural member mooring points.

Cable is preferred for mooring lines but should be put under only a very slight tension. If manila line or other material is used, careful adjustment should be made for slack to provide for shrinkage. However, the leaving of excessive slack should be avoided.

## Here Are Parking and Staking Details

*The following details of parking and staking should be followed:*

1. Locate plane with main landing gear wheels on level ground and headed into the prevailing wind or expected wind direction; lock tail or nose wheel in the fore and aft direction.

2. Lock controls in neutral position. External surface control locks, if available, should be used.

3. Lock parking brakes and place wheel chocks at front and back of each wheel. Do not lock brakes in freezing weather.

4. On planes without tie-down lugs on landing gear attach lines above the oleo.

*The following additional precautions should be taken when a storm or a severe wind condition is expected:*

1. Space all planes to provide a minimum clearance around each plane equivalent to its major axis length plus 10 feet.

2. Remove to enclosures or anchor all equipment, vehicles, tools, etc., that may become flying debris.

3. Install flat spoilers fabricated locally from wooden 2 x 4 material placed with long dimension vertical, along approximately 75 percent of the wing span and located 10 to 15 percent of the average cord aft and parallel to the leading edge. Spoilers should be covered with felt along the edge in contact with the wing.

4. All movable control surfaces should be fastened securely with felt padded wooden clamps fabricated locally.

5. Wheel chocks should be anchored securely or pegged down on ground parking areas to minimize plane movement.

For permanent anchorage facilities, rings set flush in concrete aprons or attached to concrete blocks sunk in the open ground, spaced to provide tie-down points and designed for a minimum tension pull of 2,000 lbs. should be provided.

For semi-permanent and temporary mooring in the open, metal spiral auger-type stakes or anchor fence post stakes will give excellent results. Wooden stakes similar to tent pegs will prove satisfactory under most semi- or hard-ground conditions. In soft ground two wooden stakes should be compounded for each stake location.

[CONDENSED, TN 43-47, OPERATION & MAINTENANCE INFORMATION ON MOORING AIRPLANES FOR NORMAL & EXTREME WIND CONDITIONS]



BATTERED BEACH AT NEW LONDON, CONN., REVEALS SOME OF HEAVY DAMAGE INFLICTED ON NEW ENGLAND COAST IN HURRICANE OF SEPTEMBER, 1938

# SHORE STATIONS

► **NATTC JACKSONVILLE**—"Never underestimate the power of a woman" has become the slogan of a Marine sergeant who introduces beginners to the intricacies of code. There was a time when he was known far and wide for the unsmiling countenance presented to all classes. That was his own particular technique for students' rapid progress and the lack of discipline problems.

However, that time belongs in the past tense. The transition took place recently when classes turned co-ed, and all WAVE students brought him shiny red apples on examination day.

► **NAS DALLAS**—The operator of a newsreel theater in down-town Dallas was mildly surprised at the large number of Naval Aviators who attended one of his programs.

As one pilot explained: "We are all primary instructors out at the Naval Air Station, and all of us have a deep yearning for Fleet duty. A former instructor from this station is now flying a *Hell Diver* off the carrier shown in your newsreel. During that close-up when he looks out at the audience with such a pleased look, he mutters something. One of the boys said he is mumbling (you gotta read his lips) 'Are you jerks still pushing those *Yellow Perils* at Dallas?'"



► **MCAS EL CENTRO**—Commanding officer of one of the bombing squadrons recently received a live bobcat as a gift from the Zoological Gardens in San Diego. The men immediately adopted the cat as their mascot, and they keep the full grown, four-year-old feline in a well-built cage. When they go overseas they will take the bobcat with them.

Squadron men are particularly proud of the cat because it is closely related to their insignia—the snarling lynx. The insignia, which was designed by one of the officers who is now overseas, pictures the lynx flying through the night, strafing and bombing the enemy with a machine gun in his front paws and preparing to drop bombs from his hind paws.

▼ **SoPAC**—A Marine captain has one special item he always carries into combat, and that is a time-tattered New Testament. This Bible has been on the scene of three wars with members of his family. The captain's paternal great-great-grandfather first took the Bible into battle when he was a sergeant with an Ohio infantry division during the 1861-1865 incident. His father had it with him during World War I. Now the Bible is seeing the Pacific, and the captain hopes this will be its last trip.

► **MCAS EL CENTRO**—"Where, oh where has my little goat gone" is the familiar refrain of a Marine private at this station. *Friskie* alias *Diggins* alias *Dilbert* alias *Stinky* is the four-month-old baby goat who is always among the missing.

Every time he gets lost or is stolen the goat comes back with a new moniker. Who's getting who's goat?

► **NAS DALLAS**—The fifth class of potential pilots for the French Navy now are training at this station. These men are all from Arzeiw, Algiers, a naval air base near Oran. Originally from France, they escaped to Africa to carry on the fight with the Allies.

One was imprisoned by the Gestapo in France but managed to flee to Switzerland where he was imprisoned again. He made a miraculous escape back into France, then across the border into Spain where he was more fortunate than the others to be spared from prison. However, he was ordered out of the country within 48 hours. The others served from two to nine months in Spanish prisons.

► **MCAS EL CENTRO**—Excellent results are being obtained from a plan of periodic "zone inspection" in which various department heads are assigned to inspect departments other than their own. The written inspection reports are closely followed up, and departments with unsatisfactory reports are required immediately to remedy the situation. Inspections occur approximately every two weeks.

► **MCAD MIRAMAR**—A two-star general wishing to enter the gate one evening couldn't produce his identification card. The private on guard duty was unimpressed and refused to let him pass through the gate. Finally, the exasperated general bent forward, pointed to the stars on his shoulders, and bellowed:

"Do you know what these mean?"

"Yes sir," the private replied, "you have two sons in the service."

► **NAS GROSSE ILE**—The station's baseball team is in full swing, and won four out of the first five games played. They now are in the servicemen's league, and will play games twice a week throughout the season with other teams in the league.



► **NAS PENSACOLA**—An A&R night shift which will permit use of the same floor space and equipment along the assembly and repair lines 16 hours a day rather than eight hours was recently inaugurated.

Although a small night shift was maintained before, the new set-up shifts a much larger group to the night work detail and thereby enables the A&R shops to take care of the increasing work load.

► **NAS NEW YORK**—Life is complex according to a certain chief and his flight division salvage crew. One week they had two mascots—a chow named Octane and a bull terrier named Susie. The next week they had five mascots with the addition of three bull-headed, chow-hungry half-breeds named Tom, Dick and Harry!

They could be a happy family. Old "High-Test" is plenty proud of his all-male trio, and he has been duly congratulated by the salvage crew. But Susie is bull-headed and won't even let Octane in the dog-house.

Susie has been difficult from the beginning. When it was near time for Tom, Dick and Harry to make their debut, she burrowed under the CPO club and didn't emerge for three days. The boys of the salvage crew were concerned. They had lifted *Hellcats* and *Wildcats* from bogs, swamps and bays, but they had no idea how to lift Susie and family from the CPO cave. Finally the salvage crew went to work with spades, cables and bulldozers. It was quickly undermined.

► **MCAS EL TORO**—Construction is well under way in the \$18,000 expansion program approved for this station. This includes work on parallel concrete runways, major assembly and repair shops, hangars, squadron buildings and related structures such as barracks, mess halls and other facilities for personnel.

► **MCAS SANTA BARBARA**—The second Women Reserve squadron has been organized on the West Coast. As of May 1, Women Reserve Squadron 2 was taken over by the senior woman officer to operate as a separate unit with its own administrative officers. WR's previously were attached to station headquarters.

► **MCAS SANTA BARBARA**—Construction of new runways and parking apron have inaugurated the expansion program at this station. The recent Navy appropriation fund allows for new and additional facilities such as storehouses, armory, medical dispensary, a post office, and mess halls etc.

►SoPAC—How does a Marine spend his time en route to an invasion and awaiting the zero hour? Sgt. J. G. L. skipped over the hours like this:

1. Played 215 consecutive games of gin rummy; 2. bought and smoked six cartons of cigarettes and one box of cigars; 3. drank 93 cups of hot coffee; 4. submitted to one crew haircut; 5. washed the same pair of socks and same set of underwear 11 times; 6. read one pocket history of the United States; 7. read two religious essays; 8. read 19 mystery stories; and 9. spent an average of eighteen out of twenty-four hours talking and thinking about home.

►NAS PENSACOLA—The photo squadron recently put into operation a PBY-5a equipped with various hatches for aerial picture making. It is believed to be the only one of its kind within the U. S. The plane has seen a great deal of enemy action in the Solomons and has just been overhauled.

►NAS PENSACOLA—A survival museum, one of the most comprehensive single projects yet undertaken to teach self-preservation to naval personnel, has been scheduled for construction.

In order to capture the proper perspective of the museum, the exterior of the building, approximately 60' by 100', is being painted with blending colors similar to structures in the Pacific combat area. A green and white camouflage netting, merging with the surrounding landscape, will be strung across the roof with an overhang in one corner shielding a dummy plane, much as revetments are built in the Pacific.

Largest and most detailed display in the museum will be the tropical jungle room in which palm trees and a sand beach merge with murals painted to give the effect of distance. Props in the exhibit include a thatched lean-to, a one-man life raft showing signs of hard usage, a parachute silk mosquito canopy and a bamboo fish spear. A mannequin is shown opening coconuts with a machete.

►NAS MEMPHIS—The value of two-way radio communication in crash ambulances and ambulance planes was effectively demonstrated in a recent crash which occurred some distance from the main base and in a rural area.

The ambulance plane first located the crash. Then the crash ambulance, which was picking its way through a maze of unmarked country roads, was directed by the plane. The pilot gave directions as to the best route, indicating when intersections were clear. It was estimated that, by this means, the injured men were reached an hour sooner than would otherwise have been possible.

►MCAS MOJAVE—Speaking of the hardships of war, you have to go a long way to beat the rigors of a real Mojave wind-storm. In a recent storm the wind reached a velocity of 71 knots, and all the Women's Reserve could do was stand by and watch their roof take off across the boondocks. However, repairs were made as soon as the wind died down, and the rugged Marines came through with no casualties.

## TOKYO TALKS

—TO GERMANY

With Allied forces in the Pacific moving closer to the Philippines, the recent visit of a group of Filipino puppets to Tokyo, and Japanese reports of their activities indicated that Japan was exerting special efforts to make ready for General Douglas MacArthur's promised return to the archipelago.

The visitors' mission "was to report on the establishment of the bases of the political, economic and military collaboration of the Philippines in the prosecution of the war of Greater East Asia."

—TO JAPAN

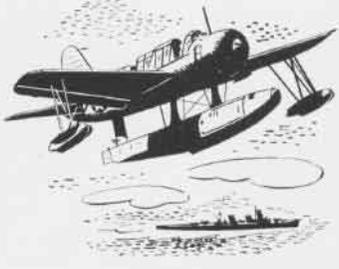
The Finance Ministry of the puppet Thailand government has appropriated 10,000,000 (m) bahts (approximately \$7,491,000) for the construction of a "new capital" at Pechabun. Bangkok was abandoned this year as the Thailand capital following Allied bombings.

—TO JAPAN

Filipinos are responding wonderfully to the War Planes for Nippon Drive which was inaugurated after General Tojo promised Filipino independence in the "not too distant future."

Hundreds of Filipinos have contributed to the fund which now stands at \$135.35.

**SHOW ME THE WAY TO GO HOME**



**Wind Star**

While tracking a suspicious vessel you note a change in your wind and fly a wind star making the following observations: (Flight altitude 4,000 feet, temperature (+) 7° C. CAS 120 k).

TH 150°	Drift 5° R
TH 186°	Drift 9° R
TH 091°	Drift 6° L

What is your wind?

From .....

Force .....

(Answers on page 40)

—TO JAPAN

Japanese submarines have been too busy supplying front line Pacific bases to carry out their "real function of attacking and sinking enemy warships." In apparent apology for the failure of Japanese submarines to play a more important rôle in the war to date, a submarine commander was quoted as saying "Truly if we had more ammunition and more planes, transportation by surface ships could be accomplished under the protection of planes. Then the submarines could carry out their real function of attacking and sinking enemy warships."

—TO PHILIPPINES

Philippine school year will be divided into two terms to give teachers and students "enough time" to help in a food production campaign. The present school year is divided into four terms, and the teachers have "no chance for a vacation." Under the new order the country will benefit from the help the teachers and students can give "during the semester intervals."

—TO JAPAN

A new list of "approved" Japanese books "to improve the cultural background of the people," is headed by a work entitled *Wartime Economy and Financial Control Policy in the United States*. "At the time when correct understanding of the American economic condition is very important, this book is recommended as a book to be read widely." Its author, a minor official in Nagoya prefecture, is said to have "traveled widely through the continent of the United States."

—TO PHILIPPINES

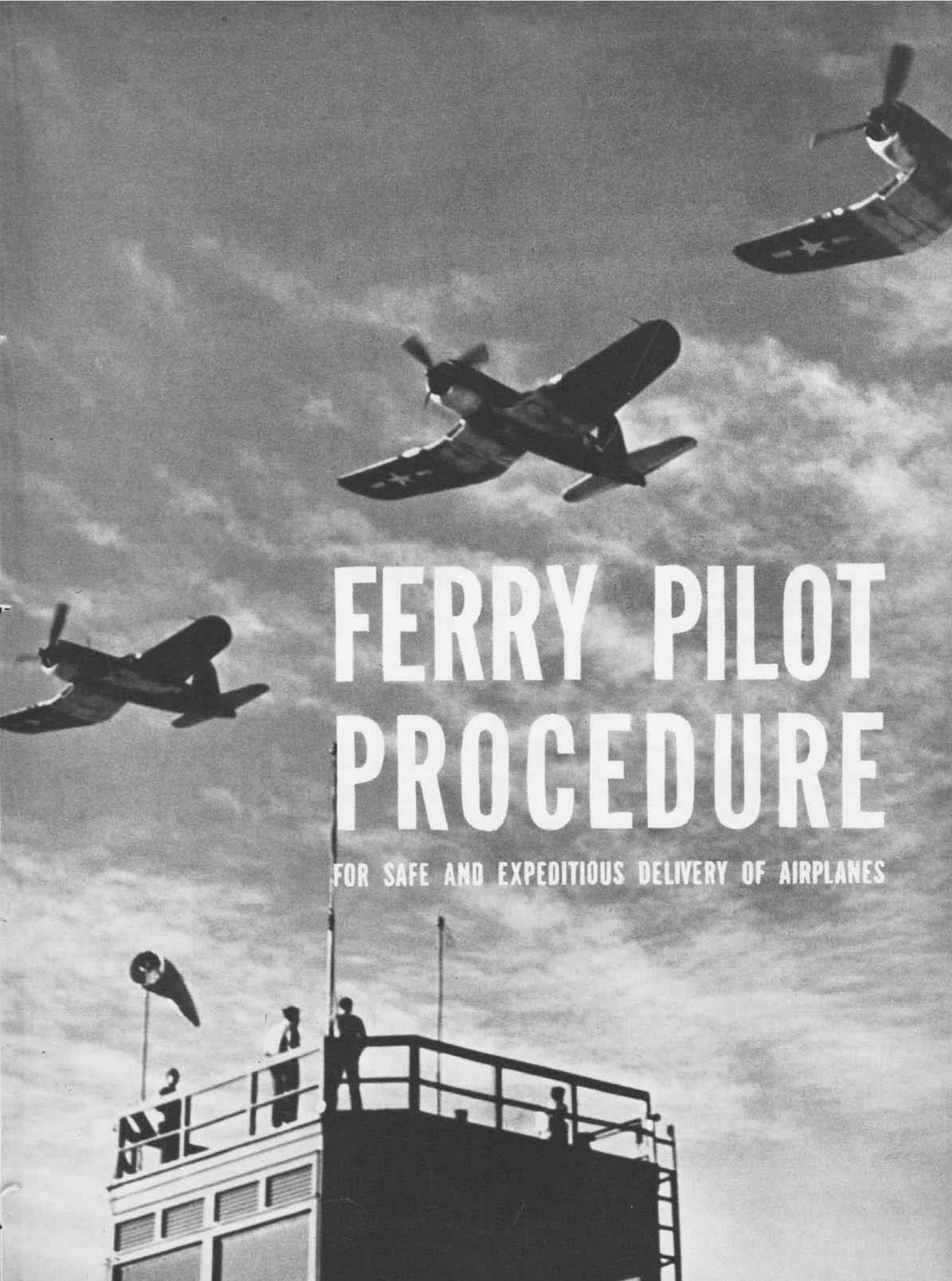
"Enforcement of labor" law affects all people in the Philippines between the ages of 15 and 60. Residents of Manila were instructed to report to recruiting offices to be told how they will work and where. "Everyone except those exempt from this order is required to bring his own food and the things he needs while working."

