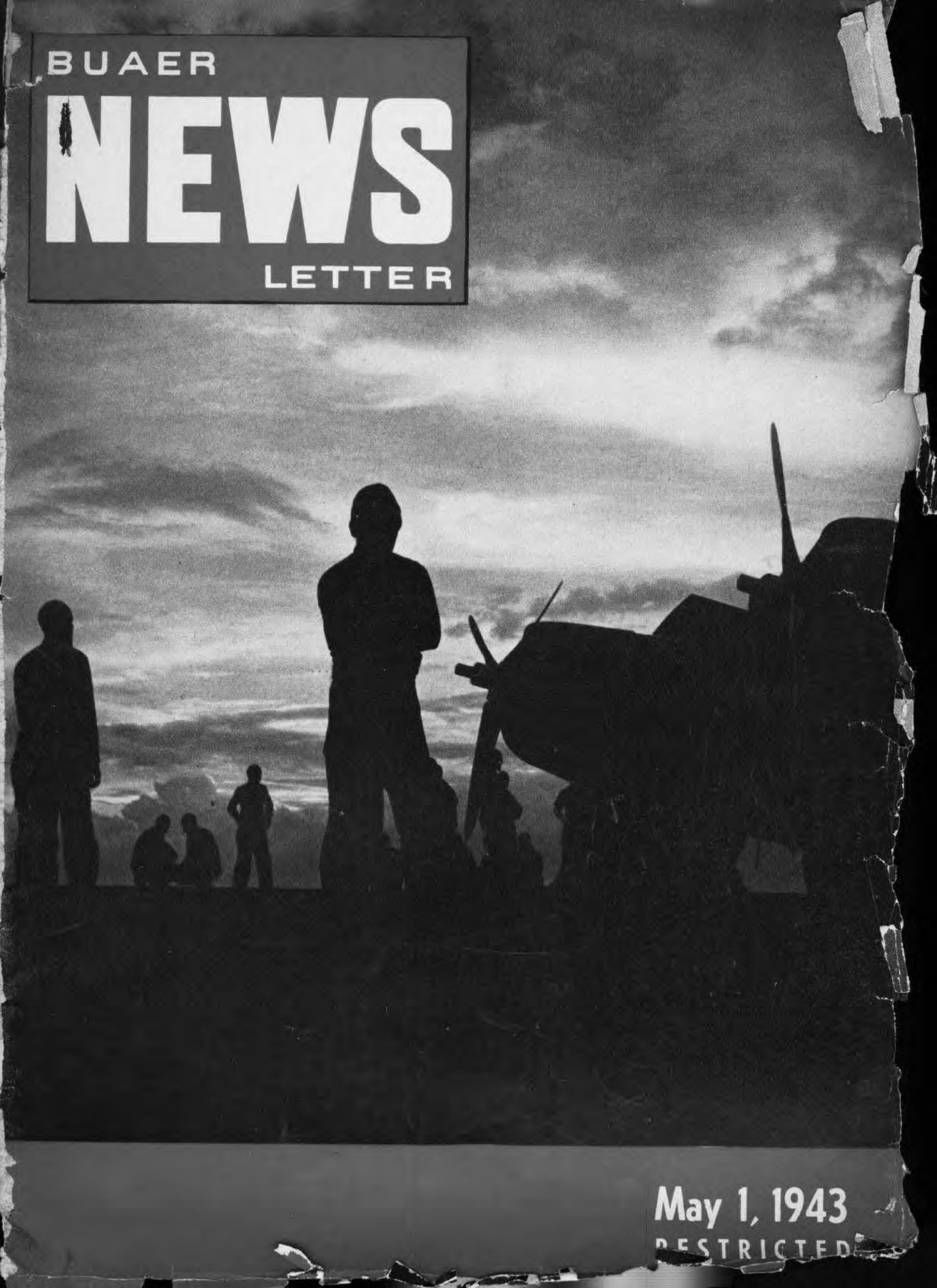


BUAER

NEWS

LETTER



May 1, 1943

RESTRICTED



The Corsairs are Coming (see story)



JAPANESE POSE, IN DRESS CAPS AND WHITE UNIFORMS, BEHIND A 7.7 MM. MACHINE GUN. THIS PICTURE WAS FOUND ON JAP CAPTURED AT GUADALCANAL

Japanese Antiaircraft Fire

**Accuracy Best at 8,000 to 12,000 Feet, Drops above 15,000
Naval Batteries Superior to Land in Firing**

JAPANESE antiaircraft tactics do not fall into a rigid pattern, and exceptions to any general conclusions will therefore be common. Available reports, however, suggest that the following have been true under most conditions.

a. In the great majority of instances Japanese antiaircraft fire has been reported below and behind our bomber formations.

b. Errors in altitude have been corrected more quickly than errors in range. Errors in deflection have been less frequently reported and when encountered have been quickly corrected.

c. The best accuracy has been observed between 8,000 and 12,000 feet. Above 15,000 feet, accuracy has rap-

idly decreased.

d. The few reports available on low altitude antiaircraft fire have indicated that this fire has been relatively inaccurate.

e. Japanese observer planes flying at the same altitude as our bombers have been frequently reported. When such spotters were present, relaying data to the gun crews, adjustment of antiaircraft fire has been more rapid than normally.

f. Antiaircraft fire from naval batteries, particularly those of battleships, cruisers, and aircraft carriers, has been more accurate than antiaircraft fire from land batteries.

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BUREAU OF AERONAUTICS
NAVY DEPARTMENT-NO. 192

Any Suggestions?

Many of the NEWS LETTER readers will have observed several changes in format during recent issues. These changes are part of the effort to provide all aviation personnel with a broader picture of the things others are doing. No doubt, many readers will have a touch of nostalgia at the abrupt changes. This sentiment is, of course, understandable. However, it must be recognized that war conditions come to the fore.

Fewer and fewer NEWS LETTER reports have been received from the Fleet. This is logical in view of existing conditions. Another point is the feeling that NEWS LETTER should provide aviation personnel some knowledge of news going on in the aeronautical world.

NEWS LETTER, it has been proven, is one of the best media for disseminating engineering and other data. Consequently, it was decided that it should become the

means of circulating official data as well as timely news.

To insure that it would be widely read, it was decided to dress the publication up to a point which would encourage reading. The printing run has been greatly increased so that sufficient copies will reach all organizations.

Although NEWS LETTER is restricted, wide distribution within Naval Aviation organizations is sought. News from activities is especially desired, for frequently it cheers the heart of an aviator in Alaska to find out that the life of the aviator in the tropics also has its disadvantages.

It is hoped that eventually it will be possible to provide air mail deliveries of NEWS LETTER in order to achieve timely distribution of news and official information. Efforts will be continued to improve its make-up, and suggestion from all units are welcome.

Camouflage of Antiaircraft Positions

Antiaircraft guns are frequently protected by a sandbag or earth revetment with the entrance to the gun position shielded by a blast wall, but extensive camouflage is normally not

employed. Cases have been reported where the Japanese have apparently deliberately discarded all attempts at concealment in order to secure more effective fire. In Burma, for example, they have been observed to raise the base of an antiaircraft emplacement to some height above ground level.



THIS 3-IN. A. A. GUN, CAPTURED INTACT AT GUADALCANAL, IS NOW IN USE AGAINST THE JAPANESE

In scattered instances, however, the Japanese have camouflaged their antiaircraft gun positions by the use of overhead cover. This cover has usually consisted of a net interlaced with cut shrubs and foliage. Occasionally positions have been covered in order to blend with the sand or surrounding soil.

Report of Night Raid on Wake Island

Antiaircraft fire encountered in a recent raid on Wake Island was reported to range from light to intense but was inaccurate, with the tracers falling below and behind the attacking bombers. The fire encountered was mostly of the machine guns and .50 caliber type. The altitude of the attack (4,000 feet) apparently was just above the point where the trajectory of this light antiaircraft fire began to break. During the first stages of the attack, there appeared to be no direction of antiaircraft fire as tracers were seen in all directions. During the later stages, light antiaircraft fire seemed to converge in a cone over the Island. There were a few reports of curtains of light antiaircraft fire. Not many bursts from heavy caliber shells were observed and most of these were erratic.

Reports indicated a total of eighteen searchlights scattered over the Island. Approximately half of them were located in pairs and in some cases appeared to be working together. A small percentage of the searchlights seemed to be more powerful than the rest of the lights. There appeared to be some central control of the searchlights as they came on and off together. However, there was no co-ordinated control of the searchlights from a directional point of view.

Approximately one-fourth of the bombers were caught in searchlight beams but were not held for any appreciable length of time. Slight maneuvering was sufficient to evade the light beams. In general the searchlights were reported as ineffective and they did not seem to be synchronized with any antiaircraft fire.