—TO NORTH AMERICA

The 28 boundary gates around the former International Settlement in Japanese-occupied Shanghai are being torn down and used for scrap metal. "Their presence today is no longer necessary or desirable. City authorities struck upon the idea of removing them and donating them to the scrap metal drive recently launched by Sino-Japanese authorities." The steel gates, valued at \$800,000, were expected to yield 80 tons of scrap.

—TO JAPAN

Japanese scientists have developed a method of cooking rice "without the use of fire" for the benefit of troops "undergoing severe bombings of enemy planes in the southern battle zones." Rice is boiled "with the addition of a specially prepared chemical" before being sent to the front areas, then placed in water by the troops for about 30 minutes. The resultant product is a "fluffy rice with no hard uncooked portion existing whatsoever."



# FERRY PILOT PROCEDURE

FOR SAFE AND EXPEDITIOUS DELIVERY OF AIRPLANES

# Ferry Command Delivers the Airplanes

FROM A STAFF of 10 pilots who ferried planes in their spare time evenings back in 1941, the Naval Air Ferry Command has grown until it now has a thousand pilots who fly everything from fighter planes to big four-engine *Liberators* from coast to coast.

The three ferry squadrons can fly anything with wings, at a few hours' notice, to the four corners of the nation, Canada or overseas. Most of its operations are in continental U. S., but special ferrying jobs sometimes take its pilots to South America or ocean bases.

To keep such a heavy flow of air traffic moving smoothly with a minimum of accidents requires constant pressure on safety and proper pilot procedures. NANews reproduces on these pages information on correct procedure, which is stressed with all ferry pilots. Much of the advice is applicable to all Navy pilots since

it involves proper methods to use in any flying, cross-country or merely around an air base while training.

Beginnings of the Naval Air Ferry Command, which is now under the Naval Air Transport Service, were modest. For example, the work at NAS New York was done back in 1941 by reserve pilots who instructed day-times and ferried evenings and week-ends. They drove their private cars to nearby Grumman plant, picked up *Wildcat* fighters and ferried them back to the station. Fleet units picked up the planes there. Principal types flown then were *Kingfishers*, Brewster *Buffalos*, *Wildcats* and the Grumman *Goose*. Flying personnel of the Aircraft Delivery Units later became the Ferry Command on December 1, 1943.

Part-time ferry piloting was expanded when half a dozen naval aviators were called in to help carry the load.

## FERRY PILOTS FLY OUT NEW PLANES AND BRING BACK THE BATTLE-WORN

BECAUSE of the large number of Navy planes being turned out today, the huge ferry squadrons, largest in naval aviation, are kept busy most of the time flying new fighters and bombers to the west coast and bringing back battle-worn fighters, SBD's and other types, or new planes built on the Pacific slope.

This diversity of types requires that ferry pilots know how to fly many kinds of airplanes. Besides the F6F, F4U, TBF and SBD, the most common types flown, ferry squadrons also are called on to deliver such others as J4F, JRF, J2F, F3A, FM, TBM, SB2A, PV, SB2C, FG, R4D, GH, PBJ, JM, SBW, TDR, SNV, BTD, N2S, F4F, F7F, PB4Y. But pilots naturally cannot be masters of all kinds of planes.



Lead pilot briefs his three follow pilots on a transcontinental map before starting; men also review their airways pilot and radio facility books before starting their several-day flight west

### FERRY PILOT PROCEDURE

#### CONTROL



#### UNDERSTAND C.A.A. REGULATIONS

**SIGN** PUT YOUR MAPS IN SEQUENCE - CHECK RADIO FREQUENCY RANGES, "RADIO AIDS" CALLS, CONTROL STATIONS, ROUTE SHEETS

**SIGN** GET CHUTE & GEAR WHEN ASSIGNED TO YOUR PLANE (USE YOUR OWN IF ASSIGNED FROM ANOTHER ACTIVITY)

**SIGN** CROSS-COUNTRY PACKET CONTAINS DAMAGE REPORTS, BILLS OF LADING, AND SUPPLY AND SERVICE FORMS

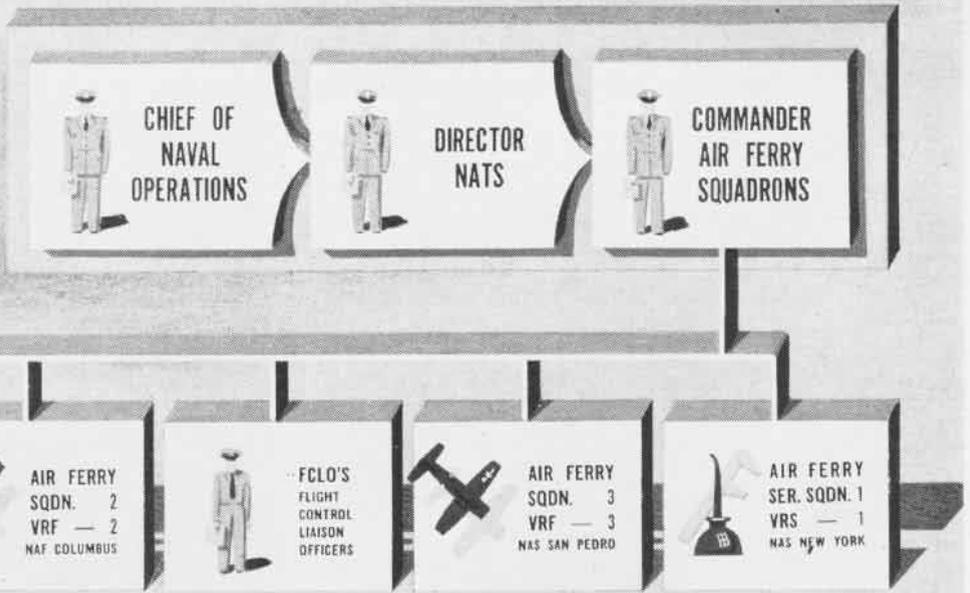
**SIGN** IF ASSIGNED A PASSENGER, INSTRUCT HIM ON PARACHUTE. SIGN FOR HIS GEAR FILE HIS ADDRESS AND NEXT OF KIN

\$75 TO \$100 IN CASH (AT LEAST) IN CASE WEATHER HOLDS YOU OVER

KNOW YOUR PLANE! CHECK UP FUEL SYSTEM AND CONSUMPTION PROPELLERS AND PECULIARITIES

CHECK LIST

# NAVAL AIR FERRY COMMAND



NA News Chart

## PILOTS FLY MILLIONS OF MILES YEARLY KEEPING FLEET SUPPLIED

MAJOR transcontinental and coastal ferry routes are laid out with frequent airports designated as stops. At these places, ferry service units or auxiliary FSU's are located to keep the planes serviced and in flying trim. The tremendous scope of naval aviation today is best indicated by the fact that the Ferry Command's pilots in VRF-1 alone have flown 15,000,000 miles on actual ferry trips, not counting check-out flights or tests which pilots may take to familiarize themselves with the particular plane they may be ferrying. Training of some ferry pilots is done at NAS Willow Grove, Pa., where they spend a month refreshing themselves on engines, ground work and plane check-outs, and generally getting themselves ready for the job of ferrying planes.



Cross-country flying requires strict adherence to flight plans and CAA regulations; planes usually fly looser formation than the three Helldivers in photograph above, flying above glistening river bed

### FERRY PILOT PROCEDURE

#### ROUTES

YOUR LEAD PILOT IS YOUR BOSS

- GET ACQUAINTED WITH YOUR LEADER

---

- SIGN READ: CNO AV. CL 35-43  
OPNS. DIRECTIVE NUMBER 1  
INSTRUCTIONS TO PILOTS

---

- SIGN GET ORDERS AND LOG OUT!

---

- TUNE IN TOWER (COCKPIT OPEN)  
GET CLEARANCE

---

- SET GYRO TO CORRECT HEADING

---

- NO STEEP CLIMB TURNS AT TAKEOFF  
STAY NEAR YOUR LEADER

---

- CHECK LIST TAKE • OFF • SINGLY

# SAFETY OF AIRPLANES AND PILOTS REQUIRES ADHERENCE TO RULES

PILOTS' LIVES are valuable and airplanes are expensive, so constant pressure is maintained by the Ferry Command on safety and observation of proper flying procedures. Younger, inexperienced pilots sometimes have a tendency to break formations, flat-hat and commit other breaches of aerial etiquette.

To encourage safety-consciousness, VRF-1 maintains in its ready room at NAS New York a "Glory Board" listing names of pilots with outstanding records. A pilot who completes five transcontinental flights, or the equivalent 13,500 miles in coastal hops, without accident, has a gold pair of Navy wings after his name. Twenty-five flights entitles him to a "stork," insignia of the squadron. The board at present has 194 members listed, with 124 boasting one or more "storks." Champion pilot of the squadron has completed 92 transcontinental trips, a total of 276,000 miles, without accident.

If a plane is slightly damaged during its delivery flight and can be repaired and continue the flight, the pilot will not get credit for the trip. If it sustained major damage, the pilot loses credit for that flight, plus one other to set him back. Delivery of 25 airplanes without any damage wins a special merit award or a "medallion."

The Ferry Command transports thousands of military personnel—Army, Navy or Marine alike—on leave or on orders.

► This carrying of passengers resulted in a unique experience for one ferry pilot flying a TBF on the west coast some time back. After taking aboard an enlisted man as passenger, he found his inter-communication system did not work.

He instructed the sailor to tie a rope around his leg and to bail out if he should jerk on it in case of emergency. Out over the desert the cockpit enclosure started to fly off and the pilot seized the rope to tie it down.

When the pilot landed the TBF at the next station, there was no sailor aboard. Search was launched and he was found, none the worse for his parachute jump except for a cut on the head. He had bailed out in the South Pacific on past occasions and had not stopped to argue when the ferry pilot jerked the rope while lashing down the enclosure.



"Glory Board" at NAS New York shows safety record of pilots who are in VRF-1; gold pilot wings, storks are awarded men who make trips without accident; board helps rouse rivalry among pilots



TBM'S, FG6'S AND FAU'S STAND SERVICED AND READY FOR TAKE-OFF AT FORT WORTH

## FERRY PILOT PROCEDURE

### FLIGHT

- BE KIND TO YOUR ENGINE!  
DON'T RACE BETWEEN STOPS  
FERRYING MAXIMUMS ARE FOR  
MINIMUM WEAR TO ENGINE 
- DIRECT ROUTE VIA ESTABLISHED AIRWAY  
WHEN PRACTICABLE. 
- WEATHER MUST DETERMINE FLIGHT  
LEADER DECIDES 
- FLIGHT NOT TO PROCEED INTENTIONALLY  
ON INSTRUMENTS CERTAIN PILOTS ARE CERTIFIED TO DO SO 
- IF RADIO FAILS, PROCEED IF REPAIRS ARE MINOR 
- TO CHANGE ALTITUDE GET PERMISSION GIVE REASON 

### NO FLATHATTING - NO FLATHATTING

- CHECK WITH ARMY ADVISORY SERVICE  
FOR WEATHER 
- YOU ARE RESPONSIBLE FOR CLASSIFIED  
MATERIAL—SEE THAT IT IS GUARDED  
AT NIGHT 
- TUNE NEXT STATION—WATCH CHECK POINTS  
NOTE: DIFFERENT FREQUENCY • RADIO RANGE AND AIRPORT TOWER 
- KEEP CLOSE FORMATION (MAX. 500' APART)  
● NEVER CLOSER THAN 2500' TO TRANSPORTS  
FOLLOW PILOTS MAY NOT PROCEED ALONE 
- FLIGHT MUST ARRIVE BEFORE SUNSET 



AIRPORT: AIR FERRY SERVICE UNITS DO IMPORTANT JOB ALONG FLIGHT ROUTES

## FERRY SQUADRONS HAVE MANY MEN WITH LONG RECORDS IN AVIATION

WHO ARE the ferry pilots? Calling the roll on VRF-1, for instance, would reveal such widely divergent experience as skywriters, commercial airline pilots, barnstormers, plane salesmen, lawyers, CAA pilots, aviation cadets right out of Pensacola or Corpus Christi, aerial circus fliers, test pilots and graduates of operational training. Many ferry pilots are former fighter or bomber pilots with the RAF or RCAF who returned to the services of the United States.

The nucleus of Ferry Command is composed of men with long experience flying, some with as much as 20 years. The commander of VRF-1, for instance, has over 8,000 flying hours. Some are nearly 50 years old, with the average age in the 30's. Frequently, when a rush job of ferrying arises, a few score of comparatively green pilots are borrowed to fly fighters to the west coast or do whatever needs to be done in a hurry. It is among this group—pilots whose eyes are on the Central Pacific where they are headed instead of on the instrument board of the plane they are flying—that many of the Ferry Command's accidents occur.

The more experienced men are the lead pilots, with the younger men following them, but the older pilots still think they can hold their own in combat. Recently VRF-1 polled its men and more than 100 volunteered to form a fighter squadron for active duty in the Pacific.

The plan was not carried out in this manner when it was found impractical to keep them together as a fighting unit—the idea being to test whether the "graybeards" would be good fighter pilots because of their long experience with handling planes and meeting all conditions of aerology and the enemy, but 20 of them are being sent to operational training for this purpose.

Although they have many hours in the air, pilots are not allowed to lose touch with aviation progress. Instrument work is given constantly in the air or in Link trainers. All ferry flying, however, is contact.

Three naval air stations are the main operating bases of the Ferry Command—NAS New York, home of VRF-1; NAS Columbus, where VRF-2 is based, and NAS San Pedro, where VRF-3 is located. VRS-1 is based at New York.

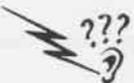
### FERRY PILOT PROCEDURE

#### OVERNIGHT

- CIRCLE AIRPORT ONCE OBSERVE WIND & TRAFFIC



- LISTEN TO RADIO (COCKPIT OPEN) OBSERVE LANDING PROCEDURE



- $\frac{1}{3}$  FOR TOUCH-ON —  $\frac{1}{3}$  LANDROLL —  $\frac{1}{3}$  RESERVED FOR PILOT ERROR



- GAS! FILL TANK SEE IT DONE! ARE CAPS TIGHT? HOW ABOUT OIL?



- SEND RON & MOVEMENT REPORTS  
VIA { 1. NAVY 2. ARMY 3. C.A.A. OR COMMERCIAL CIRCUITS



WRITE LOG

#### DISCUSS FLIGHT WITH YOUR LEADER

- SECURITY OF FLIGHT — DON'T BLAB!



- WEAR UNIFORM OF DAY — NOT FLIGHT



- KEEP YOUR WINDSHIELD CLEAN



- ASK FCLO OR FSU OFFICER { MINOR REPAIRS, REPORTS, WEATHER, HOTELS, ETC.



- DELAY ALLOWABLE ONLY FOR { WEATHER REPAIRS ASSISTANCE FATIGUE



Chart room at NAS New York where pilots gather up maps of the area over which they will ferry planes; thorough checking out in plane type to be flown is given fliers before they start trip

# FLIGHT DISCIPLINE IS VITAL IF THE FERRYING JOB IS TO BE DONE

IN THE EARLY days of ferrying, flights consisted of five or six planes in formation, but today there usually are only three—a lead pilot with two follow pilots behind him in a loose v. To qualify as a lead pilot, an aviator has to have made at least six transcontinental trips.

Pilots assigned to VRF's are classified as senior ferry pilots, lead pilots, single pilots and follow pilots, according to their experience and their ability to deliver planes undamaged and on schedule. Each classification has its set of qualifications.

For ferrying purposes, the United States is divided into an eastern and western zone, with the Mississippi River the boundary. Transcontinental ferry flights go by several alternate routes to Texas and west by the southern route. Ferry service units are located all along the routes, with auxiliary units at smaller airports, to keep the planes in operating order. FSU's are at Knoxville, Fort Worth, Little Rock, Lynchburg, El Paso, Tucson, Petersburg, Va., Red Bluff, Calif., and Spartanburg, S. C. AFSU's are at Tulsa, Midland, Tex.; Shreveport, and Madera, Calif. Routes also extend into Canada and north-south on both coasts.

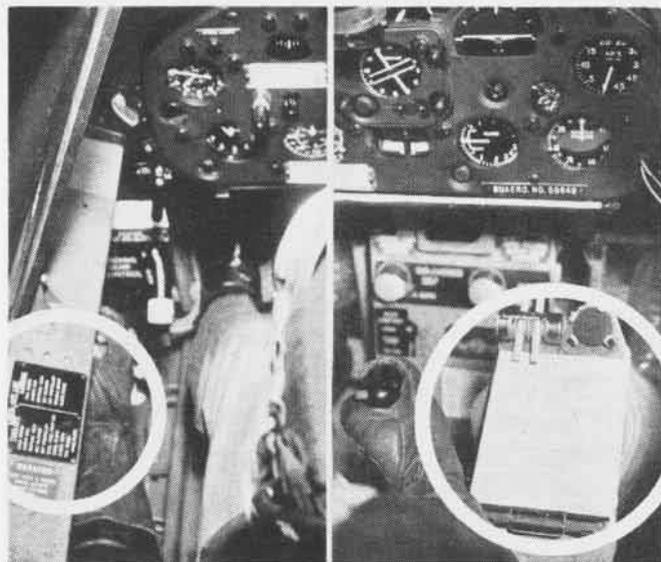
Cross-country flights entail considerably more paper work than is encountered by short hops around a naval air station, at the start, during the flight and when it is completed.