Battle of Midway

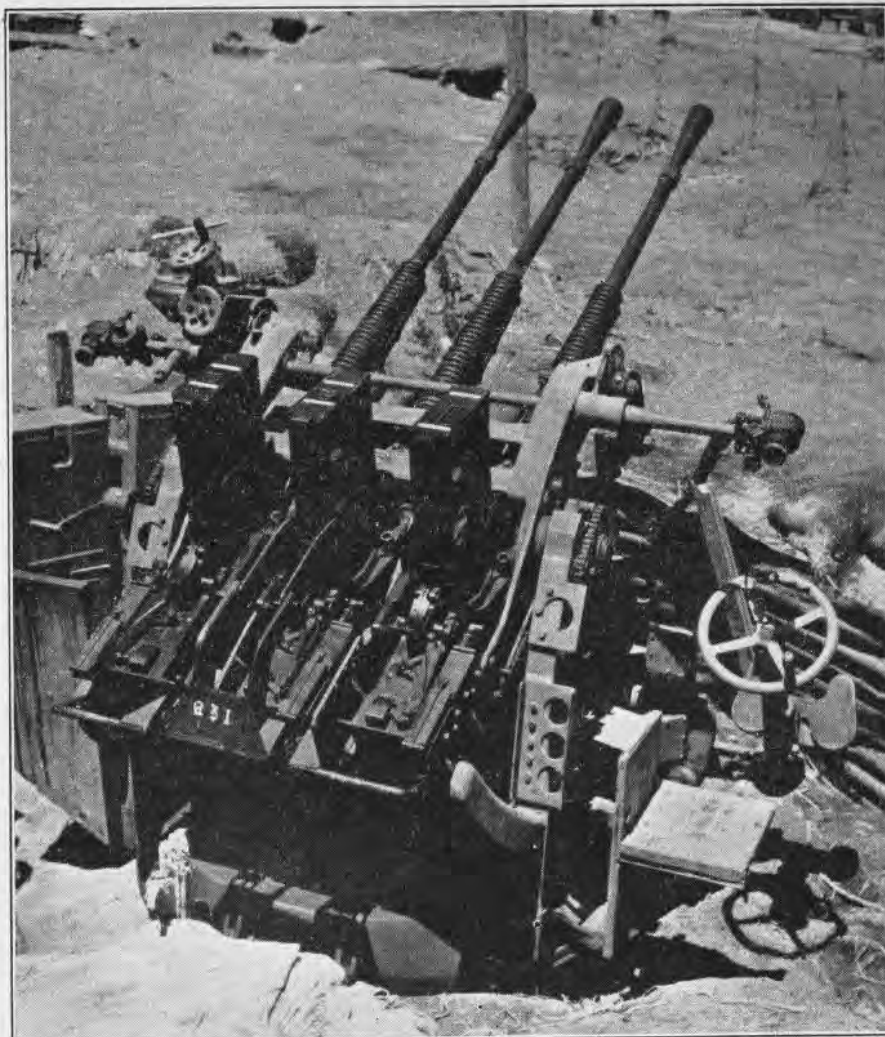
Fairly definite antiaircraft defense tactics were indicated in the comments of an officer taking part in the

Battle of Midway. Fire was not commenced until the bomb bay doors opened. At that time a sighting shot, a yellow burst, was fired. This was followed by intensive fire which appeared to have a definite barrage pattern. This pattern was reported to be approximately 2,000 feet wide and 2,000 feet deep.

In the Midway action, Japanese fighters were stationed above the fleet for the apparent purpose of reporting the altitude of our bombers to their ships. This assisted the Jap gunners to direct their antiaircraft fire.

Report From the Aleutian Islands Area

On occasions Japanese antiaircraft fire at Kiska has been concentrated on openings in the cloud blanket upon the approach of our airplanes. Over Kiska Harbor, a strong concentration of antiaircraft fire has been reported from enemy vessels moored alongside one another. Reports have indicated that raiding bomber planes have occasionally been hit and suffered some damage while engaged in attacking their objectives. Fire has been quite accurate at elevations up to 15,000 feet. Hits have been scored on planes flying above the overcast, indicating the probable use of radio direction equipment.



JAP 25-MM. POMPOM, SHOWING SIGHTS AND SIGHTING MECHANISM. JAPS USE SCANTY CAMOUFLAGE

Characteristics of Japanese Antiaircraft Guns

	Caliber	Muzzle velocity (feet-second)	Maximum range (yards)	Weight of projectile (pounds)	Rate of fire r. p. m.	Weight (pounds)	Elevation	Traverse	Remarks
Machine Gun, Hotchkiss Type.	7.7-mm...	2,700	4,587 Horiz., 3,300 (ft.), vert.	0.467 ozs.	400	115	80°	360°	Air cooled—special mount.
A. A. Gun, Hotchkiss Type.	13.2-mm..	2,722	7,685 Horiz., 13,120 (ft.), vert.	0.114.....		213	0° to 90°	360°	
A. A. Gun, Oerlikon Type.	20-mm...	2,720	5,450 Horiz., 12,000 (ft.), vert.	0.55.....	120	836	10° to 05°	360°	Also anti-tank.
A. A. Gun.....	25-mm....								New pom-pom with 3 barrels.
A. A. Gun.....	37-mm...	2,300	5,450 Horiz.....	1.54 A. P.		197.6			
A. A. Gun.....	40-mm...	2,800	11,000 Horiz., 24,000 (ft.), vert.	0.955 Kg. H. H.	100		5° to 85°	360°	Believed to be Bofors lost by Brit.
A. A. Gun.....	57-mm...								Ballistics unknown.
A. A. Gun (Model 1928).	75-mm...	2,450	15,200 Horiz., 32,000 (ft.), vert.	14.3.....	15	5,390	0° to 85°	360°	Japanese place main reliance on this gun for A. A. defense.
A. A. Gun.....	105-mm..	2,300	19,620 Horiz., 36,000 (ft.), vert.	35.2.....	8	11,000 (in action)	0° to 85°	360°	One hour to emplace in readiness for action, tractor drawn.

FLIGHT STATISTICS

Pilot Technique When Illuminated by Searchlight

A recent fatal crash occurred during a night familiarization flight when the pilot of a TBF-1 entered a spin at approximately 900 feet, shortly after being illuminated by a searchlight. The searchlight was being used to identify the aircraft and illumination lasted for less than one minute. This pilot had been doing wing-overs in an effort to elude other searchlight beams that night. It is believed he attempted similar maneuvers during the illumination in question and was unable to maintain control of his aircraft due either to blindness caused by the searchlight beam or to lack of ability to recover from an unusual position on instruments. Prior to his flight, this pilot had been instructed to shift to instruments if illuminated by searchlights and to stay on instruments until clear.



Grampaw Pettibone says

Remember that! Shift to instruments as soon as you are illuminated—especially at low altitude. If you are not an instrument pilot, just hold her steady—don't try to turn or make any other maneuver, until you are clear of the beam.

Crash During Altitude Take-Off

During a recent ferry flight the pilot of a PBY-5A landed at an airport at 6,400 feet altitude. Certain repairs were made at this field, upon the completion of which a take-off was attempted with the airplane loaded almost to capacity. Although the runway was nearly 9,000 feet long and the engines functioned satisfactorily, the airplane failed to become airborne until past mid-field and then gained altitude so slowly that it crashed into obstructions at the border of the field. Fortunately, there was no fire or serious injuries.

Bureau Says

The pilot of this airplane was very experienced (over 2,000 hours in this type plane), but he neglected on this flight to take into account the

altitude at which he was operating. Although the capacity load carried on this take-off was not a structural overload, it was an overload for normal take-off at that altitude.

Air decreases in density in direct proportion to an increase in altitude; therefore wings give decreased lift as altitude increases. This decreased lift increases the stalling speed of aircraft and necessitates a faster landing speed and also a longer take-off run to build up flying speed. Tests have shown that for each 1,000-foot increase in altitude above sea level approximately a 3-percent longer run is required for take-off.

Although it is not known whether air temperature had any effect on this accident, it is also closely allied with operating efficiency and is, therefore, pertinent to this discussion. In addition to a decrease in air density due to increased altitude, there is a similar decrease in air density due to increased temperature above normal temperature. It has been determined by tests that approximately a 3-percent longer run is required for each 10° C. rise in temperature above normal. For information, flight characteristics for landings, take-offs and stalling speeds of aircraft are always based on the following conditions: (a) Sea-level altitude, and (b) 15° C. air temperature at sea level.

The main thing to remember when operating at high altitude or in hot weather is that a longer take-off run is required, rate of climb will be slower, and a faster landing speed will be necessary.

Forced Landings at Sea

The following opinions as to proper pilot technique when "ditching" F4F's and SBD's were submitted from several Atlantic Fleet carrier squadrons in accordance with a recent request for such information. These opinions are based on considerable forced-landing experience and, while not necessarily the last word, merit considerable respect.

1. Wheels should always be up, although one F4F pilot made a successful wheels-down landing at night when his engine cut out in the land-



With Comments by Grampaw Pettibone

ing circle. (Additional comment on this item appears farther on.)

2. Flaps should be down; the tripping effect appears negligible.

3. Actual contact with the water should be made at the lowest possible speed, but with the wings in a level attitude. This means that the airplane should touch the water in a full stall attitude, or while slightly above the stalling speed, in order to keep from dropping a wing.

4. Engine should be used, if available, to (a) give better control; (b) improve selection of landing spot; (c) decrease rate of descent. One squadron recommended pilots jump at night if engine is not available.

5. Landings should be made into the wind if force is over five knots and parallel to swells if force is under five knots. Avoid trough of swells, if possible. One squadron was of the opinion that if there is a heavy swell the pilot should bail out.

6. Before contacting the water the pilot should:

(a) Lock cockpit hood open or, if possible, jettison it.

(b) Jettison all possible weight, such as bombs, fuel, radio, etc.

Bureau Says

In aircraft with bomb bay doors, it is considered more important that doors be closed on impact than that bombs be jettisoned.

(c) Get clear of oxygen equipment, radio lines, etc.

(d) Push goggles up over helmet, but don't detach them because they

will be very useful if pilot is forced to remain in a life raft for any length of time.

(e) Unbuckle parachute, but leave straps over shoulders. Even if no gear is attached to the chute it will be very useful, afloat or ashore. The reason for unbuckling the parachute is that, in case the harness should catch on something as the pilot is getting out of the cockpit, he can easily leave the parachute behind.

(f) Tighten safety belt and shoulder harness. If shoulder harness is not worn, fly the airplane with one hand and brace against sight or cowling with the other.

7. Force of impact is considerable, but no serious injuries should occur if pilot has tightened shoulder harness or has braced himself well. Pilot may be slightly dazed on impact, with the possibility of unfastening wrong buckles, etc. Shoreside drills and training will help in this.

8. The aircraft will usually remain afloat from thirty seconds to two or three minutes, depending on the success of the landing, sea conditions, type of plane, etc. Planes usually sink in a nose-first attitude, with the tail rising to almost 90 degrees shortly after starting to settle. The pilot should be prepared for a hurried exit and should get clear with needed equipment, in accordance with a preplanned sequence of action.

9. Retention of all clothes, especially shoes, is very important, to help guard against exposure.

10. The mental attitude of the pilot is important.

(a) He must convince himself that a water landing is perfectly feasible and that many such landings have been successfully accomplished by other pilots. (See statistics on this in the March 1st *News Letter*.)

(b) He must make up his mind to fly the airplane all the way down to the water and execute the landing with skill.

Relative to item number 1, on attitude of wheels, the following interesting arguments for having wheels down, particularly in F4F's, were submitted via NAS Jacksonville *News Letter* by a lieutenant with considerable forced landing experience:

(a) A wheels-up landing does allow the airplane to skid along the water

for a short distance before the nose digs in, but as soon as the nose does dig in the airplane stops with a much greater resultant shock. It is believed that this shock does the damage.

(b) With wheels down, the momentum of the shock is dissipated in the roll of the airplane as it tends to go over on its back, after having been "tripped" by the wheels.

Bureau Says

In view of the large majority of recommendations for landing with wheels up and the excellent record of such landings, the Bureau continues to recommend that whenever possible forced water landings be made with the wheels up.

The Bureau has an open mind on this question, however, and welcomes additional comments and data. It is quite possible that no hard and fast rule can be laid down; possibly it will be found that different models of airplanes will require different procedures. Possibly, even, the same airplane will require different procedures when landed in calm waters and in heavy seas. Possibly wheels should be neither up nor down, but in a partially lowered attitude.

Likewise, the question brought up in this article, of jumping at night if no engine is available, or in the daytime if swells are very heavy, is open to argument. Here again the answer may be found to vary with different types of airplanes, with different circumstances and, also with the experience and skill of the pilot.

Additional comments would also be appreciated on the "into-the-wind-or-parallel-to-the-swells" argument. Where patrol planes, which land with a considerable run, might land parallel to the swells to avoid smashing into them, a landplane, which takes very little run, might fare better by making a slower landing into the wind. The main danger here appears to be that of smacking head-on into a swell. Send in the dope!

The theory of these discussions is not to get everyone upset and uncertain as to what action to take, but to force everyone to think about these matters and to crystalize procedures. As was brought out in the Jacksonville *News Letter*, because the technique of the pilot is all-important in making a successful landing, it is essential that each pilot

should have absolutely fixed in his mind exactly what he is going to do if faced with a forced landing, under any condition; sufficient time to figure things out is seldom afforded when the occasion arises. (Read again item 10 of this article.)

For further information on this subject, particularly concerning launching and usage of the life rafts, see the pamphlet "Dunking Sense" recently issued by the Training Division.

Realistic Training

The other day Grampaw Pettibone was seen waving a handful of long, white hairs (beard) in one hand and a pilot's statement in the other and screaming frantically, "My Gawd, they're training 'em that way now!" We still can't quite believe it, but this is the pilot's terse statement:



"While flying an F4F, I made an approach for my first night landing with my wheels up. The landing gear horn was inoperative. I landed."

Take-off Technique in PV Airplanes

During a recent attempted cross-wind take-off in a restricted area, a PV-3 airplane was completely demolished. The pilot employed the following take-off technique: (a) Both engines were brought up to 25" Hg. before releasing the brakes, (b) Manifold pressure was then immediately increased to 50" Hg. "in an effort to expedite raising the tail, to promote rudder control." As the tail lifted, the airplane swerved to port and the pilot lost directional control.

The forwarding endorsement on this trouble report stated: "The main lesson to be learned from this accident is that the most difficult take-off in PV airplanes is with a cross-wind on the port side. The normal tendency of this airplane on take-off is to swerve

to the left, due to high propeller torque, and a cross-wind, such as existed in this case, greatly aggravates this condition.

In reporting a similar fatal accident which occurred during a normal take-off in a PV-1, the trouble board recommended that a Circular Letter be issued on the torque effect in this airplane.

Bureau Says

This airplane does have a marked tendency to swerve to port on take-off, due to propeller torque. In this connection, attention is invited to the Pilot's Handbook and Technical Orders 86 and 91-42 wherein this torque effect is explained and the following special take-off technique is recommended: (a) Tail wheel locked, (b) increase power slowly, with left throttle slightly ahead of right throttle, and (c) keep tail wheel on the ground to maintain directional control until rudder effectiveness can be felt (approximately 40-45 knots).

All PV pilots are doubtless aware of the tendency of these airplanes to swerve to the left on take-off, but apparently some pilots are unaware of the proper technique necessary to correct for this. Note in the above case the rapid application of power and the "effort to expedite raising the tail to promote rudder control." Note also that "as the tail lifted, the airplane swerved to port."

Pilots who have used the recommended "tail wheel down" technique report that "it works." Squadrons should insure that this take-off technique is clearly understood by all pilots operating PV airplanes. Particular stress should be placed on keeping the tail down until considerable acceleration has been obtained, for this is exactly opposite to normal take-off technique and will, therefore, be harder to remember. (This technique is equally applicable, however, to any

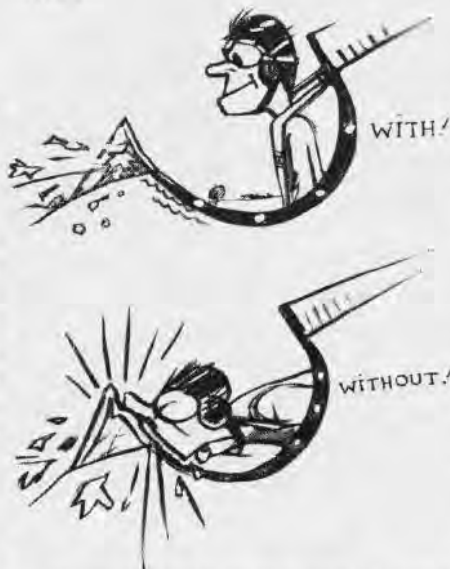


high-powered airplane which has a tendency to swerve to the left on take-off).

Don't Be a Sap

During a recent ferry flight in an N2S-3, engine trouble necessitated

making a deferred forced-landing. In coming in to land, the pilot hit a tree about 35 feet above the ground and spun into a marsh. From the pilot's statement: "At this time my shoulder harness was not fastened." The pilot received the following injuries: loss of one eye, severe concussions, and abrasions.



In a somewhat similar case, the pilot of a TBF-1, while practicing field carrier landings, lost flying speed in a turn and spun in from approximately 200 feet. From this pilot's statement: "My injuries were minor, due to wearing of shoulder harness. I received a slight scalp wound and a bruised left arm."

Numerous similar reports have been received wherein pilots attribute their escape from injury entirely to the shoulder harness.



Grampaw Pettibone says

I knew it! There's always a certain percentage of smart fatalists who think nothing will ever happen to them; they're the type that never take out insurance. And this shoulder harness is the best accident insurance that's been offered to aviators since the invention of the parachute and the safety belt. It's the kind of insurance on which you, instead of your next of kin, collect.

Maybe this harness does take a little time to adjust, but so does a broken jaw.

Spread Your Wings

A recent ground accident occurred while an SOC-2 seaplane was being rolled out to the line with the wings

folded. As the airplane rounded the corner of the hangar, a gust of wind struck the plane broadside, overturning it and fatally injuring one man. The investigating board attributed this accident to the fact that the airplane had been improperly seated on the handling truck, making it impossible to secure the holding-down chains.