The pilot's pre-departure hours are filled with checking maps, radio frequencies, collecting gear and chutes, cross-country packets with damage reports, bills of lading and supply and service forms, instructing passengers and finally checking-out on the plane to be ferried to learn its peculiarities, fuel system and consumption. Confidential gear and plane equipment have to be under guard at all times, either by the pilot himself or station police.

Ferry flights usually start about 0900 and are supposed to be completed for the day by sunset. Strict adherence to flight rules and CAA airway regulations while flying cross-country are necessary to insure a minimum of accidents. One squadron found that men right out of flight training made the poorest ferry pilots, many fatal accidents resulting.



**Mockup board** of radio installations is used to check out men, to be sure they know how to use the type installed in plane they will be ferrying; "green" pilots usually "know" the most



Use of check-off list is just as important to the ferry pilot as any other naval aviator; on left is the list attached to the plane, at right is the check-off pad fastened to pilot's knee for convenience

## FERRY PILOT PROCEDURE

### TROUBLE

IS THERE A FIELD BELOW ME?  
BAIL OUT OR WHEELS UP?  
MAKE UP YOUR MIND QUICKLY!



### CRASH

ARMY AID ONLY WHEN NAVY IS NOT AVAILABLE  
BUAER IS NOT THE PROPER AUTHORITY

CONTROLLING ACTIVITY IS

**VRF**  
WHICH WILL

**STAY WITH YOUR PLANE**

YOU ARE RESPONSIBLE UNTIL RELEASED

AND NOTIFY CONTROLLING ACTIVITY  
NOTIFY VRS-1—WHICH WILL AIR EXPRESS REPAIR PARTS  
SEND MODIFIED ORDERS  
SEND SUBSTITUTE PILOT (IF YOU ARE HURT OR YOU MUST PROCEED BEFORE THE PLANE IS READY AGAIN)

FCLO'S OR SERVICE OFFICERS WILL ACT IF PRESENT (FOR THE CONTROLLING ACTIVITY)



### FORCED DOWN

1st. CLOSE YOUR FLIGHT PLAN, AND NOTIFY NEAREST FERRY CONTROL LIAISON OFFICER

FILE "DAMAGE TO PRIVATE PROPERTY" REPORT  
C.A.A. MUST GIVE WRITTEN CLEARANCE





Ferry pilots get plenty of paper work before taking off and after they arrive at their destinations; here some pilots are filling in their itineraries, flight logs, discrepancy reports and the sheet on their follow pilots, giving estimates of their abilities as fliers; analyses of ferry command accidents show that causes usually are for the same stock reasons as other activities, a third of accidents occur during landings

## FLAT-HATTING IS WORST SIN FOR PILOTS; ONE RISKS KILLING SELF

CONSTANT ATTENTION to the little details of flying are necessary to keep down the accident total in ferry flights, just as it is with smaller operations. Before taking off, the tower must be checked for clearance. In the air, the flight plan filed with airways authorities must be adhered to and proper use of radio followed.

Instrument flight is barred and flat-hatting is an unpardonable sin. One ferry pilot broke formation, buzzed his home in Texas and crashed his plane, killing himself. Steep climbs on take-off and racing between ferry stops are on the list of forbidden actions.

Some ferry pilots have had to be warned about flying too close to transport aircraft, others because they taxied too fast or failed to S-turn to improve visibility. A third of all accidents on ferry occur during landings, many because of failure to go over the check-off list beforehand. Another 25 percent are as a result of forced landings, in which pilot error often is a contributing cause.

When delayed by accidents or crashes, pilots are required to stand by their planes until some naval authority takes over. They are responsible for daily reports to headquarters on flight progress and for filling out the necessary reports due before take-off and upon arrival at destination.

In case of crashes near Army air facilities where naval air operations are not near at hand, cooperation of that service may be utilized, although pilots are instructed not to abuse the privilege. Ferry squadrons and service squadrons have to be notified in case of accidents so that repair parts, modified orders and substitute pilots may be dispatched, if necessary. Fliers forced down have to close their flight plans and notify nearest ferry control liaison officers, then file damage reports.

Routine to be performed on arrival at final destination includes filing of flight records and forms, having orders endorsed, logs on the plane, engine and propeller filled out, maps returned, and substitute pilots may be made over the same route, and the final arrival report made out. The lead pilot must see that others in his flight observe regulations.

### FERRY PILOT PROCEDURE

**DESTINATION**

CLEAN OUT YOUR COCKPIT  
YOU WON'T SEE IT AGAIN

---

SIGN WRITE UP YOUR FLIGHT RECORD  
& THE FORMS AT DESTINATION

---

SIGN HAVE YOUR ORDERS ENDORSED

---

SIGN FILL IN AND TURN IN LOGS

---

SIGN MAPS MUST BE RETURNED TO  
ISSUING STATION

---

SIGN IF YOU CAN'T BRING CHUTE BACK,  
GET RECEIPTS: SEND ONE TO THE  
ISSUING AUTHORITY; KEEP OTHER

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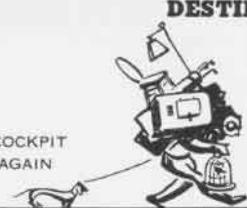
SIGN MAKE POSITIVE, SURE AND  
CERTAIN THAT YOUR ARRIVAL  
REPORT IS FILED: YOUR VRF  
RON SHOULD BE ACTION OR INFO  
ADDRESSEE AS CASE MAY BE

---

GET FURTHER ORDERS  
(RED CROSS MAY ADVANCE  
MONEY FOR DISTANT DUTY)

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CHECK LIST







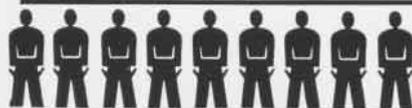
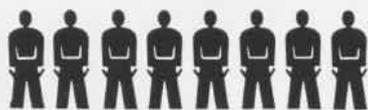





**NOW RELAX**

# DEATHS

PER 100 ACCIDENTS



# PERCENTAGE OF ALL ACCIDENTS

5%

COLLISION WITH GROUND

8%

SPINS & STALLS

11%

TAKE OFF

18%

MISC. & UN-DETERMINED

25%

FORCED LANDING

33%

LANDING



DURING NINE MONTHS OF NAVAL FERRY PILOTING IN 1943

# DID YOU KNOW?

## Rockets Help Sink U-Boat TBF's Team Up on German Sub

First public announcement that the Navy was using rockets to destroy U-boats was made recently by the Navy Department in announcing sinking of a sub in the Atlantic a few months ago.

Two TBF's from escort carriers found the sub on the surface and attacked it first with their rockets, following up with depth charges. One of the pilots in the attack stated he got one and



U-BOAT ON SURFACE BEFORE GOING TO BOTTOM

probably two hits with his rockets after starting to fire when he ran out of clouds two miles away from the U-boat.

Anti-aircraft fire was fairly heavy from the submarine, although no one was visible on the conning tower, giving rise to the conjecture that they may have been controlled from the interior or behind armor plating of the tower.

At the same time, the Navy revealed it now has 65 aircraft carriers in active service, nine times as many as it had two and a half years ago, while its air force embraces a total of 37,700 planes of all types.

## Radio School at Navy Pier Replaces Naval Training School

Approximately 50,000 men, trained as mechanics and technicians, have been graduated to units of the Fleet and advanced bases by the Naval Training Schools, Navy Pier, Chicago, which closes on June 25 to make way for the Naval Training School (Radio Matériel), now being established.

Commissioned on December 1, 1941, in Chicago's former commercial and recreational landmark, the naval training schools have prepared men as aviation machinist's mates, aviation metal-smiths, motor machinist's mates, special

artificer devices, ship's cooks and bakers.

The new school, which started its first classes on June 5, will train men for advanced radio technician rates.

## Standards Set for Ratings

### Aviation Classes Are Set Up

New or revised qualifications for five ratings in aviation have been announced by Bureau of Naval Personnel, covering requirements for third, second or first class ratings as aviation ordnanceman, radio technician, radioman, aviation storekeeper and special artificer optical.

The new announcement sets up standards required of men before they can be eligible for promotion to the various ratings. A number of them replace existing requirements and bring them up to date. The storekeeper (aviation) and special artificer ratings are comparative newcomers to the list of aviation ratings, the latter one being set up to include men skilled in optical devices used for sighting guns and bombs.

## Commands at Hutchinson

TRAINING of pilots, aircrewmembers and ground crews at NAS HUTCHINSON involves three distinct activities carried on under two commands.

► Grooming pilots to handle the *Liberators* takes place under the Naval Air Operational Training Command (Hqtrs: Jacksonville), as does also training aircrewmembers for the part each member performs.

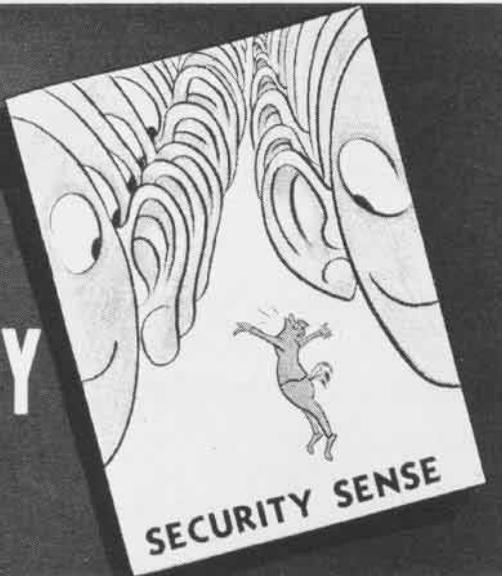
► Training of ground crews (*Patsu*: Patrol Service Unit) as aviation mechs, metalsmiths, ordnancemen, electricians, radio technicians with special schooling in *Liberators* to keep them in flying and fighting condition, is an activity under Naval Air Technical Training Command (Hqtrs: Chicago).

Aircrewmembers, taught the essentials of a plane's technical make-up so that they can do minor repairs en route, concentrate on gunnery, air bombing and aerial communications.



ALL OF THE good-looking women in war service are not in the WAVES, witness this picture of a French Wave giving landing instructions to a French Catalina pilot at an airport in Algiers. Clad in the shorts which are GI in Africa, she is one of 2,000 French women who have joined the Services Feminins de la Flotte to relieve French men for active duty. The SFF was organized in September, 1943. Line forms to the right.

# SECURITY SENSE



## BUTTON YOUR LIP, PAMPHLET ADVISES

ONE OF THE BEST kept secrets of this war is the fact that you aren't supposed to give away secrets to the enemy. So says *Security Sense*, newest pamphlet published by the Aviation Training Division, Office of the Chief of Naval Operations. It's hard to convince many Americans that there are enemy agents in our midst. They are with us even though they seldom go about in long black overcoats, or wear false whiskers, or carry bottles of invisible ink. Nor do they confine their diet to sauerkraut, sing the Horst-Wessel song, or keep hissing "So sorry, please." Generally they are such ordinary persons that they are scarcely noticeable, which, of course, is their big idea. However, they are wonderfully skillful at encouraging a braggart and sympathizing with a complainer. And they know exactly what to do with the dope they dig up.

If, through careless talk, smart-alecky letter writing, or other forms of clownish

conduct you hand the enemy military information, you are giving him a great boost and your country a slap in the face. What you do in particular is rob our troops of one of their greatest weapons—surprise. It is now generally conceded that the Germans, by some means or other, found out in advance about the Dieppe raid. The result was tragic, meaning many more casualties than would have been the case if the raid had been carried out in strict secrecy. The best time to catch an enemy agent is when he is actively mining for information. There are certain signs that often give him away. For instance,



if he can't find a loose talker he must ask questions; he must seek employment in places where information originates; he must do hundreds of other things which ordinary folks would never do in the course of a day's work. So keep an eye out for these signs. You'll have a clear conscience if you button your lip, *Security Sense* advises.

### USE THIS FORM TO ORDER PAMPHLET

Regular distribution is in process. Coupon should be used for those whose copies may have gone astray.

FROM: \_\_\_\_\_  
(Unit Commander)

TO: Office of the Chief of Naval Operations, OP-33-J5, Navy Department, Washington 25, D. C.

SUBJECT: Pamphlet—Request for.

It is requested that copies of the new pamphlet be sent as indicated to this activity.

COPIES

PAMPHLET

Security Sense

SIGNED: \_\_\_\_\_

Delivery \_\_\_\_\_

Address: \_\_\_\_\_

Cut here

## BEST ANSWERS

### Soviet Russia

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

1. The Soviet Union comprises approximately—

- a—one-third of Europe, one-sixth of Asia
- b—one-half of Europe, one-third of Asia
- c—two-thirds of Europe, one-half of Asia
- d—one-half of Europe, one-half of Asia

2. The population of the U.S.S.R. is approximately—

- a—one-tenth of the human race
- b—one-sixth of the human race
- c—one-third that of China
- d—the same as that of India

3. Among the countries adjoining Russia's southern frontiers are—

- a—Turkey, Iran, Arabia
- b—Turkey, India, China
- c—Iran, Syria, Turkey
- d—Burma, China, Manchukuo

4. Military service in the U.S.S.R.—

- a—is limited to males over 18
- b—includes males and females from 18 to 56, excludes others
- c—is universal
- d—includes males and females from 16 to 60, excludes others

5. The closest that the territory of the U.S.S.R. approaches that of the United States is—

- a—about 1,000 miles
- b—about 500 miles
- c—over 3,000 miles
- d—less than 50 miles

6. Politically, the U.S.S.R. is—

- a—not a compact unit, but is completely decentralized
- b—the largest compact unit in the world
- c—divided into six major areas
- d—made up of five separate republics

## Deserted Isle Opens Fire Japs Sneak Back to Old Haunts

Imagine the surprise of a Navy lieutenant piloting a *Liberator* over the island of Kapingamarangi, long since deserted by the Japanese under Navy aerial pounding, when he was greeted by heavy anti-aircraft fire.

For months the Navy had pounded the Jap seaplane base between Truk and Rabaul, wrecking the weather and radio station and shooting up float-type *Zeros* sent in to defend it. Finally it appeared the Japs had left it for good.

The *Liberator* pilot flew his craft over it one day recently to give his crew some target practice when the Japs, who apparently had sneaked back, opened up with automatic anti-aircraft guns. Before it left, the plane laid four 500-lb. bombs on the gun post. The episode emphasized the necessity for constant vigilance and careful reconnaissance of the entire area covered by Navy search planes.

## Primary Goes to Glenview Command Leaves Kansas City

Headquarters of the Naval Air Primary Training Command were scheduled to be moved from Fairfax airport, Kansas City, to NAS Glenview about July 1. The change was made because at present no naval air primary training was under way at Kansas City and it was desirable to have headquarters at a station served by NAPTC.

NAPTC now has 130 units located throughout the country. Headquarters has been at Kansas City since October 1, 1942. Headquarters of the Naval Air Intermediate Training Command recently was shifted from Pensacola to Corpus Christi and the new over-all Naval Air Training Command, comprising primary, intermediate and operational training, moving to Pensacola.

## GIVE 'EM BOTH BARRELS!

A double-barreled war bond campaign is going full blast. The Navy Department's Independence Day cash war bond sale coincides with the last lap of the Treasury Department's nationwide Fifth War Loan drive. The Fifth War Loan drive began June 12 and winds up July 8. The Navy's Fourth of July drive runs July 1 to 8.

## BUY EXTRA BONDS

## Blimps Rescue 18 in Brazil Dense Jungle Slows Down Work

Navy blimps are proving themselves valuable assets in rescuing airmen stranded in dense Brazilian jungles, 18 men having been rescued recently in three separate missions by a lighter-than-air squadron.

Fifteen of the rescued men were picked up by a single airship which participated in all three operations. Twelve were Army fliers, one a Navy pilot and the other two Royal Canadian Air Force flight officers. The rescues involved some ticklish landing operations by the blimps in the jungle areas, the Canadian airmen being down in swampy country bordered by high trees. Crews of two B-25 Army bombers, which belly-landed

in a jungle clearing, also were picked up by a low-flying blimp whose propellers mowed down bushes and shrubs.

## Navy Ready for Xmas Mail Packages Accepted to Oct. 15

Hot summer weather has several months to go, yet the Navy mail service already is making plans for handling the Christmas mail for Navy, Marine and Coast Guard personnel stationed overseas. The 30-day period from September 15 to October 15 has been designated as Christmas Mail Month for men in those three services outside the United States.

Christmas gifts must be less than five pounds in weight, 15 inches in length and 36 inches in length and girth combined. Perishable articles will not be accepted for mailing. Emphasis is being placed on correct addresses, several thousand Navy personnel getting their Christmas packages after the holidays last year because of this failure.