Grampaw Pettibone says

A little display of common sense and good seamanship would have prevented this accident; namely, spreading the wings and attaching and manning wing lines.

The center of gravity of a seaplane on a handling truck is very high; even when secured to the truck there is danger of overturning on a rough runway or in a strong wind. Seaplanes on handling trucks should, therefore, always have the wings spread when possible, to give better balance and control.

Danger of Tripping Master Switch

A few months ago there was an SNB-1 forced landing caused by the accidental movement of the master switch to the "Off" position by a passenger as he moved through the cockpit to the bomber's compartment. Shortly after this accident, the squadron to which the airplane was attached designed an effective guard for the master switch. The Bureau adopted the design and issued a change order No. 5 to be incorporated as soon as possible in all SNB-1 aircraft.

In the second week of March an instructor took off at one of the training stations in an SNB-1 and climbed to about 2,500 feet, when one of his students asked to go up in the nose. During the subsequent action in the cockpit both engines cut out. The trouble was not located and a forced landing was made in a lake. The investigating board was of the opinion that the simultaneous failure of both engines was caused by the pilot inadvertently striking the master ignition switch while moving his headphones before leaving the seat.

Personnel are again warned of the danger of accidentally knocking this master switch to the "Off" position. Stations are urged to expedite installation of change No. 5.



Check Crews

DID YOU KNOW?

German Subs Stalked Sweepers

World War I Tale Unfolds Cart-Before-Horse Daring

NATTC, NORMAN, OKLA.— Prompted by a story in the March 15th NEWS LETTER of the bombing of the wake of minesweeping gear by a bombing plane, a naval officer relates this incident of World War I for its potential value today:

"I was Commanding Officer of a Naval Air Station on the French Coast during the last war. The activities comprised antisubmarine and anti-mine warfare. The patrol area assigned, on the Bay of Biscay, included a large body of shoal water suitable for the mine of those days. Minesweepers were steadily in use sweeping channels for incoming and outgoing convoys. The pilots attached to the command were generally familiar with these facts.

"The sweeping gear of that date in use by the French Navy comprised a minesweeper with two, not one, 'Fish,' towed astern and spread out at an angle of about 20° on each side of the keel line of the sweeping vessel. These 'Fish' were towed at approximately 300 yards astern, at the customary 8-knot speed.

"During a patrol by a pair of flying boats on a day of mediocre visibility, a pilot reported sighting and bombing a periscope wake. Other planes were dispatched at about the same time that a minesweeper reported the plane and his number two as bombing the minesweeper's fish.

"Radio contact with the plane brought the report that the pilots were familiar with any minesweeping gear carrying three fish and that they had seen the two customary fish of this minesweeper and the periscope of a nery submarine probably laying mines right in the middle of the swept channel and not more than 500 yards behind the minesweeper.

"Both plane crews concurred in this statement, which was relayed to the

minesweeper through the communications net work. A return sweep of the same water brought up mines.

"The sweep was being made to clear a channel for a large troop convoy due to arrive the next morning at dawn."

Cold-Testing High-Fliers

The coldest spot in America is not Havre, Mont., but any one of 30 stratosphere laboratories in America's airplane manufacturing plants. Temperature in the stratosphere laboratories is a near-constant -67°, and in many of them pressures may also be adjusted to simulate any stratospheric or tropospheric situation.

At -67°, an oil guaranteed for -40° may freeze almost solid, stiffen-



SCIENTISTS WORK IN ICEBOX TO STUDY COLD

ing airplane controls or even making them immovable. At such temperatures, metals and other substances shrinking at different rates and to different extents, make airplane parts loosen or bind, make dural skin shed its protective camouflage of paint. Cold-room tests show up such tendencies and allow them to be safely overcome.

Because these giant iceboxes, 14 by 16 by 8 feet are dangerous to work in, one man rarely, if ever, enters them alone. Men working in them are constantly watched through peepholes for signs of danger. In addition, workers inside have built-in telephonic equipment in their polar suits to talk

with the "outside world." The air they breathe is also fed them from outside, and is valved to them in such a way that they pre-heat it with their bodies before breathing it. If this were not done, pneumonia resulting from frozen lung tissues would quickly set in.

Destroyer Named 'The Sullivans'

Commemorates Five Brothers Lost at Sea

A new destroyer has been named *The Sullivans* in memory of the five Sullivan brothers of Waterloo, Iowa, who were lost in action when the cruiser *Juneau* was sunk in the waters near the Solomon Islands last November.

This is the second time in the history of the United States Navy that a destroyer has been named after five brothers. The first was the *O'Brien*, launched in 1940, which was named in honor of Capt. Jeremiah O'Brien and his four brothers, who won the first naval engagement in the Revolutionary War.

The naming of *The Sullivans* is in line with the Navy's policy of calling ships after heroes of the Navy or Marine Corps. The five Sullivan brothers of the *Juneau's* crew were George Thomas, Francis Henry, Joseph Eugene, Madison Abel, and Albert Leo. Their mother, Mrs. Thomas Sullivan, christened the vessel.

Improvements in Aircraft Design

How much further can the aircraft designer go? This question is answered in part by an English publication, *The Engineer*. There are still a great many problems in the outward design of aircraft that have to be solved. Rivet heads, when not finished flush, cause an extra drag that can and must be avoided. New wing shapes in which the air stream follows the contour farther back than used to be the case are a vitally important field

USE YOUR CHECK-OFF LIST



of study, since success in this direction at once cuts down the drag.

Pioneers have experimented with methods of sucking the turbulent air into the wing, or, in the alternative, of blowing it backwards, in order to reduce still further the wing resistance which accounts for some half of the total resistance of the modern aircraft.

At the same time, engine power is being steadily pushed up. With all these developments, and others being tried or still to be discovered, a very steep barrier is being approached. If the drag invariably rose at no steeper rate than the square of the speed, a change from 400 to 600 miles an hour would merely lead to a drag increase, in the ratio of 16 to 36, but owing to the close approach of the higher of these two speeds to the velocity of sound—the highest speed at which any sudden disturbance in the air can move itself away—the actual increase in drag, as many wind tunnel tests have shown, is likely to become tenfold. No ordinary increase of engine power, however substantial in itself, can overcome such a barrier, especially when the aircrew efficiency is known to drop substantially once this range of speed is entered.

The aircraft designer has plenty of work ahead of him.

Photo-Science Lab.

The newest photographic lab of the Navy will soon be in operation at NAS, Anacostia, D. C. This lab will be a headquarters for combat photography and movie work. The structure was designed and built by the Bureau of Aeronautics and Eastman Kodak Co. engineers and has the most modern facilities available for its work.

The Photo-Science lab, as it is called, will assign cameramen and technicians to fleet and shore duties; check and test aerial and motion picture cameras and equipment; process still and movie film; and supply photographic prints for many purposes.

The lab will have a staff of about 700 naval personnel—many of them former movie men and from the plants of the country's photographic manufacturers. WAVES also will be used to staff this laboratory.

The Eastman Kodak Co. will give special courses to a small group in handling certain equipment.

A sizable portion of the lab will be used for the school of Photo-Interpre-

tation, and another portion has a large sound stage for indoor movie work. This sound stage, designed by the Eastman Kodak Co., is actually a sound-proofed building on a separate foundation within the building and is not affected by planes on the adjacent airfield.

Size of the Navy

On January 1, 1943, there were 118,000 officers and 1,100,000 enlisted men or a total of 1,218,000 personnel in the Navy, including Women's Reserve on active duty. It is estimated that on June 30, 1943, there will be

156,000 officers and 1,450,000 enlisted men, or a total of 1,606,000 personnel on active duty. Requirements to December 31, 1943, necessitate 190,000 officers and 1,850,000 enlisted or a total of 2,040,000 personnel on active duty.

On January 18, 1,160 male officers and 510 enlisted men had been relieved for assignment afloat by the WAVES. These numbers will increase during the year so that it is estimated that 3,000 officers and 14,000 enlisted men will be relieved to the fleet by June 30, 1943, and 5,300 officers and 42,000 enlisted men by December 31, 1943.

Seapack Luggage Now Available

The product of a year of research, the new *Seapack* luggage is now available to naval aviators and aviation cadets at all Naval Flight Preparatory Schools, Pre-Flight Schools, Jacksonville, Pensacola, Corpus Christi, and other aviation activities. The luggage, of forest military green color, is sold on a nonprofit basis.

Seapacks come in three sizes, each type having certain advantages:

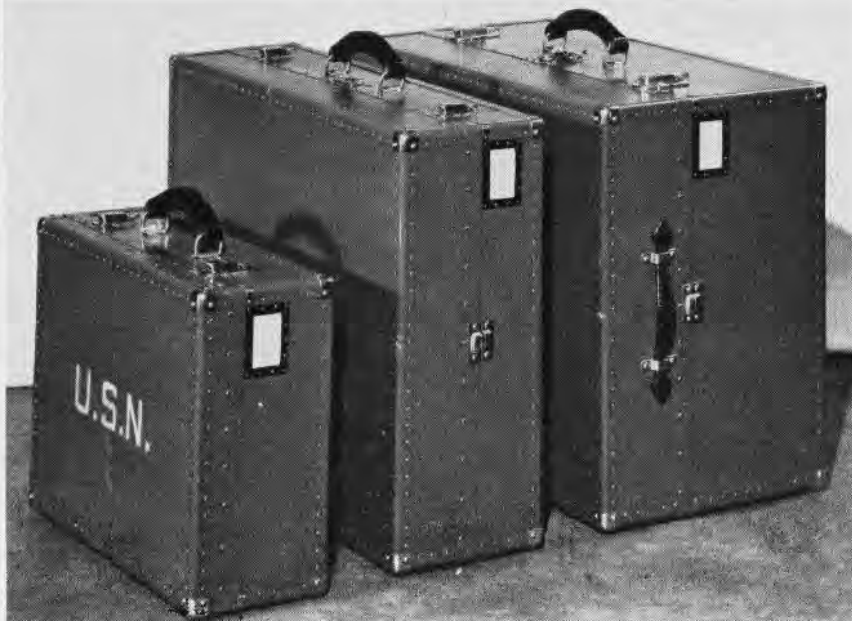
The "DB" (Ditty Box) is a personal kit for overnight travel. It has sufficient capacity for toilet kit, writing set, shoes, shirts, shorts, socks, night gear, and accessories, including either a service uniform or an officer's cap. It is

easily stowed and conveniently carried.

The "DC" (Duty Case) is designed for ordinary light travel. Fully packed, it will carry eight shirts and collars, 2 suits of service blue, six sets of underwear, shoes, two pairs of pajamas, a dozen each of hose, neckties, and handkerchiefs, a toilet kit, bath robe, and slippers.

The "DL" (Duty Locker) is planned primarily for moving the entire wardrobe from station to station. It is satisfactory for "living out of the case" when other facilities are not available aboard ship or station. It also serves as a safe stowage locker. If the entire capacity were used it would hold ten uniforms and a raincoat.

Distinctive features of the *Seapack* include an envelope arrangement which helps keep out moisture and dust and makes it possible to slip out uniforms easily. The lid sections may be removed from the DC and the DL.



SEAPACKS ARE STRONG AND LIGHT, SPECIALLY DESIGNED TO MEET NEEDS OF NAVAL AVIATORS

They "Fly" Bicycles

Formation Instinct is Sharpened

NAS, OAKLAND.—With the arrival of a few bicycles, the Squadron has made cyclists of the AvCads and they are now riding "Pylons," "Landings to a Circle," and "Approaches to Small Fields." The patterns of the pylons, etc., are painted on the asphalt in front of the Operations Building.

The student is shown these designs and when he feels that he has mastered them, he is taken to the "drill mat," given a bicycle and required to perform the maneuver for a qualified flight instructor.

This bicycle training has proved an excellent manner of instruction in formation work. During the per-

formance, silence is required and all movements executed by signal only.

Helicopter vs. Submarine

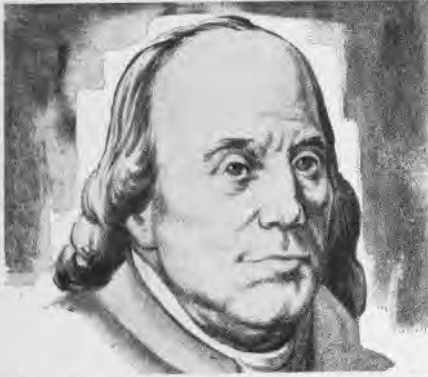
Use of helicopters to protect ship convoys against submarines is the latest British idea, as revealed in the House of Commons recently by H. H. Balfour, Under Secretary for Air. Ability of the helicopter to take off and land vertically from a space as small as a ship's deck is felt to make it suitable for this purpose, as it could accompany convoys during the entire ocean trip.

A study of the helicopter as an anti-submarine weapon was recently recommended in an editorial of the New York Times:

"Light helicopters might be built for a fraction of the cost even of pursuit planes. They could be turned out very quickly. A helicopter on every merchant ship or small escort vessel, or at least one or two helicopters to accompany a convoy, could perform invaluable reconnaissance service in detecting the approach or presence of submarines. Helicopters can go several times as fast as the fastest destroyer, with infinitely less consumption of fuel. If built in larger sizes they could carry bombs—if not large enough to sink a submarine then at least large enough to keep it under the surface. Our counter-measures against submarines have not been distinguished so far by novelty or imaginative boldness. Why not try the helicopter?"

Military Aircraft Designations

NAVY AND MARINE CORPS	ARMY	NAME	ORIGINAL MANUFACTURER	NAVY AND MARINE CORPS	ARMY	NAME	ORIGINAL MANUFACTURER
<i>Heavy bombers</i>				<i>Transports</i>			
	B-17	Flying Fortress	Boeing	GB	C-43	Traveler	Beech.
PB4Y	B-24	Liberator	Consolidated.	JRB	C-45A	Voyager	Beech.
<i>Medium bombers</i>				R5C	C-46	Commando	Curtiss.
	B-18	Bolo	Douglas.		C-47	Skytrain	Douglas.
	B-23	Dragon	Douglas.	R4D	C-53	Skytrooper	Douglas.
PBJ	B-25	Mitchell	North American.	R5D	C-54	Skymaster	Douglas.
	B-26	Marauder	Martin.	R50	C-56	Lodestar	Lockheed.
PV	B-34	Ventura	Vega.	GK	C-61	Forwarder	Fairchild.
<i>Light bombers</i>					C-69	Constellation	Lockheed.
	A-20	Havoc (attack)	Douglas.		C-76	Caravan	Curtiss.
SBD	A-24	Dauntless (dive)	Douglas.		C-87	Liberator Express	Consolidated.
SB2C	A-25	Helldiver (dive)	Curtiss.	JR2S		Excalibur	Vought-Sikorsky.
PBO	A-29	Hudson (patrol)	Lockheed.	<i>Trainers</i>			
SB2A	A-34	Buccancer (dive)	Brewster.	N2S1 and 3	PT-13 and 17	Caydet	Boeing.
	A-35	Vengeance (dive)	Vultee.		PT-19 and 23	Cornell	Fairchild.
SB2U		Vindicator (dive)	Vought-Sikorsky.	N2T		Tutor	Timm.
TBD		Devastator (torpedo)	Douglas.	NR	PT-22	Recruit	Ryan.
TBF		Avenger (torpedo)	Grumman.	SNV	BT-13 and 15	Valiant	Vultee.
<i>Patrol bombers (flying boats)</i>				SNJ	AT-6	Texan	North American.
PBY	OA-10	Catalina	Consolidated.	SNC		Falcon	Curtiss.
PB2Y		Coronado	Consolidated.	SNB2	AT-7	Navigator	Beech.
PBM		Mariner	Martin.		AT-8 and 17	Bobcat	Cessna.
<i>Fighters</i>					AT-10	Wichita	Beech.
	P-38	Lightning	Lockheed.	SNB1	AT-11	Kansas	Beech.
	P-39	Airacobra	Bell.		AT-13 and 14	Yankee-Doodle	Fairchild.
	P-40	Warhawk	Curtiss.		AT-15	Crewmaker	Boeing.
	P-43	Lancer	Republic.		AT-19	Reliant	Vultee.
	P-47	Thunderbolt	Republic.	<i>Liaison</i>			
	P-51	Mustang	North American.	L-1		Vigilant	Vultee.
F2A		Buffalo	Brewster.	L-2		Taylorcraft Grass-hopper	Taylorcraft.
F4F		Wildcat	Grumman.	L-3-C		Aeronca Grass-hopper	Aeronca.
F4U		Corsair	Vought-Sikorsky.	ME	L-4-B	Piper Grasshopper	Piper.
<i>Scouting observation (seaplanes)</i>					L-5	Sentinel	Vultee.
SO3C		Seagull	Curtiss.				
OS2U		Kingfisher	Vought-Sikorsky.				



Air-Borne Troops Old Stuff

The idea of air-borne troops, though introduced to this war by the Germans, is neither new nor of Nazi origin. Ferrying troops was advocated as a feasible military tactic as far back as 1784 and by no less an American than Benjamin Franklin.

Bird-proof Windshield

Pilots who have been "getting the bird"—through the windshield—can rest easier. The Civil Aeronautics Administration, in cooperation with a group of commercial companies and the air lines, has developed an airplane windshield that will stop 15-pound bird carcasses traveling at speeds in excess of 200 miles per hour.

That pilots have had their troubles with birds is attested to by A. L. Morse, chief of CAA's aircraft section.

"Even small birds such as ducks not only have penetrated the windshield, but one in particular continued through the bulkhead, traveled the length of the cabin, penetrated the rear cabin wall, and lodged finally in the baggage compartment," he said. "Fortunately, in this case neither the passengers nor the crew were struck."

One pilot reported as follows: "Time, 12:17 a. m. Climbing at 8,000 feet. Air speed, 150 miles per hour. Hit flock of swans. One swan penetrated leading edge, left wing. Second swan almost tore off left vertical stabilizer. Rudders jammed. Third swan struck and dented engine cowl. Later, two swans went through propeller. Portion of swan taken from wing after landing weighed 11½ pounds."