## Carriers Given New Names Honor Naval Victories by Titles

A group of escort carriers will perpetuate names of successful naval and army battles.

Chief of Naval Operations recommended that the names of the new vessels be changed to commemorate victories instead of bodies of water.

FORMER NAME	NEW NAME
Bucareli Bay	Kwajalein
Chapin Bay	Admiralty Islands
Didrickson Bay	Bougainville
Dolomi Bay	Matanikau
Alava Bay	Roi
St. Andrews Bay	Gilbert Islands
Willapa Bay	Cape Gloucester
Totem Bay	Vella Gulf
Frosty Bay	Siboney



FIRST PATSU for Navy Liberators, trained at Hutchinson by the Naval Air Technical Training Command, graduated two months after the overall PB4Y program of training pilots, aircrewmembers and ground crews was centered on the flat terrain of dust-licked Kansas prairies. As this Patrol Service Unit pulled out of the PB4Y Line Maintenance School for assignment to the Fleet,

*Patsus* 2, 3 and others forming were taking the same training in groups which, when graduated, go out intact to service the big Navy Liberators. These doughty groundcrewmembers, about whom too little is heard, keep Navy planes flying and fighting on the skill of aviation mechs, metalsmiths, ordnancemen, electricians and radio technicians. They are the salt of Naval Aviation.

# PANORAMIC GUNNERY TRAINER

NEW SPECIAL DEVICE

**T**HE PANORAMIC GUNNERY TRAINER Mk II, developed recently by BuAer's Special Devices Division, provides 22 minutes of advanced practice in turret manipulation and aerial free gunnery sighting.

Designated Device 3-A-11b, it consists of a 35-mm. motion picture projection system enclosed in a box which may be mounted on a Basic Turret Mk II, Device 3-C-13c or 3-C-13d. Realistic motion pictures of attacking enemy aircraft and the image of a Mk 9 Illuminated Gunsight Reticle are seen by the student through a viewing window. Motion of the turret in azimuth and elevation produces corresponding motion of this reticle. By operating his turret controls, the student can place the reticle in any desired position on the screen.

As an attacking aircraft appears on the screen, the student estimates the amount and direction of lead and operates his turret accordingly. When he thinks he is in firing position, he operates the trigger switch. Hits and rounds fired are recorded on conveniently located counters. To score a fair proportion of hits the student must estimate lead quickly and manipulate



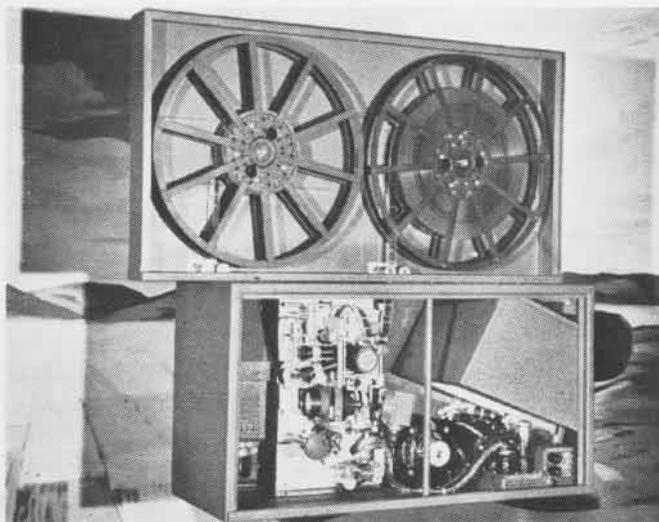
NEW PRACTICE DEVICE RECEIVES ENDORSEMENT FROM FREE GUNNERY STANDARDIZATION COMMITTEE

his turret smoothly. The motion pictures used are substantially the same as those furnished with the 3-A-2 Dual Projection Trainer.

Mechanically, the trainer differs greatly from the Mk I. Front projection on the screen is used instead of rear through the screen, resulting in brighter pictures. The picture is larger (9" x 6½") and is viewed simultaneously with both eyes through prismatic, infinity-focus lenses. The older model has a separate screen only 2 1/8" x 1 9/16" for each eye; 35 mm. frame is used.

The Panoramic Gunnery Trainer is primarily a practice device. A red flash appears when hits are made. Although it indicates hits and misses, it does not show the direction and magnitude of sighting errors. It should not be used until student has learned fundamentals of sighting and turret manipulations.

*THE FGSC has given the new Mk II a thorough workout and finds it a great improvement over the Mk I. It is recommended that it be used to occupy standby time during 3-A-2 periods.—Free Gunnery Standardization Committee, Jacksonville.*



THIS IS PORT SIDE OF TRAINER SHOWING MECHANISM AND FILM REELS



STUDENT SEES ATTACKING ENEMY FIGHTER AGAINST REALISTIC SKYSCAPE

# TECHNICALLY SPEAKING

## Aerological Books Available Should Order Direct From CNO

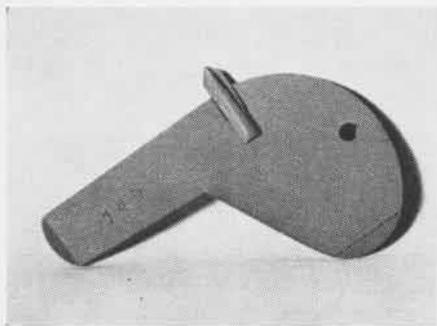
The following aerological publications have been made available for distribution since the last list was published in the May 15 issue of NANews. They may be obtained from the Chief of Naval Operations.

NAVAER No.	TITLE
50-1R-104	Frontogenetic Regions in the Far East.
50-1R-106	Meteorological Conditions for Ice Formation.
50-1R-107	Weather Estimates from Local Aerological Data—A Preliminary Report. University of Chicago Miscellaneous Report No. 2.
50-1R-108	A Climatic Summary of Wake Island.
50-1R-110	Statistical Data for Selected Stations in Brazil.
50-10R-125	General Climatic Information Guide No. 125—Climate of Perpignan, France.
50-10R-128	General Climatic Information Guide No. 128—Climate of Georgetown Island, Malay States.
50-10R-131	General Climatic Information Guide No. 131—Climate of Rochefort, France.
50-10R-133	General Climatic Information Guide No. 133—Climate of Reims, France.
50-10R-147	General Climatic Information Guide No. 147—Climate of Saipan, Marianas Islands.
50-15R-10	Weather Guide for Long Range Planning—Singapore, Straits Settlements.
50-15R-11	Typhoon Tracks Supplement to Weather Guide for Long Range Planning—Southwestern North Pacific Ocean.
50-45R-2A	World Climatic Chart for January.
50-45R-2B	World Climatic Chart for July.
50-1T-14	Preliminary Instruction Manual—Weather Forecasting for Radar Operations. Confidential.
50-1T-16	Preliminary Report on Weather Influences in Radar Wave Propagation. Confidential.
50-40T-1	Aerology and Naval Warfare—The Battle of Midway. Confidential.

valve telling the pilot how to stop a runaway gun. While this point is probably covered during gunnery training, it is apt to be forgotten, especially under combat conditions, and it is therefore suggested that the necessary information be placed on a plate or panel adjacent to the valve. It is further suggested that information vital to stoppage of runaway guns appear in red print.

## Dzus Key Trainee Project Students Make, Later Use Tool

NATTC NORMAN—The Dzus Key, a constantly needed tool, has been discovered by the Technical Training Center here, an activity of the Naval Air Technical Training Command, as



DZUS KEY PRODS STUDENTS' MECHANICAL BENT

a project that can not only be made but also, unlike other shop projects, used by aviation mechs and metalsmiths in training.

Using the basic Curtiss-Wright pattern, Norman introduced a few minor

changes making the Dzus Key more useful to the aviation mech. The Aviation Metalsmith School also will use the improved device.

The Dzus Key is a practical tool, composed of several different parts: Dzus ends, drill angle, Phillips screwdriver head. There are two Dzus ends for different-sized fasteners. These are filed to a depth and thickness making them useful for various jobs. The drill angle is filed to an included angle of 121° (for the mech when sharpening drills).

As many parts of Navy planes are fastened with screws having a Phillips head, it is necessary to use the Phillips screwdriver to fit. The Dzus Key is compact and may be used to fasten any part equipped with Dzus fasteners or Phillips screws.

When Norman discovered that the Dzus Key embodies all the operations for which other shop projects had been taught, the Center substituted it for traditional student projects such as the slotted-anchor plate and hinge-fitting.

[DESIGNED BY LT. S. C. STEWART]

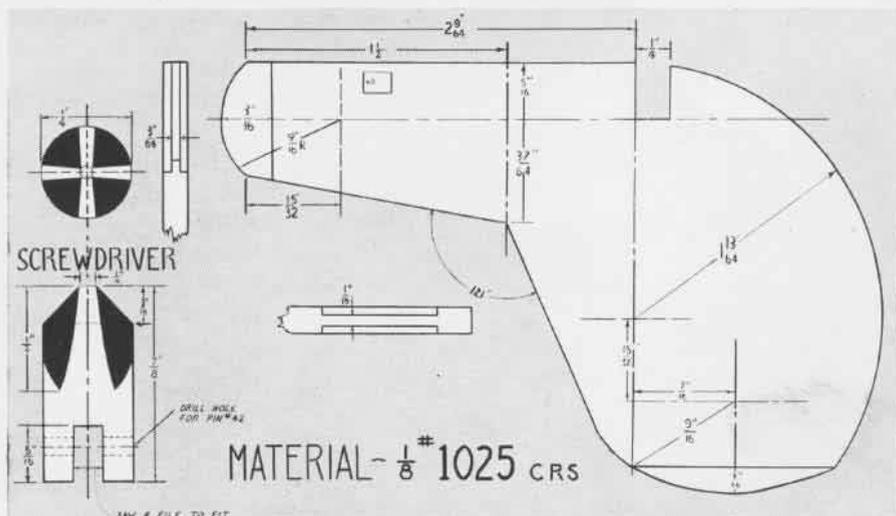
► **BuAER COMMENT**—This is another design of many tools for Dzus operation. Mechanics use common and cross pointed screwdrivers in operations for which this tool is designed. The recommended angle for grinding drills is 118°, not 121° as shown here.

This tool has its greatest value in training mechanics in that they learn some of the fundamentals of lay-out, use of hand tools for cutting and at the same time make something that can eventually be used on aircraft in any Assembly and Repair outfit.

## How to Stop Runaway Guns Turn Valve to Safe and Depress

BuOrd recently was informed by a report from the *Bunker Hill* that runaway guns were stopped by turning the knob of the hydraulic gun charger valve, AN Mark 1, to the SAFE position and then depressing the knob. Since this charger valve incorporates a safety feature which allows the valve to accomplish this function, the question arises as to whether pilots throughout the Fleet are generally in possession of this knowledge.

It is understood that, in most current installations, the SAFE position and FIRE position are appropriately indicated but that no instructions appear adjacent the



MODIFICATION OF BASIC CURTISS-WRIGHT PATTERN FITS TOOL FOR AVIATION MECHS, METALSMITHS

## PHOTOGRAPHY

### Photos Show Eniwetok Mopping Up

BuAer recently received a series of low-altitude oblique photographs showing mopping up of Japs on Eniwetok atoll. The photographs were made from a carrier



RAIDS WRECK FUEL DUMP ON ENIWETOK ISLAND

plane with the K-20 camera. Such photographs are desirable for historical and news value, and for interpretation study.

### Photo Bulletin Mailing List Expands

Recently some 500 addresses have been added to the Photographic Technical Bulletin mailing list. It is intended to make the service available to all photographic units



BUAER FURNISHES BINDER FOR PHOTO ORDERS

of the Navy, Coast Guard and Marine Corps. A binder and one copy of all previous bulletins will be forwarded to each unit. When new bulletins are received one copy should be placed in the binder immediately, the other circulated for information of all hands. The binder should be kept in an accessible place where it is available to any photographer at any time.

### Magazine Makes Plea for Credit Line

Title of an article appearing in *U. S. Camera* magazine: "Is the Photographer the Forgotten Man?" This is a discussion of, and plea for, the giving of credit to the photographer whose pictures, other than the run-of-the-mill type, appear in any publication. From a military standpoint it is impractical to use the Navy photographer's name with the photographs he has produced. However, commanding officers can and should reward extraordinary efforts of photographers under their commands. The standard release stamp supplied carries the notation: "If published, credit must be given as follows: 'Official Photograph U. S. Navy.'" Give them credit.

## Commendation for Gunner Designs Wrench for Gun Barrel

NAOTC JACKSONVILLE—A gunner on the Free Gunnery Standardization Committee has been commended by BuOrd for ingenuity in designing a tool for setting headspace in the .50 cal. BAM gun.

The tool is a clamp-type friction



WRENCH FACILITATES TURNING OF GUN BARREL

wrench which engages the muzzle of the barrel where it protrudes from the front barrel bearing to facilitate rotation of the barrel in either direction. BuOrd is preparing drawings of the tool, which was built by the Jacksonville A&R Department, with a view to its adoption and issue.

[DEVELOPED BY GUNNER MAYNARD CARTER, USN]

## Change Martin Turrets

AS A RESULT of extensive experience, it has been found that continuous operation of the amplidyne in the Martin 250 CE series turrets will extend the life of the main line contractor and brushes considerably. As a result, all present Martin 250 CE series turrets (PV-1 deck, PV-2 deck, PB4Y-1 deck and PB4Y-2 deck) are being delivered so wired that when the master switch is turned on the amplidyne immediately start operating.

This wiring is so arranged that the dead man's switches in the control grips still control operation of the turret. Although the amplidyne is running, no motion of the turret will result from movement of the control grips unless one of the dead man's switches is first closed. A turret change to make this change effective in turrets in the field now is being prepared and will be issued shortly.

## CARRIERS LET NANNEWS HEAR FROM YOU!



## POWER PLANTS

### Switch to Auto-Lean After Stopping

Instructions have been issued to place mixture control in AUTO-LEAN after stopping engines with idle cut-off and leave control in AUTO-LEAN until time of next start or until engine and accessory compartment have cooled completely, on the following aircraft: F4F, F6F, F4U, SBD, PV, PB4Y, R5C, and R5D equipped with Stromberg PD12E4, PD12F5, PD12F7, PD12K4, PD12K10, PT13D4, PT13F5, PT13G1, or PT13G2 carburetors.

Troubles reported to date indicate that fuel trapped in these carburetors in idle cut-off position expands and vaporizes from residual heat of engine, forcing poppet valve and vapor trap needles into seats with sufficient force to cause sticking of these parts in closed position. Sticking of poppet valve can make starting difficult, if not impossible. Sticking of vapor trap needle, which is apparently more prevalent, can cause surging or power loss on take-off or at high altitudes.

Analysis of some causes indicates possibility of poppet valve jamming shut when throttle is cut suddenly in flight, particularly with auxiliary fuel pump in operation. Usual symptom is backfire and complete power loss. For this reason, BuAer advises refraining from sudden closing of throttle except as necessary for arrested landings.

### Reduce Leakage in R-2800 Engines

Oil leakage at rocker box covers and pushrod housings has been a persistent source of trouble in R-2800 engines. The engine contractor has developed the following "fixes" to correct the leakage. At the joint in two-piece pushrods a labyrinth type external seal, part 86040, has given a marked improvement. For best results the seal should be installed dry and tampered with as little as possible after installation. New end seals, part 36090, also are available which do not take a permanent set so readily as previous seals.

Care should be taken to prevent over-tightening the gland nut. The specified tightening torque is 70-85 in. lbs. Later engines will incorporate single-piece pushrod housings, which should completely correct this trouble. For the R-2800 "B" engines a new rocker box cover gasket made of neoprene, part 88962, is available. These gaskets should also be installed dry for best results. Tightening limits have been reduced to 60-75 in. lbs.

R-2800-8W engines subsequent to Serial No. P-17735 and R-2800-10W engines after Serial No. P-17955 incorporate aluminum rocker box covers on all cylinders. The casting number is the same, 79111-4290, but the new covers can be identified by the letter "B" stamped inside. BuAer will supply these new covers in quantity when available. Oil leakage with aluminum rocker box cover and neoprene gasket combination should be reported promptly, since no service experience data are available and a re-design may be required.

## Notice to All Carrier Pilots

### BuAer Reports on Gas Spillage

Several aircraft carriers of the service have reported spillage of gasoline from wing tanks or auxiliary tanks of aircraft during and shortly after being catapulted. This condition is prevalent in the TBF and TBM and to a lesser extent in the belly tank of the F6F.

To correct this situation would require elaborate modifications to the venting systems. In view of the extensive number of catapult shots that have been conducted with the TBF and the absence of fire casualties from this source, the modifications are not considered warranted.

However, due to the potential fire hazard caused by the spillage of fuel, it is recommended that ships' personnel use caution to prevent unnecessary sparks or flame on weather decks forward, during catapulting operations.