Confronted with the necessity of solving the bird problem, CAA decided to develop a method of throwing birds against windshields for test purposes. It contacted Westinghouse Electric and Manufacturing Co.,

"Five thousand balloons capable of raising 2 men each could not cost more than 5 ships of the line," Franklin wrote after he had observed the ascension of the hydrogen balloon at Paris, "and where is the prince who can afford so to cover his country with troops for its defense, as that ten thousand men descending from the clouds might not in many places do an infinite deal of mischief before a force could be brought together to repel them?"

Navy Bond Buying Passes 100 Millions

Navy personnel, both military and civilian, invested \$104,390,245.25 in War Savings bonds during 1942. The Navy established the highest record of any Government department.

65 Percent of Aviation Employees Women

Women comprise 65 percent of the employees in the aviation industry, according to recent statistics of the Labor Department. During 1941 only 1 percent of the employees were women, during 1942 only 15 percent.

While 4,000,000 women were employed in industry at the close of 1942, 6,000,000 will be employed by the end of this year, according to the Labor Department. Percentages of women employees in industries is as follows:

Industry	1941	1942	1943
Instruments.....	10%	35%	60%
Aviation.....	1%	15%	65%
Electrical.....	6%	9%	35%
Pharmaceutical.....	45%	55%	75%
Tool and die.....	2%	2%	20%
Machinery.....	0%	10%	50%

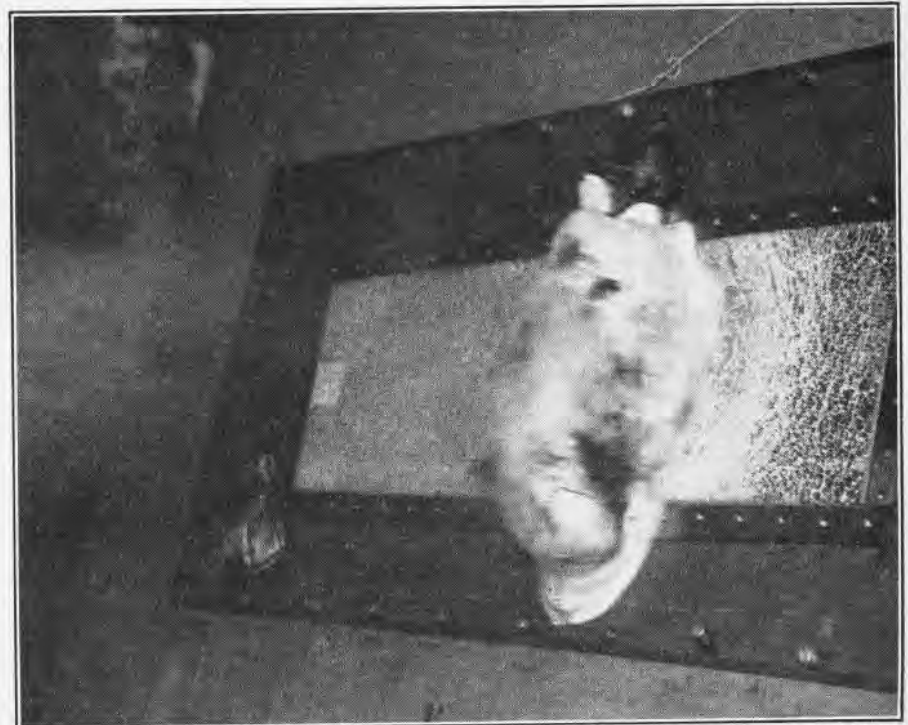
Pittsburgh, to devise a gun out of which birds could be shot. The company came through with a \$2,500 "weapon" fitting the purpose.

Sample windshield panels were contributed without cost by Pittsburgh Plate Glass Co., Libbey-Owens Ford, E. I. du Pont de Nemours, and Monsanto.

In tests conducted at Pittsburgh recently, "tough old birds" were used, according to Morse. They were painlessly electrocuted with a 5,000-volt charge, placed in flour sacks, stuffed

into the gun barrel, and shot against the windshields at speeds simulating actual flight conditions.

The windshield assembly includes a front pane of one-fourth inch tempered glass, separated from the impact resistant panel by a narrow air space through which hot air can be circulated. This, it is said, prevents the accretion of frost and ice and maintains the high temperatures necessary to provide a maximum of impact resistance to the panels.



NEW AIRPLANE WINDSHIELD STOPS A 15-LB. BIRD TRAVELING AT MORE THAN 200 MILES AN HOUR

*25 years ago
this month*

Naval Aviation, 1918

May—First American-built DH ready for test at Dayton. It was flown by Capt. Oscar Brindley, U. S. A. It crashed.

May—Agreement with Army that first 60 DH's made at Dayton-Wright Co. would be delivered to Navy. When turned over to Navy, they were found to be weak in several important particulars. All planes not already shipped overseas were sent back to the factory for alterations. A total of 52 changes were made.

May 4.—Naval Air Station, Pensacola, with 57 planes serviceable during the week May 5 to May 10, 1918, flies 2,434 hours and 36 minutes, which established a record.

May 10.—Ensign Souther, in a Thomas Hydroscout seaplane, in a Miami executes every stunt known. In one of the maneuvers he turned the seaplane on its back, glided for about 1,000 feet and executed a spiral while upside down, gradually going into a tail spin. In another maneuver, he executed a falling leaf for about 1,000 feet with the machine on its back. Ensign Souther states that with the stick control he had trouble getting a leverage while maneuvering upside down and that with a wheel this could be done more easily. He repeated these stunts on the following day to prove they were done intentionally.

May 20.—LTA base began at La Pallice, Commanding Officer, Lt. (jg) J. H. Dashiell, U. S. N. Not completed before Armistice.

May 22.—Kite balloons installed aboard U. S. S. *Connecticut, Arkansas, Oklahoma, Texas, and New*



CAPT. BRINDLEY FLEW FIRST AMERICAN-MADE DH

York. These balloons were used for spotting gunfire but on the whole were not successful.

May 25.—Quoting a Progress Report of the Repair Base at Pauillac, France, "American-built seaplanes began to arrive in France on the 25th day of May 1918. Of the hulls, 25 percent were received in damaged condition, which necessitated extensive repairs. In addition, 40 percent of all control wires were found to be too short and had to be discarded. Many wing surfaces were in badly warped condition, while many of the aileron hinges were out of line and would not permit their installation. Moreover, it was found necessary to disassemble all engines received prior to installation because of conditions found that interfered with normal operations." Two storage batteries only received prior to July 24 and only nine starters prior to Sept. 1. July and August operations held up for lack of propellers.

Maybe St. Peter Knows

The FBI is on the trail of Carl von Clausewitz.

Richard G. McCloskey, editor of the Military Service Publishing Co., was called upon by an investigator who said in stern tones:

"We understand you have recently published a book called *Principles of War* by a German officer by the name of von Clausewitz. We want to know

how he got into this country and where he now is. He is not registered—in fact, we can't find out a thing about him. How come? Give."

Mac just laughed and laughed. Poor old von Clausewitz may be subversive, but his *Principles of War*, after more than 100 years, is regarded as an authoritative classic by army men. Perhaps it's just as well von Clausewitz has been in the subsoil so long—he's safe from the FBI anyway.

—*Army and Navy Register*

Gull of My Dreams

The poor cadet salutes the gull,
That model of dynamics;
Broad of wing, and sleek of hull,
Astute in his mechanics.

He never has to change his prop,
Nor ever lower flaps;
His tank is full when full his crop;
He has no need for maps.

For flying low or flying high,
His freedom's not impounded;
He passes wind tees coolly by,
A gull is never grounded.

If he should wish to glide or climb,
He moves no elevator;
Nor contemplates at any time
The ball-bank indicator.

No spins or skids or loops or stalls
Disturb his innocence;
He fears not winds, nor fogs, nor
squalls,
Nor flies by instruments.

Parachutes he may decry,
If wrecked, he'll never drown;
He'll never get from any guy
A check that's pointing down.

He never has to find a cone—
To him 'twould be absurd;
He leaves snap rolls and such alone;
This bird has got the word.

The things cadets are forced to learn
The gull will never vex;
To him the phrase a "normal tern"
Suggests of naught but sex.

A mighty pilot is the gull!
God gave him many things;
The right to fly—and more, I cull—
A pair of silver wings.

—A. E. MONTGOMERY

A Gunner's Vow

*I wish to be a pilot,
And you along with me.
But if we all were pilots,
Where would Naval Aviation be?*

*It takes GUTS to be a gunner,
To sit out in the tail
When the Shrieking Zeros are coming
And the slugs begin to wail.*

*The pilot's just a chauffeur,
It's his job to fly the plane,
But it's WE who do the fighting,
Though we may not get the fame.*

*If we all must be gunners,
Then let us make this bet:
We will be the best damn gunners
That have left this station yet.*

FLEET AIRCRAFT

VS-44 Develops Practical Gadgets

Squadron Consistently Trains and Improves

SCOUTING SQUADRON 44.—Because the accomplishments of naval air squadrons on Guadalcanal and carrier-based aircraft in the Pacific are so spectacular, the achievements of pilots in less active theaters of this war often are minimized. The work of these fliers frequently lacks glamour, adventure, and thrills, except for occasional contacts with submarines, but their job is just as necessary to the successful consummation of the war as knocking Jap Zeros out of the skies and bringing Jap ships out of the seas.

Scouting Squadron 44 is one of the units helping the Navy keep supply lanes open. This Squadron has been operating with OS2N-1 land and sea-planes in the Caribbean area since its commissioning last November 2.

Besides keeping submarines out of the area while covering shipping, the Squadron has conducted an intensive training program for pilots and enlisted men alike. An important phase of this program involved a schedule of joint plane-submarine exercises, in which the Squadron developed tactics which appeared most practicable for attacking submarines effectively in the clear waters of Caribbean. Other training activities have included the machine-gunning and glide bombing of land and water targets, practical navigation problems, range flying, homing, instrument flying, night flying, sleeve gunnery, and others. On the ground the Squadron has resorted to the Link Trainer, key and flash communications, and synthetic training in general.

Of Practical Value

Gadgets and practices developed by VS-44 which may be of practical value to other squadrons include the following:

1. As a holder for the M-2 signal pistol, a wooden plug was secured to

the fitting installed in the plane for a Very's pistol. Over this plug was placed an empty M-2 signal cartridge. This cartridge provides a secure mounting for the M-2 pistol.

2. All life rafts have been moved to the rear cockpit and suspended by straps to the turtle-back. The straps are unbuckled by means of a toggle, just behind the rear-seat man, which leads to the buckles. This provides a rapid means of breaking out the life raft for use in emergencies.

3. Cruise boxes were built when the Squadron first went into commission. The boxes were built so that they could be stacked with the lids opening forward and downward and used as accessible stowage spaces. At the advance base they have been used as desks, file cabinets, clothes lockers and general stowage.

4. Communication by voice presented its usual difficulties for several weeks, but by using the trailing antenna for distances exceeding five miles, and reeling out to a maximum indication on the antenna output meter (even though that maximum is very low), voice communications up to 200 miles have been successful.

5. The planes were painted solid white with nonspecular paint prior to moving to the present base. This camouflage has proved effective against the cumulous cloud formations which are characteristic of the area. Although the planes are easily distinguished from above, they are ideally disguised for convoy coverage and submarine search work.

6. When the supply of antenna "fish" was exhausted, the radiomen cut the veins off the tail section of a miniature bomb, drilled a hole through the

tail and secured the bomb to the antenna. This has proved satisfactory.

7. The Squadron found that in bombing its land submarine target many of the miniature bombs would not go off because of the fact that the impact of the soft ground was not sufficient to set off the cartridge. It was found that by filling the nose of the bombs with clay the number of duds was reduced to zero.

New Filter Evens Photographic Detail

Extends Use of Lens

VD SQUADRON 2, ATLANTIC FLEET.—A new "sunflower" filter, designed to extend the usefulness of extreme wide angle lenses in aerial cameras, has been used with success in preliminary operational tests conducted by the Atlantic Fleet's photographic squadron.

Heretofore the use of such lenses, which permit photographic coverage of a much wider area than lenses of the usual type, has been limited by their inability to provide uniform lighting of the film, with resulting over-exposure in the center and under-exposure on the edges of the picture. In such cases it has been necessary to restore detail in the laboratory by "dodging" or manipulating lights during the processing of the prints.

This work is eliminated by the new Metrogon filter, which is a yellow or "minus blue" type with a central "flower" in sunflower shape. This strong yellow central section, because of its "neutral density" effect, limits the amount of light reaching the center of the film while the spaces between the petals or rays provide a gradually increasing intensity of light toward the edges of the image on the film.

The result is that all detail is brought out evenly and the "hot spot" in the center is eliminated. The filter was tested at altitudes up to 15,000 feet with the wide angle six inch Metrogon lens used in making 9" x 9" pictures with the Navy K-17 mapping cameras.





THOUGH A PLANE USUALLY GROUNDLOOPS TO THE LEFT, THIS ONE SWERVED TO THE RIGHT, SENDING CRAFT OVER STARBOARD SIDE, THUS HITTING GUNS

PLUNGE FOLLOWS GROUND- LOOP

**Shoulder Harness
Prevents Injury
to Rescued Pilot**

THANKS to the alertness of a Navy photographer, the record of an instructive crash aboard a carrier has been preserved faithfully in pictures. The journey of this ill-fated F4F to its watery grave was the result of a groundloop on the deck of an ACV somewhere at sea. The pilot lost control on the take-off and spun into the groundloop. The plane then slid over the starboard side forward and struck the 40-mm. mount about 80 feet from the bow.

The case is unusual in that the pilot and plane slid to the starboard bow. In most cases groundloops spin to the

left, which would throw the plane over the port side. The pilot fortunately received only minor injuries, which has been attributed to the fact that he was wearing a shoulder harness.

Details of action are strikingly shown in the photographs. As the plane taxied stubbornly to the starboard side, trainers and other crewmen ducked for safety. Both the barrels and the blast shields on the muzzles of the guns were hit. The right wing of the craft was badly mutilated and the plane dove downward, striking the water with a great splash. It submerged quickly, the pilot escaping.



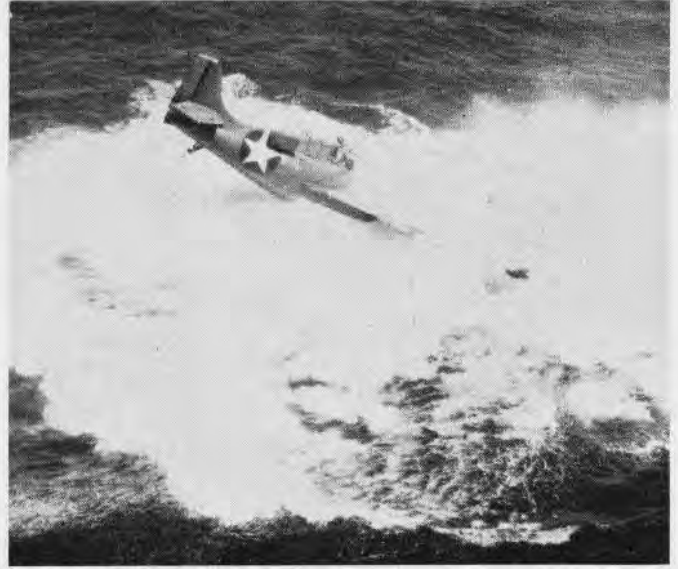
HOLDING HELMET, GUNNER DUCKS FOR SAFETY. NOTE DAMAGED WING



CREWMEN, RECOVERING POSITIONS, WATCH PLANE HEAD FOR DRINK



THE ENORMOUS SPLASH HIDES PILOT, PLANE, AND DAMAGED WING



PILOT PREPARES TO LEAVE THE DUNKED CRAFT AND SWIM FOR IT

PILOT ESCAPED NARROWLY AS PLANE QUICKLY SUBMERGED. PROPER USE OF SHOULDER HARNESS WAS CREDITED WITH PREVENTING SERIOUS INJURY



Rams, Downs Japanese Fighter

An American airplane knocked a Japanese fighter out of the skies in recent Guadalcanal fighting by ramming it in mid-air.

"A Jap and I," the naval pilot reported, "both continued in our head-on runs and delayed pull-outs so long we crashed in mid-air, my right wing

hitting both of his right wings head-on. Finding that my plane was still controllable, I turned and saw the Jap plane below me, apparently having trouble.

"I observed the Jap go off into a spin, and another pilot reported that he crashed. I proceeded to Henderson Field and landed. I found pieces of fabric (including the Rising Sun) on the leading edge of my plane."

Airplane Barriers in ACV's

The Bureau has recently arranged for the incorporation of power operation of airplane barriers in ACV's and CV22 Class aircraft carriers. Production of the necessary parts has been initiated, it is understood, and deliveries are expected within two months. The new installation will make the ACV barriers standard with those in the large CV's.

More on the Tow Bar

Continuing the discussion of the Tow Bar introduced in a recent issue of NEWS LETTER, Carrier Aircraft Service Unit Eight, Pacific Fleet offers for review a similar piece of equipment designed and built by their John W. Lewis, ACM. The new tail tow bar, illustrated on this page, has been used by CASU-8, VF-3 and other units for several months with outstanding results, its sponsors state. There were no breakdowns in spite of the fact that the number in operation were built of salvage material and that they utilized F4F-4 rear wheels.

Each unit that has been temporarily based with this CASU has requested permission to take several with them, to be used for both ship and shore based operations. Naturally, therefore, a strain has been placed upon available sources of salvage metal and the CASU-8 metal shop, as a result, virtually has been turned into a manufactory for the tow bars.

Unit 8 requests that other units of the aeronautical organization be familiarized with this bar so that it can be adapted to wider use, where desired.