## Device Bolsters Drive Shaft

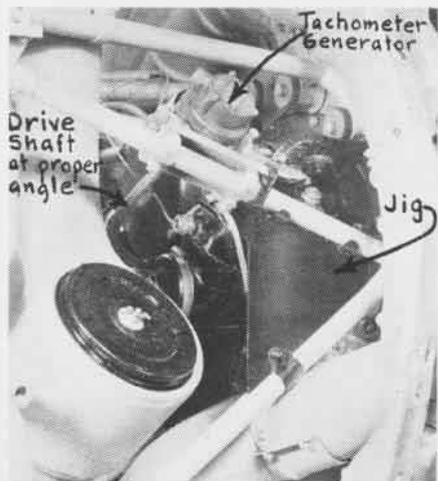
### Brace Cuts Down on Breakage

NAS LIVERMORE—A device to minimize breakage of electric tachometer generator drive shafts, as used on N2S aircraft, has been developed by the A&R Department at this station.

It was found that breakage of these flexible shafts was due largely to various incorrect positions and angles at which the generator could be spotted in the engine mount. Accordingly, a simple triangular jig was constructed which snaps on the tubing of the engine mount and permits the generator to be mounted at one correct position and angle.

This should lengthen greatly the life of the flexible shaft, which is a critical item, and at the same time save many man-hours of labor made necessary by frequent replacement.

► **BuAER COMMENT**—The jig appears simple and effective. The flexible shaft is FSSC No. 88-S-499.



JIG STRENGTHENS TACHOMETER DRIVE SHAFTING

# AVIATION ORDNANCE

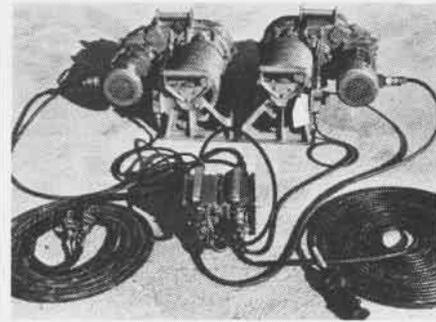
INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

## Ordnance Perfects New Bomb Hoist

A versatile new bomb hoist embodying a number of improvements not found in present hoists, recently has emerged from BuOrd's Research Division. The electric bomb hoist Mark 10 Mod 0 (twin hoist assembly), as it is officially designated, is essentially a combined assembly comprising two complete hoists fixed to separate frames.

Each unit of the twin assembly has its own drum, gear housing group, control box, and electric motor and cables. To provide the portability needed for setting up and removing the hoist in airplane installations, the design affords a quick means for breaking the hoist down into a few individually protected sub-assembly groups of parts, and means for carrying each group of parts as a separate unit.

For airplane installations where only single cable hoisting is needed, certain groups of parts of the hoist may be assembled into a single hoist and used in that manner. For this purpose, the right-hand assembly, as viewed from the motor end of the twin hoist assembly, is preferred. Right-hand assembly bears the nomencla-



NEW BUORD BOMB HOIST HAS IMPROVEMENTS

ture electric bomb hoist Mark 10 Mod 0 (right-hand assembly).

The twin hoist assembly, or either component, is operated on a nominal 24-volt DC circuit. Provision is made, however, for emergency manual operation by means of cranks. The cranks have two positions, one for raising or lowering loads, the other for quickly reeling and unreeling cable in the unloaded hoist. The hoists provide for 44' of cable on each drum.

A high safety factor, together with slip clutches, is incorporated in design of the hoists to permit satisfactory hoisting of bombs and torpedoes from airplane rearming boats, should it be necessary to rearm the airplane in that manner. These slip clutches are capable of positive adjustment to any predetermined point by the average ordnanceman without use of any special tools or weights, and without reassembling the hoist.

Although the hoist is rated at 4,000 lbs. capacity, and the single hoist at 2,000 lbs., these low capacities, relative to the capabilities of the hoists, were assigned in view of their possible use for rearming airplanes

while moored in rough water and where high shock loads may be expected. It is believed that much higher loads may be satisfactorily hoisted under conditions which do not impose large shock loads on the hoists.

Quick mounting and detaching features of these hoists permit them to be installed in airplanes either temporarily, for rearming purposes only, or permanently.

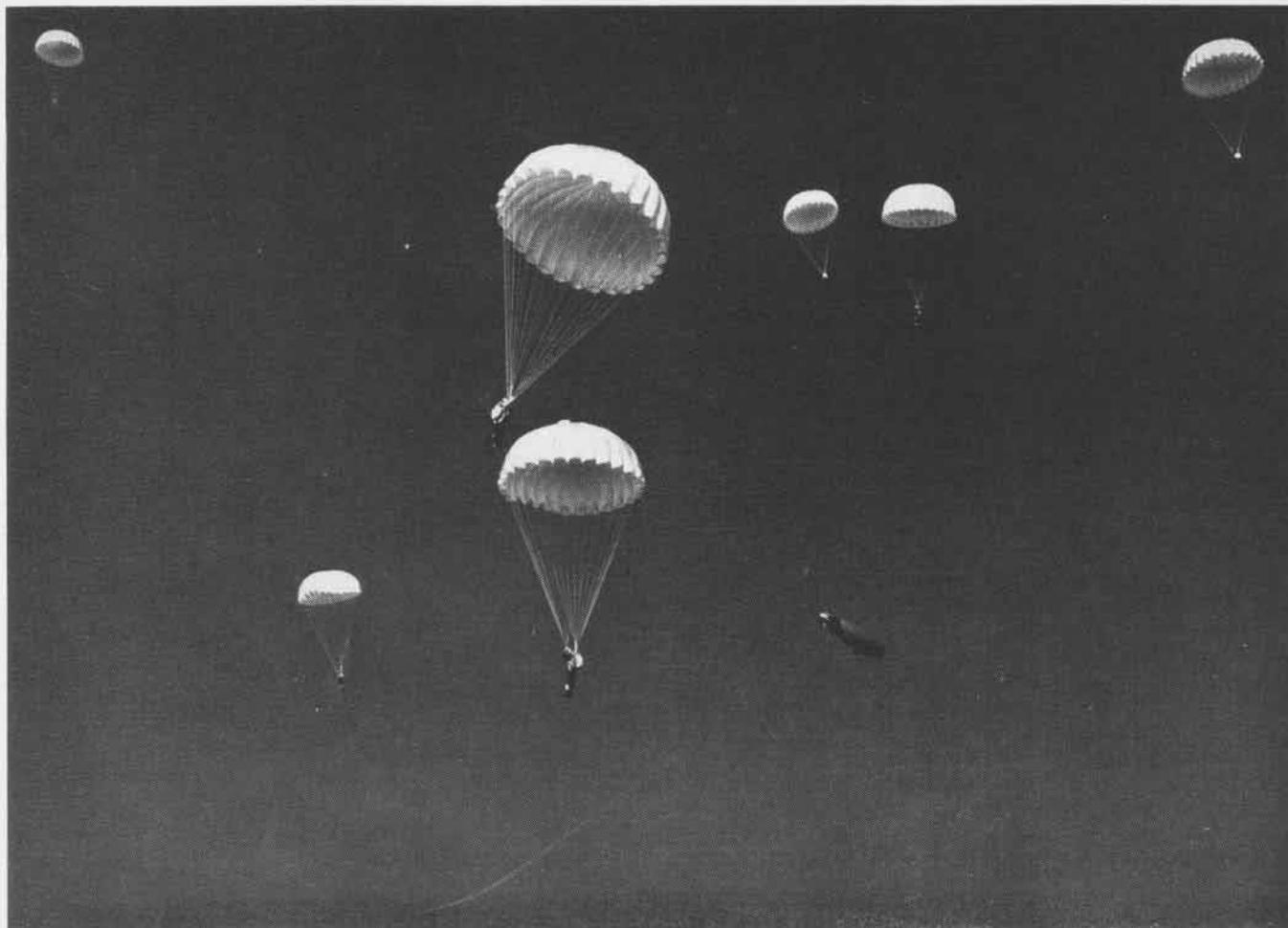
## Gun Cameras Use Overrun Control

Ever since the gun camera outgrew its original purpose as a training device and became an excellent means of obtaining intelligence data and combat records, the need has been emphasized for a control which would permit a number of pictures to be taken after the trigger has been released. Such an arrangement, in addition to permitting a continuous recording of all phases of an attack, would furnish valuable photographic proof of the effect of the bullets on the target, particularly of those bullets fired at the end of a burst.

Early designs of such an "overrun control" were bulky in size and weighed almost as much as the camera itself. Moreover, they were individual units in themselves, separated from the camera, and operated by their own power systems. While such controls could be satisfactorily used in VPB installations, they were considered too cumbersome for use in cockpits of fighter planes. Steady progress in the design of the overrun control has been made in recent months and the present unit, a small compact mechanism, built into the gun camera case and actuated by the driving system of the camera itself, represents the last word in its development.

The new gun cameras manufactured by the Bell and Howell Company, containing the overrun control, will have the nomenclature Gun Camera AN type N6A, Stock No. 2G-1031-150. These will be augmented by AN type N4A cameras being reworked by the manufacturer to contain the overrun control. Since the latter type, as modified, has not been submitted to the Army-Navy Standardization Committee for approval, it will be known as the Gun Camera Mark 8 Mod 0, Stock No. 2-G-1052. The two types will be identical in operation, but because of a difference in internal construction, will present slightly different overhaul problems.

All cameras equipped with an overrun control will be shipped from the manufacturer with a pre-set overrun adjustment and will be tagged accordingly. Control settings will be adjustable between one and five seconds, in one-second steps. To make the necessary adjustments for the various overrun settings, it will be necessary to remove the cover from the camera. Therefore, changes in adjustment should be made after reading the ORI which will be shipped with each camera when delivery is made.



Operating conditions in combat zones involving both carrier-based and land-based aircraft are given first consideration in determining whether parachute and harness designs are suitable and adequate. Although standardization is sought, safety factors are paramount

# PARACHUTES ARE DESIGNED FOR SAFETY

## Lifesaving Tops All Other Major Factors in Design of Chutes

**T**HE PARATROOPER who jumps from a heavy transport to land on enemy soil, or the naval aviator who bails out of his burning plane, doesn't stop to think about the elements of parachute design. That thinking has been done for him, and some very serious thinking it has been.

The parachute dates back to 1495 when Leonardo da Vinci set down

sketches and notes describing the principles of parachute operation. Centuries of experimentation followed, and today's trustworthy chute is the result of these years of experience. Specific uses must be taken into consideration and vitally important features weighed carefully before even the most minor change is adopted. A veteran parachute man once remarked that it is harder to get a parachute design change approved by the experts than it is to make a change in the Bible.

No doubt this is a slight exaggeration, but it does indicate how particular Bu-Aer's parachute technicians are about making hasty changes in this important piece of life-saving equipment. Bureau researchers are continually seeking means to improve the parachute, but any suggested change has to pass not one but a series of acid tests before it is incorporated.

These basic principles of design must be met before a parachute is accepted:

1. The parachute must open positively and promptly, and the canopy must be able to withstand sudden maximum stresses and strains of opening; it must have a low rate of descent and be stable in operation with minimum drift and oscillation or pendulum motion; it must be packed to prevent accidental or premature release, and must be secured to the wearer in a comfortable manner to allow freedom of movement in leaving aircraft and in carrying out duties in the air.

2. The releasing device must be positive, quick acting, simple and sufficiently rugged to withstand normal operating use and abuse.

3. The pack dimensions must be suitable to meet all clearances within aircraft.

4. The harness must be designed to withstand stresses and strains of opening and to absorb these stresses to protect the wearer; it must be adjustable to all sizes of personnel; it must be arranged to hold wearer safely regardless of position at time of opening, and be removable quickly.

5. The assembly must be compact with the very minimum of weight and bulk.

# OPERATIONAL FEATURES MUST BE CONSIDERED CAREFULLY IN DESIGN OF TODAY'S EQUIPMENT

**C**ERTAIN OPERATIONAL FEATURES must be considered thoroughly in the design of parachute equipment—speed of opening, opening shock, rate of descent, sail area, oscillations and drift; all are related directly to parachute performance.

Porosity of fabric, size and ventage of canopy, and method of packing, control the opening of the chute. The shock of opening depends upon the area and form of the canopy, the rapidity of opening, and speed of the aircraft from which the chute is launched. Shock is absorbed by the combined resistance of canopy, shroud lines and harness.

The area of the canopy, porosity of the fabric and total load control the rate of descent. Stability of the parachute, air density and drag coefficient also affect descent.

The area of the sail or canopy is limited by the bulk of the pack, available space in the aircraft and load. Shape of sail, air currents, atmospheric conditions and altitude determine drag coefficient. Oscillations upset stability of the parachute in descent. Oscillation is affected by the relative position of the jumper and canopy at the time of opening, the size of the vent, length of shroud lines and wind velocity. Contour of the canopy and wind velocity determine drift.

Harnesses and accessories are tested constantly to meet conditions in the field. Harnesses for use with back, chest and seat applications have been

altered to meet operating conditions.

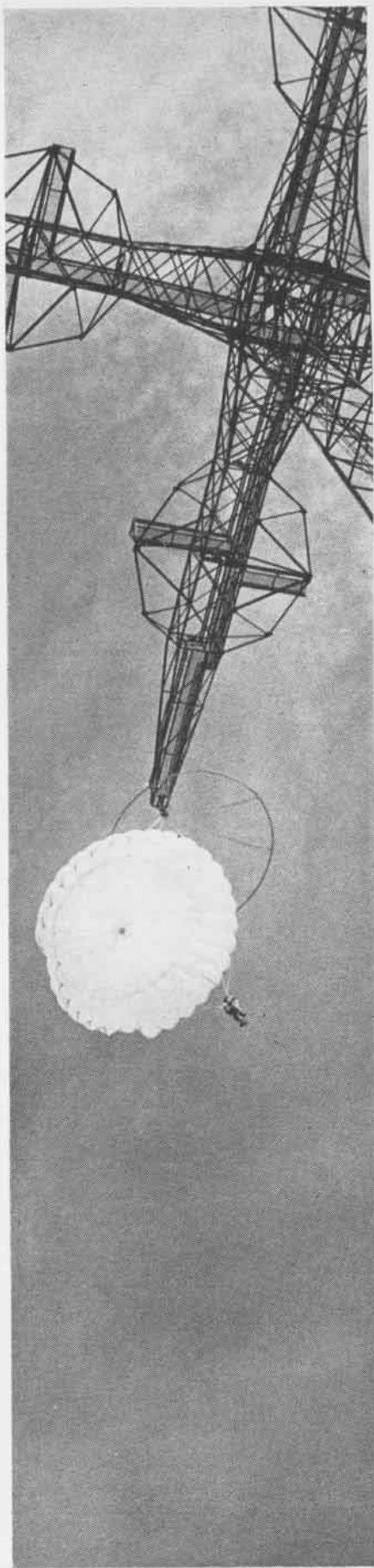
Operating conditions in combat zones involving both carrier-based and land-based aircraft are given first consideration in determining whether parachute and harness designs are suitable and adequate. For instance, the quick attachable seat type harness was developed to comply with the order prohibiting the wearing or carrying of parachutes by personnel on flight deck.

**B**U AER HAS DEVOTED a great deal of effort toward standardization of parachute equipment, including harnesses, for all branches of the service. However, differences in operational use of parachutes have made it necessary to deviate from the standard design to meet specific needs. Attachment of life rafts, emergency kits, and other marine safety gear which are of great importance to one branch may not be necessary to another. Addition of this safety equipment materially affects designs of harnesses and hardware as well as size of chutes. Safety of personnel in an emergency is the prime factor in the use and maintenance of the parachute, and although standardization is highly desirable, life-saving factors cannot be sacrificed to attain it.

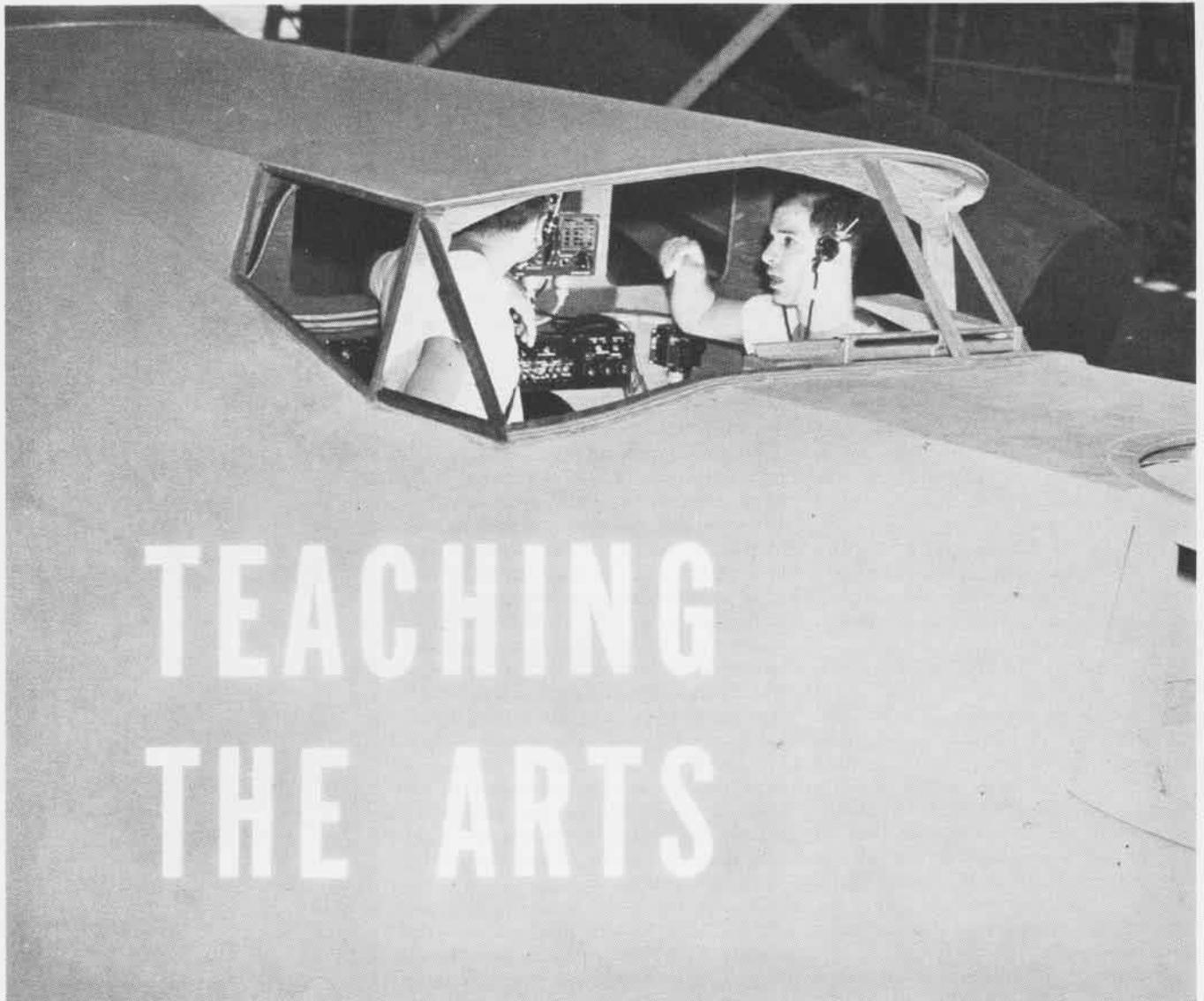
The Bureau encourages suggestions and recommendations from the service, as practically every major improvement in parachute design has emerged from tests under operating conditions. BuAer also scrutinizes developments in chute design of friendly and enemy nations.



Porosity of fabric, size and ventage of canopy, and method of packing control opening of parachute. Shock is absorbed by combined resistance of canopy, shroud lines and harness



Area of the canopy, porosity of the fabric and total load control the rate of descent



# TEACHING THE ARTS

BEHIND CAREFULLY GUARDED DOORS AT WARD ISLAND, ACTUAL TUNING AND CHECKING PROCEDURES ARE PRACTICED IN THE AIRPLANE MOCK-UP

## NATTC employs practical training technique

WHEN confronted with the task of teaching basic and advanced electronics to large groups of aviation radio technicians, NATTC Ward Island developed a lecture-recitation-laboratory type of instruction, believed unique in Navy technical training.

Instructors cover all work thoroughly in a large group lecture, after which students are assigned to smaller classes for recitation work on the material under discussion. These smaller classes represent discussion groups meeting in rooms where actual working equipment is mounted for demonstration. Instructors encourage the students to participate to keep the group session from becoming a second lecture.

A carefully supervised laboratory program supplements the work covered in lectures and recitations. The student works with the actual circuits, master-

ing the practical phase of every operation by personal observation and experiment. Every detail of instruction being planned to make the student think for himself, the program results in a workable teaching method that adds practical lab work to lectures.

On the premise that students remember better from personal observation than from lectures alone, Ward Island has developed a comprehensive program of visual aids. Cathode ray tubes mounted along the sides of lecture

rooms give every student, regardless of location, a close-up view of at least one of the oscilloscope screens.

The cathode ray tubes serve as remote oscilloscopes and are controlled by the lecturer from a master control unit. The MCU consists of high-voltage power supply for remote cathode ray tubes, electronic switch (for simultaneous observation of any two waveforms), commercial cathode ray oscilloscope (DuMont 241) as a master 'scope for lecturer, and cathode-follower unit for feeding sweep and signal voltages into the coaxial cables running to the remote oscilloscopes. A laboratory table has built-in power units to furnish all required voltages.

With this installation, the lecturer adds to the usual blackboard work a waveform analysis of every circuit under actual operating conditions. The electronic switch unit allows comparison of any two signal waveforms in shape, amplitude, phase relationship.



## Ward Island has made most of visual displays

OVER A PERIOD of about two years, enough test equipment has been received, built or modified so that each laboratory has sufficient standard-type test instruments to allow the student to spend the period working on gear. Each laboratory has enough gear to allow students to busy themselves with useful work during the entire period.

Installation and maintenance problems encountered in the Fleet are aired in the laboratory. Instructors give trouble-shooting examinations on equipment being discussed. Complete installations are mounted on tables or racks on the instructor's platform with power supplied to demonstrate operation.

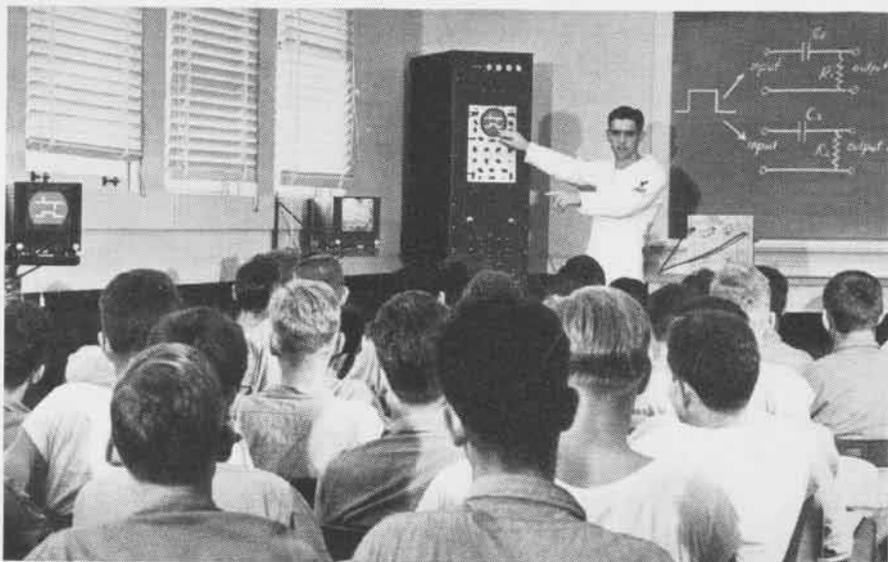
Each student receives instruction books with complete schematic diagrams. Owing to the many methods of drawing schematic diagrams of radio circuits, it has been found necessary to redraw the circuit of each piece of equipment in a standard form. Where practical, the complete schematic of each component unit in a model of gear is printed on one blueprint page. Blow-ups of the blueprinted diagrams hang at the front of the classroom to speed and clarify the lecture.

Associated sound films and strip films help break the monotony of continuous lectures. Slides showing one or two tube portions of a circuit reduce the time formerly spent putting these diagrams on blackboard. It has been found that a diagram drawn on a 10"x13" card (using  $\frac{3}{16}$ " or thicker lines) when copied on a double-frame 35 mm. film may be projected without blacking out the classroom.

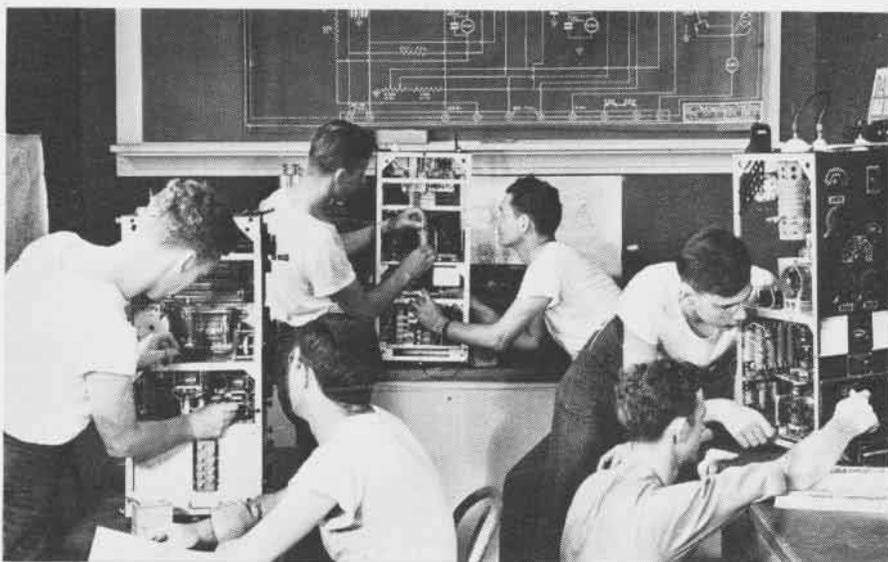
TO TEACH operation of particular circuits, "dynamic demonstrations" are constructed. These usually are a bread board circuit on a vertical panel to show voltages or waveforms during a particular condition of operation. The method has been especially helpful on circuits involving radio frequencies.

Small model planes and their parts demonstrate the need and operation of special equipment. Special test units are mounted on racks equipped with rollers, so that they may be moved from one lecture room to another.

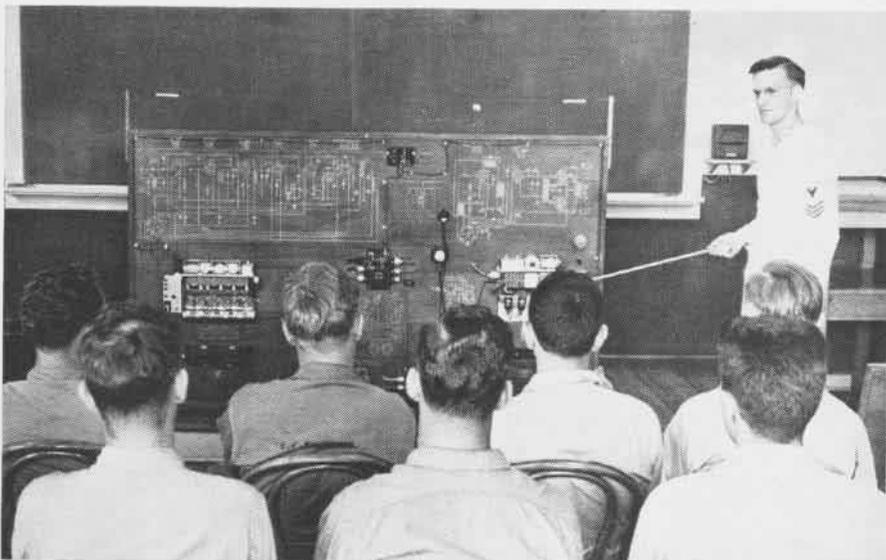
In one type of equipment using test apparatus permanently installed in the lecture room, oscilloscopes are located every 10 feet along one bulkhead. By this method the various waveforms, important factors in maintenance and understanding of this gear, are easily seen by students from any seat in room.



Master oscilloscopes, timing devices, and repeater oscilloscopes allow NATTC students to identify and analyze waveforms. Screens are clearly visible from every seat in the room



Laboratory classes at Ward Island are small enough to permit each student to familiarize himself with all the gear. This is important step in lecture-recitation-laboratory method



During lectures the "Dynamic Demonstrator" provides a connection between the actual equipment and the schematic diagrams. These are commonly referred to as bread boards

# INDEX TO NANNEWS

JAN. 1 TO JUNE 15

SUBJECT                      ISSUE PAGE                      SUBJECT                      ISSUE PAGE                      SUBJECT                      ISSUE PAGE

## GENERAL

### A

Abandon plane bill.....	4/15.. 7
Abandon ship drill.....	3/1.. 7
Accident board is formed.....	5/15.. 5
AEO School.....	4/1.. 8
Aerology books, GPO has.....	4/1.. 6
Air bombers.....	5/1.. 16
Aircraft corrosion.....	5/1.. 1
Aircraft designations, Army-Navy.....	3/1.. 16
Aircraft modified for Royal Navy.....	3/15.. 7
Aircraft parts catalog.....	1/1.. 40
Aircraft trouble reports.....	3/15.. 9
Aircrewmen in London.....	5/1.. 7
Aircrewmen, Navy proud of.....	4/15.. 15
Airship riggers, ratings for.....	3/15.. 6
Air storekeepers trained.....	1/1.. 6
Airstrip, birth of a jungle.....	5/15.. 36
Allied wings bombed enemy targets.....	1/1.. 12
All in a day's work.....	5/1.. 18
Anoxia worse than cold.....	2/1.. 8
Army Air Forces.....	1/1.. 12
Army clarifies word usage.....	6/15.. 38
Army-Navy aircraft designations.....	3/1.. 16
Artillery takes wings.....	1/1.. 6
Atoll airfield honors pilot.....	6/15.. 38
Authorize service ribbon.....	2/15.. 6
Aviation insignia.....	5/1.. 10
Axis suicide trends.....	3/1.. 1

### B

Baby flattop released.....	1/1.. 7
Battle echoes at Quonset.....	1/15.. 30
Birds and beasts as food.....	4/1.. 10
Birth of a jungle airstrip.....	5/15.. 36
Blimp is repaired.....	4/15.. 9
Blimp patrol.....	4/1.. 1
Blimp rescue.....	2/1.. 38
Blimps rescue men at sea.....	6/15.. 37
Bomber crews, Navy trains.....	6/1.. 37
Bond allotment goal.....	3/1.. 7
Bond buying, NAS lead in.....	2/15.. 8
British Fleet Air.....	1/1.. 13
British Fleet Air.....	1/15.. 14
British land on ship deck.....	6/1.. 39



### C

CAA-WTS schools to end.....	2/15.. 8
Cable system, Navy sets up.....	4/1.. 6
Cardboard containers.....	2/15.. 6
Carrier repairs.....	4/1.. 9
Carrier smashes Japanese.....	5/15.. 7
Cherry Point.....	1/1.. 14
Civilians get Navy badges.....	2/15.. 6
Coast Guard.....	1/1.. 12
Color prints, cut use of.....	2/15.. 6
Combine training command.....	3/1.. 5
Commandos, Navy evacuates.....	6/1.. 37
Coral works for the Navy.....	5/15.. 5
Corpus Christi.....	6/1.. 27
Courtesy to visitors.....	4/1.. 7
Cut use of color prints.....	2/15.. 6

### D

Data sheet for ocean hop.....	2/1.. 6
Deliver grass seed to Italy.....	3/15.. 6
Diary of a Marine fighter squadron.....	5/15.. 28
Dinner key base enlarged.....	2/1.. 8
Distribution of training films.....	2/15.. 7
Dry run.....	3/15.. 24

### E

Enlisted training courses.....	5/15.. 13
Escape from sinking plane.....	1/15.. 8
Exam rules, Navy gets.....	6/1.. 38
Eye appeal stops 'em.....	1/1.. 8

### F

Fighter program, Navy cuts.....	6/15.. 38
Finding your way home.....	2/1.. 12
Firemaking and cooking.....	4/15.. 10
Fishing for food.....	3/15.. 10
Flying boxcar ( <i>Mars</i> ).....	3/15.. 8
Flying radioman.....	2/15.. 9
Free balloon in line squall.....	6/15.. 6
Future pilots must be fit.....	4/1.. 6

### G

German telescope.....	5/15.. 6
Ghost rides! itinerant paymaster.....	1/1.. 6
<i>Guadalcanal</i> given plaque.....	5/1.. 7
Gunman sprays Jap target.....	6/1.. 38

### H

Handy cabinet for library.....	5/1.. 7
Helicopter gets new name.....	5/15.. 6
Helicopter, Navy.....	5/1.. 6
Helmets for combat crews.....	2/15.. 8
Hospital ship afloat.....	4/15.. 8
How to become a goldfish.....	6/1.. 36

### I

Iceing, look out for.....	1/1.. 24
Inbound mail is heavier.....	1/1.. 6
Insignia rules, Navy gives.....	3/15.. 6
Island natives entertain Marine.....	4/1.. 14
Island navigator.....	5/1.. 8

### J

Japanese shrines.....	3/15.. 1
Jap camouflage.....	4/15.. 1
Jap island installations.....	4/1.. 17
Jap pilot material.....	1/15.. 1
Jap pilots die for emperor.....	6/15.. 22
Jap plane names are given.....	6/15.. 38
Jap rations are adequate.....	3/15.. 9
Jap rifle holds up coat.....	6/1.. 36
Jap searchlights.....	6/1.. 1
Japs resent razor blades.....	2/1.. 6

### K

Keep hourly weather form.....	3/1.. 5
Keeping in trim aboard carriers.....	3/1.. 14

### L

Lakehurst uses six Links.....	6/15.. 37
Light housekeeping on a raft.....	1/15.. 31
Line squall, free balloon in.....	6/15.. 6
Link fliers spot planes.....	2/1.. 7
Links, Lakehurst uses six.....	6/15.. 37
Local air mails are busy.....	2/1.. 6
Lonely little Pacific isle.....	1/15.. 9
Look out for iceing!.....	1/1.. 24
LTA's new visual program.....	3/1.. 6

### M

Mails to ban many plants.....	2/15.. 30
Make ATR's complete.....	3/15.. 9
Make study of Navy chow.....	2/1.. 7
Makin Island fell with Tarawa.....	2/1.. 9
Marianas point to Tokyo.....	5/15.. 17
Marine Corps.....	1/1.. 12
Marine insignia.....	3/1.. 13
Marine mechanics keep planes flying.....	3/1.. 12
Marine pilot dunking experience.....	3/15.. 14
Marine pilot escapes.....	2/1.. 11
<i>Mariner</i> rescues men.....	6/1.. 39
<i>Mars</i> , flying boxcar.....	3/15.. 8
Marshall Islands.....	3/1.. 17
<i>Mars</i> , Navy to buy 20 more.....	2/15.. 6
<i>Mars</i> , taken over by NATS.....	1/1.. 7
Mecs get wrecked PB2Y.....	1/15.. 6
Mec tests are outlined.....	6/15.. 37
Mess hall, dine in swanky.....	6/1.. 38
Ministers' sons are pilots.....	1/1.. 6
Missing: one fighter pilot.....	6/1.. 26
Missionary but for lost pilot.....	1/15.. 11
Monday—somewhere in Pacific.....	4/15.. 26
Mueller—Der Deutsche Dilbert.....	2/1.. 7

### N

NAS bond buying goes up.....	3/15.. 9
NAS lead in bond buying.....	2/15.. 8
NATS flies long distance.....	5/15.. 6
NATS planes, keep flying.....	5/1.. 7
NATS takes over <i>Mars</i> .....	1/1.. 7
NATS turns in a rush job.....	3/15.. 9
Naval action in Pacific.....	2/1.. 28
Naval Air Ferry Command.....	1/1.. 6
Naval Air Ferry Command.....	1/15.. 6
Naval aviation in art.....	5/1.. 33
Naval aviation in 1943.....	1/1.. 10
Naval post office is busy.....	5/15.. 5
Navigators' school moves.....	6/1.. 37
Navy bond purchases high.....	2/1.. 7
Navy cuts fighter program.....	6/15.. 38
Navy evacuates commandos.....	6/1.. 37
Navy gets new exam rules.....	6/1.. 38
Navy gives insignia rules.....	3/15.. 6
Navy <i>Mariner</i> rescues men.....	6/1.. 39
Navy reduces clothing bill.....	2/1.. 6
Navy to buy 20 more <i>Mars</i> .....	2/15.. 6
Navy trains bomber crews.....	6/1.. 37
Navy wins air supremacy.....	5/1.. 9
New carrier to get plaque.....	3/15.. 9
New hospital ship afloat.....	4/15.. 8
New maps used at Corpus.....	1/15.. 7
New record in bond drive.....	1/15.. 7
New station in wild area.....	6/15.. 38
New <i>Wildcat</i> joins fleet.....	6/15.. 37
Night vision.....	1/1.. 1



### O

Ocean survival.....	5/15.. 10
Officers get physical ed.....	2/1.. 6
Officers keep up studies.....	6/1.. 37
Ordnance school on wheels.....	5/15.. 1
Overseas briefing changed.....	1/15.. 11

### P

Palau, strike at.....	6/15.. 1
PB4Y.....	6/15.. 25
PB2Y, mecs get wrecked.....	1/15.. 6
PBY reports to New Orleans.....	5/15.. 5
PBY's are still in fight.....	4/1.. 7
Pensacola, Annapolis of the air.....	3/1.. 25
Photography in South Pacific.....	4/1.. 32
Photo school at Anacostia.....	1/1.. 7
Pigeon specialists.....	5/1.. 5
Pilot gets homing signal.....	2/1.. 7
Plotting board attachment.....	5/1.. 5
Prop creates vapor trails.....	3/15.. 6
Publish a quarterly index.....	3/1.. 5

### Q

Quonset, battle echoes.....	1/15.. 30
-----------------------------	-----------

### R

Rabaul.....	2/15.. 25
Raids hit Buka Bonis.....	1/1.. 9
Ratings for airship riggers.....	3/15.. 6
Recognition training aid.....	4/1.. 6
Relief maps help fliers.....	1/1.. 8
Rockets smash Jap vessel.....	4/15.. 9
Royal Air Force.....	1/1.. 12
Royal Australian Air Force.....	1/1.. 13
Royal Canadian Air Force.....	1/1.. 13
Royal Navy, aircraft modified for.....	3/15.. 7
Royal New Zealand Air Force.....	1/1.. 13

### S

Save in the Navy manner.....	4/1.. 8
Seapack bag is improved.....	6/1.. 38
Seapack luggage.....	4/1.. 8
Seashore survival.....	6/1.. 13
Service ribbon authorized.....	2/15.. 6



# INDEX TO NANNEWS

1944

SUBJECT	ISSUE	PAGE	SUBJECT	ISSUE	PAGE	SUBJECT	ISSUE	PAGE
<b>N</b>			<b>C</b>			<b>C</b>		
NATS radio gear	6/1	21	SNB, aerograph installed on	3/15	30	Calling Mr. Ripley	2/15	4
New nose hangar perfected	3/1	39	SNJ's, harmonizing guns & sights on	3/1	38	Careless pedestrians	4/15	6
New sight put on shotgun	5/15	39	Socket wrench, tool holds	5/15	29	Cease firing	3/1	3
New way to use computer	1/1	40	Sort bolts with machine	5/1	31	Check-outs	3/15	3
Nipples, helps in removing	3/15	31	Sorting box speeds work	5/15	32	Collapse of SNC-1 landing gear	1/1	5
Nose hangar	3/1	39	Spark plug gapping machine	2/15	34	Combination of errors	6/15	7
Note on averaging sextants	2/1	33	Special devices	2/15	36	<b>D</b>		
N2S running lights, tests	4/1	36	Special devices review, 1943	1/1	29	Dangerous cargo	2/15	4
<b>O</b>			Speeds propeller removal	2/15	30	Dilbert runs riot	2/15	4
Oil buffer, assemble in jig	4/1	30	Speeds push rod assembly	2/15	30	Do it right	4/15	5
Oil seal tool gets prize	1/15	35	Stainless steel airplane	1/1	30	Don't get careless	4/1	3
Oil slick is new rescue idea	6/15	38	Stamp assists forecasters	4/1	29	Don't take it for granted	5/15	4
Oleo shock strut explodes	4/15	32	Starter spacer is developed	4/1	36	Downdrafts to leeward	4/15	6
OS2U beaching gear	1/15	33	Station uses salvage idea	6/15	16	Drive your own	2/1	5
<b>P</b>			Stator puller is modified	1/15	33	Dry tank plague	1/15	4
Painting of wheels, speed	5/1	29	Steel storm cables	3/1	39	<b>E</b>		
Paint matched receptacles	3/15	33	Storm cables, using steel	3/1	39	Ejected cartridge cases	4/15	6
Paint mix more durable	1/15	35	Stowage for crash landing	1/1	40	Engine bully	4/1	3
Parachute kit, VD 1 has	2/1	31	Stowage of flares, changes	6/15	19	Engine trouble	5/1	4
PBY, double screwdriver for	5/15	30	Straddle crane useful	5/1	31	Err on the safe side	4/15	6
PBY test cover developed	2/1	36	Summer jersey, fliers to get	3/15	39	Experience speaks	2/15	5
Pedals, change made on	4/1	30	<b>T</b>			<b>F</b>		
Photographic technical bulletins	2/1	37	Tail jack, BuAer, now ready	5/15	34	Fatalist	2/1	4
Photography, made simple	3/15	30	Tail wheel dolly for TBF-1's	1/15	33	F4U hydraulic failure	5/1	4
Physical fitness index	2/1	30	Tail wheel jig, devise new	4/1	35	Final warning	1/15	5
Pistol oiler for holster	2/1	39	Tapping jig aids drilling	5/15	32	Flat tire landing	1/1	4
Plane jack dolly	3/1	34	Target kites, Navy	6/15	17	Fly-by-night ferry pilot	6/1	5
Plastic professors	6/1	24	Taxi troubles with TBF's	1/1	30	For comfort and safety	1/15	5
Plexiglas, make mold for	5/15	38	TBF-1's, tail wheel dolly for	1/15	33	Fouled spark plugs	4/1	3
Portable gas cart in use	5/15	34	Three circuits in throttle switch	4/15	39	<b>G</b>		
Practice angle estimating	6/1	20	Tool draws out tail axle	4/15	33	Glassy water	6/1	6
Preserving self-sealing cells	1/1	32	Tool holds socket wrench	5/15	29	Go on instruments	5/15	4
Prevents damage to stems	4/15	35	Torpedo director, mounted on plane	2/1	32	Gremkins plus Dilbert	4/15	6
Projection screen for daylight movies	2/15	35	Torpedoes topped in a hurry	3/15	34	<b>H</b>		
Propeller alignment, tests	4/1	28	Tow target release on SNJ	5/1	32	Heads up	2/1	5
Propeller removal, speeds	2/15	30	Trailer for damaged aircraft	1/15	34	He didn't turn back	1/15	4
Push rod assembly, speeds	2/15	30	Trailer speeds paint job	1/1	29	High cost of fun	5/15	4
PV-1 load adjuster	4/1	34	Training device improvised	2/1	39	<b>I</b>		
<b>R</b>			Trim flanges with cutter	4/15	34	"I did not familiarize myself"	6/1	6
Radio altimeters guide pilots	3/15	35	Tube bending tool designed	3/15	31	Ignomy	1/1	5
Radio noise cut down	4/1	34	Tube cools generator	1/15	34	Instructor's work is never done	2/1	4
Radio operates from jeep	3/15	31	<b>U</b>			Itehy fingers	5/15	4
Radio system is improved	5/15	30	Unit speeds photo record	1/15	39	<b>J</b>		
Rafts (see <i>life rafts</i> )			Unit supplies power, new	5/1	38	Jammed controls	2/1	4
Recharge flashlight cells	5/15	29	<b>V</b>			Join-up technique	6/1	6
Refacing tool is developed	3/1	34	Vacuum jug tops procured	3/15	39	Just a playful gesture	6/15	7
Regulator carbon stacks	1/15	32	VC 19 uses new type belt	1/1	28	<b>K</b>		
Reinforce engine hoists	1/15	32	VD 1 has parachute kit	2/1	31	Keep posted	4/1	3
Release control relocated	4/15	38	<b>W</b>			Keep your head	1/1	5
Replace wood wheel chocks	3/1	35	Water idea saves aircraft	6/15	16	<b>L</b>		
Routing requests, to check	6/1	17	Waterproof charts	3/15	32	Life raft trouble	5/15	4
Rudder, eliminate removing	4/1	34	Weather, checking the	2/15	32	Look how smart I am	5/1	4
RUDM's, file promptly	4/1	29	Welding work, new aid for	4/15	32	<b>M</b>		
<b>S</b>			Wheel jack is supplied	5/15	31	Maintenance checks	6/1	5
Safety belt, machine tests	5/15	39	Wing folding, F4U, prevents	6/15	15	Mid-field Charlies	3/15	4
Safety belt used by VC 19	1/1	28	Wing storage rack	2/1	30	Mooring equipment	1/1	5
Safety harness improved	5/15	31	Winter flight mask at Norman	4/1	36	More ditching dope	6/15	8
Salvaged pipe utilized	1/1	31	Worm gears made cheaply	6/1	17	More parachute sense	1/1	5
<i>Saratoga</i> seeks new stand	1/1	28	Wrench used on cylinder drain pipes	1/15	35	Mr. Dilbert goes to Washington	5/15	3
Save space storing frames	2/15	30	<b>GRAMPAW PETTIBONE</b>					
Screwdriver, double, for PBY	5/15	30	<b>A</b>					
Self-sealing cells	1/1	32	Aircraft trouble reports	3/1	4			
Sequence timing disc, new	6/15	15	Air discipline	4/15	5			
Sewing inspection plates	1/1	30	A lesson for the instructor	2/1	4			
Sextants, inaugurate exchange plan for	5/1	38	All for want of a safety wire	2/15	4			
Sextants, note on averaging	2/1	33	All fouled up	5/15	3			
Shock struts may "freeze"	5/1	32	Are your fittings fastened?	1/15	5			
Shotgun, new sight put on	5/15	39	A stitch in time	2/15	4			
Single maintenance crew	2/1	30	Attention instructors	1/15	4			
Skin grafter, mech makes	6/1	17	Attention line chiefs	1/1	4			
<b>T</b>			<b>B</b>					
			Balance	6/1	6			
			Blimp your motor	2/1	5			
			Blind canyons	3/15	3			
			Blinded signalman	6/15	8			



# SURVIVORS GIVE VALUABLE DATA

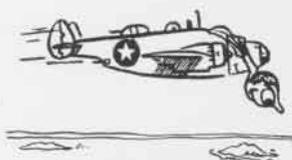
SUBJECT	ISSUE	PAGE
<b>N</b>		
Night low level bombing accident.....	5/1	4
No substitute for common sense.....	1/1	5
Not safe for solo.....	3/15	4
No way to enter a hangar.....	1/1	5
Now I've seen everything.....	2/1	4



<b>P</b>		
Parachute technique.....	5/1	3
Pass the bailing wire.....	1/1	4
PBY spin.....	3/1	3
Physical fitness.....	2/1	5
Physical injuries in accidents.....	3/1	3
Pilot error plus.....	1/15	4
Pitot tube covers.....	6/1	5
Pre-flight check.....	3/15	3
Procedure in event prop control failure.....	2/15	5
Progressive stall in FGP.....	2/15	5
Prolonged inverted flight.....	2/1	4
Put it on the yellow sheet.....	5/1	4
PV-1 night take-off crash.....	1/1	4

<b>R</b>		
Radio altimeter.....	4/15	5
Remember your life raft lanyard.....	5/1	3
Return to base immediately.....	3/15	3
Reversed controls.....	3/1	4
Roll out.....	6/15	7

<b>S</b>		
Security sense.....	4/1	4
Self-analysis.....	5/1	4
Senseless risks.....	3/15	4
SNJ landing gear collapse.....	5/1	3
SNJ landing gear troubles.....	6/15	8
Solo flight.....	1/15	5
Switch off.....	1/1	4



<b>T</b>		
Targets can hypnotize you.....	3/1	4
There's nothing too small.....	6/15	7
The wrong time.....	6/15	7
Tire pressure.....	2/15	5
Torpedo chasing.....	1/15	5
Torque accidents.....	2/1	5
Tower at fault.....	4/1	3
Tower responsibilities.....	4/15	5
Two obvious errors.....	5/15	3
Two ways to do everything.....	4/15	6

<b>U</b>		
Up-to-date logs.....	1/1	4
Use of flaps.....	4/1	4

<b>V</b>		
Visibility zero, judgment zero.....	3/1	4
VJ-13 swears this happened.....	5/1	3

<b>W</b>		
Wanted: mental precision.....	6/1	5
Watch your octane.....	6/1	5
Who wakes the bugler?.....	4/15	5
Will power.....	3/15	4

A MARINE Corps Major, piloting an SBD-5, led a flight of 14 planes in a dive bombing attack on enemy airfield and gun positions. Anti-aircraft shells set his plane ablaze, and he and his gunner were forced to abandon the plane. After bailing out, they were unable to contact each other. Each man was on his own. The combined recommendations made from their experiences provide valuable information to new combat pilots in Pacific zones.

Each man swam to a separate island, and as it happened they were separated by only 100 yards; however, neither knew the whereabouts of the other. From time to time, they caught a fleeting glimpse of the other, but neither made an attempt to identify himself for fear of meeting the enemy.

On the afternoon of the second day, SBD's, TBF's and fighters came over on a scheduled strike in the vicinity. The *Dauntlesses* and *Avengers* came out of their dive just over the Major's island, and started strafing. He ran to the beach and vigorously waved his undershirt to attract attention, but was forced to drop to the ground to avoid being hit. Suddenly a TBF gunner noticed the Marine and stopped strafing. The others picked up that cue and word was sent back to the base.

The third day, while waiting to be picked up, the Major recognized the

oil served as a lubricant for their 45-caliber automatic revolvers.

They were picked up on the fourth day by a *Dumbo* and taken to a base where they were able to receive treatment, food and clothes. Their feet, torn and cut by coral, were treated as were other skin abrasions and salt water sores. Each had lost about 15 to 20 pounds in weight, but no serious consequences were suffered.

As a result of their experiences, the two men emphasized the importance of having adequate clothes and equipment on all flights. When forced down on land or in the water, do not discard any clothes unless necessary for safety purposes. They will be very useful in cases of prolonged exposure. The sleeves removed from the gunner's leather jacket proved extremely helpful as protective foot-gear. Guns should be checked frequently to see that they have no incipient rust and are properly oiled. Fortunately, the gunner had cleaned and oiled his automatic the morning of the strike, and it functioned satisfactorily on getting ashore.

A clip of tracer cartridges should be carried for attracting attention of search planes as well as a small mirror which is useful for the same purpose. A sheath knife is an indispensable piece of equipment. It was used in a variety of ways by those two men, such as



man on the other island as his gunner, and immediately swam over to the other island.

The two men feasted on coconut meat and sprouted tips of coconut plants. One of the most useful foods was obtained by stripping outer leaves from sprouted coconut plants and extracting a white core-like center. It provided palatable food and some moisture. In their weakened condition, it was impossible to climb trees. Grated coconut meat was squeezed in a handkerchief and the oil allowed to drain off. This

securing and eating food, preparing foot-gear, cutting brush and leaves for shelter.

Every pilot should wear the standard emergency back pad kit which contains the following items essential for forced landings:

- |                                   |                   |
|-----------------------------------|-------------------|
| Instruction book                  | Sharpening stone  |
| Signaling mirror                  | Magnifying lens   |
| Heavy cord                        | Preservative      |
| Fishing kit                       | First aid kit     |
| Whistle                           | Rations           |
| Knife                             | Match-box compass |
| Pyrotechnic pistol and cartridges | Salt tablets      |
| Sunburn ointment                  | Adhesive tape     |
| Poncho                            | Safety pins       |
| Gloves                            | Mosquito head net |
|                                   | Cans of water     |

# LETTERS

Sirs:

I have been unable to purchase any of the Seapack luggage described in your April 15 edition of NAVAL AVIATION NEWS. Our Ships Service Store does not have this luggage nor does it expect to have it in the near future. I would like information as to where I could purchase it now and the approximate cost.

LIEUTENANT, USNR

NAS Key West

¶ NANews is informed that proper procedure is to go to the supply officer of your station and request him to obtain Seapack luggage from the nearest designated storage point, in this case NAS Jacksonville. Quoted prices are: Ditty Bag (new and improved model) \$8.13; Duty Case \$15.50; Duty Locker \$19.50.



Sirs:

NANews is a masterpiece in a tough field; it makes technical information pleasant reading. No other Navy magazine covers its province as well.

Y2c, USNR

New York, N. Y.



Sirs:

Reprints of the Aircrewmembers article appearing in NAVAL AVIATION NEWS have been posted on bulletin boards and distributed to as many students as possible. Suitable display boards have also been made and used to advantage.

It is felt that the reprints serve a definite purpose in that they corroborate in black and white the information given students at indoctrination lectures.

In view of the above it is recommended that a steady supply of these reprints be made available to technical training schools and that its use be continued.

COMMANDING OFFICER

NATTC Memphis

## ANSWERS TO QUIZZES

### • SURVIVAL QUIZ (on page 8)

1.b 2.d 3.b 4.c 5.c 6.d 7.a 8.b

### • BEST ANSWERS (on page 26)

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

### • NAVIGATION PROBLEM (on page 16)

Wind: From 123°

Force 21 k

(Tolerances of 2 or 3 miles or 2 or 3 degrees from the answers are considered correct)

Sirs:

As for your request for ideas and hints, I believe this would be a direct help to men expecting to leave the states with land-based squadrons and their affiliated units.

The first thing a man does on arrival at an island outpost is start wishing he had brought this and that. They seem unimportant while in the states where anything may readily be had if you can pay for it—out here money is a poor exchange for what you want.

These are some of the things I've found most valuable: Correspondence course for those who want to further their education; record player and records for music lovers (radio reception is nil); photographic equipment including developing and printing outfit (you could make more friends that way); small lantern or candles since you never know when there will be electricity, and underwater masks for viewing the beauties of the South Seas.

And many more, but the greatest folly committed is that of dragging a boxcar full of useless junk such as fancy clothes, etc. Enjoyed your article on the aircrewman, well done.

AVIATION MACHINIST'S MATE 2c

VB-109 Squadron  
San Francisco



## CONTENTS

Jap Camp Plan	1
Grampaw Pettibone	7
Subsistence in Far North	9
Tropical Cyclones	12
Shore Stations	15
Ferry Command Procedure	17
Did You Know?	25
Technically Speaking	29
Teaching the ARTS	34
NANews Index	36

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## PUBLICATIONS

The following Aviation Circular Letters, Technical Notes and Technical Orders have been issued since May 1, 1944. Copies are available on request to Publications Section, BuAer.



### AVIATION CIRCULAR LETTERS

ACL 35-44	Bureau of Aeronautics Interchangeability Charts for Engine Accessory Special Tools.
ACL 36-44	(Joint ltr.) Airport Field and Seadrome Lighting.
ACL 37-44	Reports Regarding Service Deficiencies—Forwarding of.
ACL 38-44	Report of Unsatisfactory or Defective Material—Submission of.
ACL 39-44	(Restricted) Class Designation of Aircraft.
ACL 40-44	Radio-Radar Facilities.
ACL 41-44	Life Raft, Safety Belt and Life Jacket Fittings.
ACL 42-44	Bureau of Aeronautics Field Service Program—Institution of.
ACL 43-44	Aircraft Supplies and Services Purchased by Pilots.
ACL 44-44	Emergency Issues and Assistance to other than Federal Aircraft, Authorization of.
ACL 45-44	Vacuum Tubes for Radio/Radar, Special Training Devices, Electronic Test and Photographic Equipments—Designation of Supply Points for Naval Aviation Activities and Policy for Procurement of.
ACL 46-44	Naval Aviation Insignia.
ACL 47-44	Self-Sealing Fuel and Oil Cells, Fuel and Oil Use, Retention of Informative Data on.



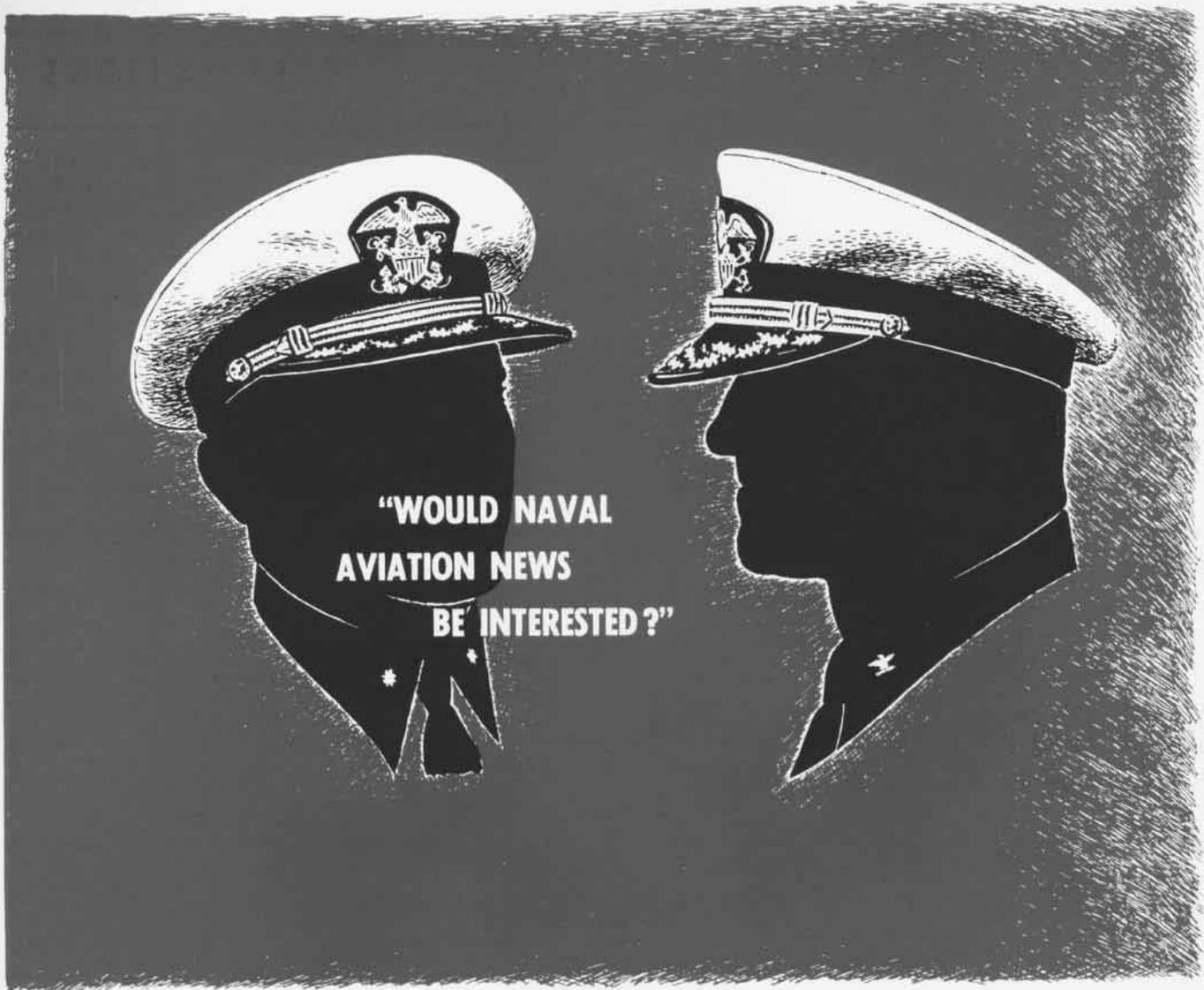
### TECHNICAL NOTES

TN 36-44	Use of Chlorinated Hydrocarbons in Aircraft Anti-Icing Systems—Precautions against.
TN 37-44	Oxygen Face Mask—Cleaning—Instructions for.
TN 38-44	Repairing of Worn Heels on Aviators' Flying Boots.
TN 39-44	AN/APN-1 Series Radar Altimeters—Operation of.
TN 40-44	Operation of Radio Equipment, Model P6F-3, P6F-3N, P6F-5, P6F-5N Airplanes.
TN 41-44	Eclipse Type 914 Generators—Interchangeability of.
TN 42-44	Notes on Bail Out Procedure without use of Special Oxygen Equipment.
TN 43-44	AN/APN-1 Altitude Limit Indicator Lights.
TN 44-44	Fluorescein Dye Markers for Life Jackets.



### TECHNICAL ORDERS

TO B-44	(Confidential) Identification Equipment in Aircraft Fitted for AN/APX-2—Installation of.
TO 56-44	Service Record of Accessories.
TO 57-44	AN/ARC-5 VHF Equipment—Pilot's Control Box, Operation of.
TO 58-44	AN/ARC-4 (W.E. 233-A) VHF Communication Equipment—Trimmer Condensers, Securing of.
TO 59-44	AN/ARC-5 Radio Equipment—Pilot's Control Box, Modification of.
TO 60-44	Model PBN-1 Airplanes—Restrictions on Maneuvering.
TO 61-44	Model PBY-5A Airplane, Model XPBY-5A Airplanes—Restrictions and Permissible Maneuvering.
TO 62-44	Modification of AAF Voltage Regulator Base and Wiring Thereof.
TO 63-44	Installation of the "SCRAM-BLED" Carbon Pile in Eclipse Type 1305-1A and 1260-1A Regulators and its effect on their interchangeability.
TO 64-44	De-Icing Fluid—Use of.
TO 65-44	Model SNB-2 and SNB-2C Airplanes—Restrictions on Maneuvering.
TO 66-44	Direct-Cranking Electric Starters for VF Airplanes.
TO 67-44	Urgent Need for Proper Handling of Aircraft Fires.
TO 68-44	Lap and Shoulder Type Safety Belts; Installation of.



## We'll answer that, Captain!

■ The answer is YES . . . if it's technical, safety or survival data that other squadrons and activities ought to have. NAVAL AVIATION NEWS reaches all aeronautical activities throughout the world twice a month, and is the clearing house for news and developments of interest to pilots and personnel in Naval Aviation.

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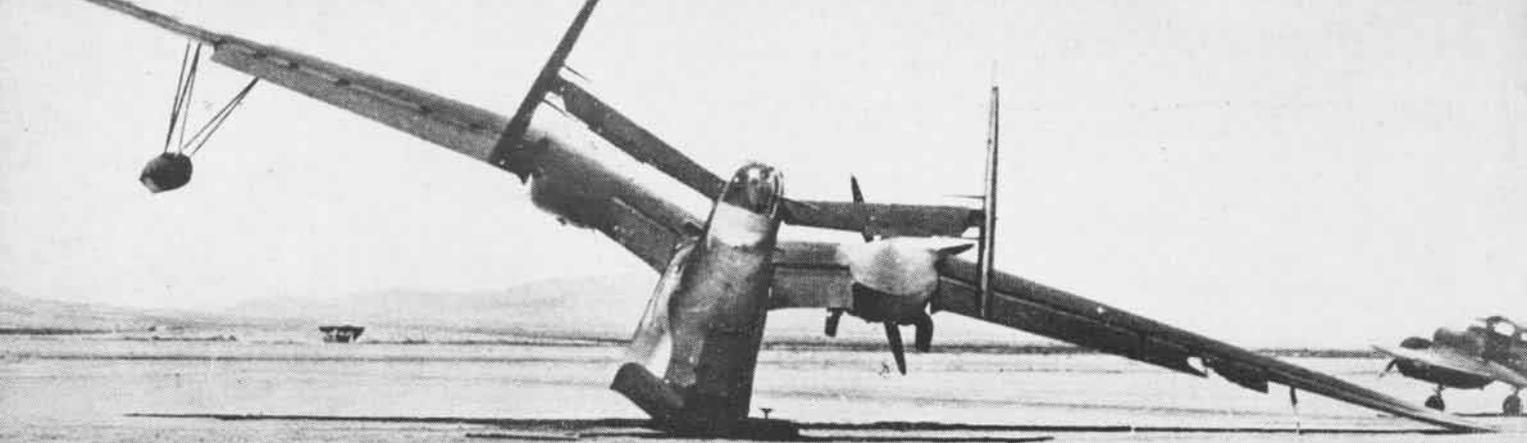
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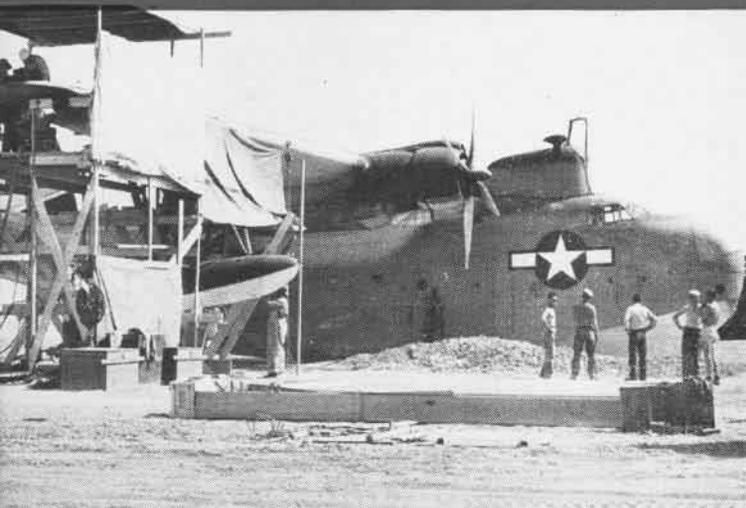
**EXPERIENCE STORIES.** Actual experiences that contain helpful hints to other pilots and crews flying Navy planes.

# NAVAL AVIATION NEWS

25TH YEAR—FORMERLY BUAER NEWS LETTER, FIRST PRINTED IN 1919



THE PILOT AND CREW OF MARTIN MARINER WERE COMMENDED FOR THEIR AIRMANSHIP IN LANDING PLANE ON ARIZONA DRY LAKE WITH SO LITTLE DAMAGE



LIKE A WHALE OUT OF WATER, PBM RESTS ON BED OF ARIZONA DRY LAKE



DOUBLE-TIRED WHEELS WERE ATTACHED ON REINFORCED MOUNTS



## PBM TAKES OFF FROM DESERT

**A** GIANT 26-ton PBM recently made aerial history when it took off from the bed of a dry lake in southeastern Arizona and flew 465 miles to San Diego. The *Mariner*, yclept "The Mirage of Willcox Lake," had been forced down in the desert after one engine had gone dead owing to an oil line break. The take-off is believed to be the first of its kind in aviation history. Beaching gear and wheels aided take-off.

ONLOOKERS HELD THEIR BREATH AS MARINER HURTLIED DOWN DESERT RUNWAY FOR RECORD TAKE-OFF. THE LANDING IN SAN DIEGO WAS UNEVENTFUL