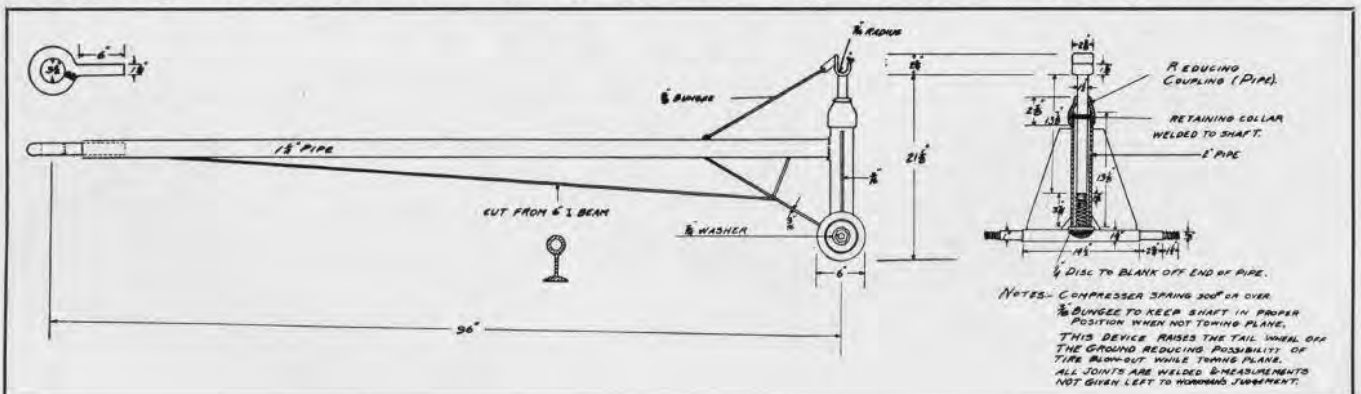
Bureau Says This tow bar, previously brought to the attention of Buaer, was regarded so highly that it



was used as a pattern for a new tail tow bar now being manufactured for the Navy.

The projected bar will have a 4-inch wheel (wider than bar being discussed), and this will make passage

easier over rough terrain. It will be of tubular construction, instead of I-Beam, thus lightening its weight. It will be made available by Buaer to all stations and squadrons servicing F4F and F6F airplanes.



TRAINING

Is Link the Answer?

News Letter Item Provokes Discussion

NAS, PENSACOLA.—The article entitled "The Missing Link" of the NEWS LETTER, January 15, 1943, has given rise to considerable discussion in the instrument squadron. Everyone agrees with the statement that all pilots should be able to fly on instruments. The statement that "The Link is the answer," is extremely controversial.

The Link Trainer was designed to fly by the 1-2-3 System, in which the turn needle is controlled by the rudder, the ball bank indicator by the ailerons, the airspeed indicator by the elevators and the altitude by the throttle. The Link was not designed to fly like an airplane and any pilot can testify that it does not fly like one. The student pilot in the Link is confused by the fact that he must learn an entirely new technique of using his stick, rudder, and throttle which bears little or no relation to the technique of piloting, which he has already learned. He is further confused by the fact that this new technique leaves him practically helpless when it comes to controlling large or high-speed aircraft.

Lost in Other Craft

For instance, if a pilot learns to control his turns by use of the rudder, he will be lost in a PBO, PBJ, or PV and many other similar aircraft, since in these aircraft, use of the rudder to stop a turn or vary the rate of turn is at best ineffective, at worst, dangerous. Many of the crashes of twin-engine aircraft from low altitudes following take-offs can be attributed (from the testimony of those who have lived through them) to the fact that the aircraft started to turn and the pilot attempted to stop the turn with the rudder, with the result that the airplane performed a nose-high slip into the ground. Again, recovery from a high-speed diving spiral, which is the cause of more fatal accidents in instrument flying than all other factors put together, can be quickly made only by leveling the

wings by a firm use of the ailerons irrespective of the position of the ball bank indicator.

Link's Use Limited

Perhaps the Link could be redesigned so that it would fly more like an airplane. Until then, the effective use of the Link must be confined to the teaching of general familiarity with the instruments and to the teaching of radio navigation.

If it is necessary to pick out something to be "the answer" to the problem of teaching instrument flying, it will be found in teaching students to fly the airplane on instruments exactly as they do on contact and in teaching them to interpret the instruments before them in terms of the attitude of the airplane. The answer is not in teaching the student pilot a technique in the Link which will not work in the air and which may lead him into danger in any but the slowest and most maneuverable aircraft.

Bureau Says

The Bureau concurs with the statements regarding instrument flight training. Attitude flying is the art of flying the airplane by reference to instruments and not as many suppose, the art of flying the instruments and disregarding the airplane.

A student's instrument flying proficiency is ordinarily directly proportional to his ability as a contact pilot. Pilots who are "naturals" in contact flying are also "naturals" in instrument flying. By the same token, pilots who are mechanical and do not have the ability to follow through smoothly in contact maneuvers, rarely make good instrument pilots.

Instrument Flying Textbook Soon Ready

Two textbooks have been designated by the Training Division for use in instrument flying instruction. The first of these, *Instrument Flight, Part One*, covers basic airwork and was prepared by the staff of the Instrument Flight

Instructors' School, Atlanta, Georgia.

For instruction in radio aids to navigation, a text by Colin H. McIntosh, published under the title, *Radio Navigation for Pilots* (McGraw-Hill), has been adopted. This volume deals with the general subjects of radio ranges and direction finding. Negotiations are under way to have a special Navy edition printed.

These texts have been stipulated by the Training Division inasmuch as they tend to standardize instrument training on the basis of using the full instrument panel, which includes all available operating instruments. They will replace all previous instrument flying textbooks used.

Squadron Metalsmiths Are Trained

Simulated Battle Conditions Impress Reality

NAS, JACKSONVILLE.—Planes riddled with bullet holes, punctured gas tanks, smashed bulkheads, and damaged fuselages are now playing a big role in the instruction of aviation metalsmith students at this station. The bullet holes are simulated and the tanks purposely punctured to give the men the type of jobs they will have under actual war conditions.

To train the men in every aspect of their squadron duties, the AM school has set aside an area in which there are airplanes of every type, needing every kind of repair from broken tubular construction to damaged float gear. Each student is equipped with a tool box containing simple hand tools, and is assigned a particular job to do. His work is carefully supervised and when the job is finished, it is checked and graded. After two weeks of experience the future Squadron Metalsmith has a good idea of what he will be expected to do under battle conditions.



Recognition Notes

Operations List: Aircraft and Surface Craft

A list of recommended aircraft and surface craft to be used in Recognition training is contained in the April 15 issue of the *Navy Bulletin*. The purpose of this list is to standardize and at the same time to simplify this subject. All activities are accordingly urged to be guided by the list.

Three-Dimensional Weather Maps Now Ready

Naval engineers recently completed a three-dimensional weather map, a device by which the changing course of weather not only is plotted on the ordinary two-dimensional weather map but also made visible by the use of glass slides on which the climatic factors existing thousands of feet above the ground are illustrated. Study of this new device will prepare air cadets to forecast from available surface maps what flying conditions may be expected aloft.

Everyone is familiar with the manner in which weather is depicted on ordinary weather maps. Curving lines known to aerologists as "isobars" connect points of equal pressure, and inspection of these lines reveals the low and high pressure areas.

In general, the ordinary weather map indicates temperature, humidity, cloud conditions, barometric pressure, wind velocity and direction, and whether the day is rainy or fair. That much knowledge of the weather is all the man on the street requires.

Two other factors, however, are of crucial importance to aviators: ceiling and visibility. The pilot flies where weather is made—in the atmosphere.

Aerology is an intricate science, but it is possible to diagram some of the factors for aviation cadets in such a way as to enable them to visualize the air masses and cloud activities above the ground.

Construction of Maps

Each three-dimensional weather map consists essentially of a flat base, 19 inches by 24 inches, on which is mounted an enlarged section of conditions typical of standard weather maps. At intervals along the map are mounted vertical cross sections of

Two advance copies are being sent to approximately 8,000 addressees. As changes become effective in this operational list, revised lists will appear in the *Navy Bulletin*.

Aircraft Recognition Booklet

The handbook *Aircraft Recognition*, a publication of the Training Division now in course of distribution, will enjoy considerably greater circulation among all ships and stations in the advance Joint Army-Navy *Recognition*

Pictorial Manual. This new and complete volume will reach its destinations during May.

Recognition Instructors and ACIO's

Air Combat Information Officers have access to a wealth of information which can be utilized to advantage in planning the presentation of material to students. Recognition instructors can add to their source material by maintaining contact with ACIO's.

glass, 10 inches high, on which are shown the locations and movements of cloud structure, air masses, and rain areas. Dimensions on the surface map are 800 miles by 1,000 miles; the altitude on the glass sections, 25,000 feet. The glass sections are easily removable for close inspection.

On the flat base, the ordinary weather map is plotted. Weather station data are included on the maps. These give data for wind direction and velocity, cloud types, and amount of cloud cover, present weather, and past weather. They also show temperature, humidity, barometric pressure, and barometric pressure tendency, or change in pressure during the past three hours.

On the glass plates held vertically above the base map, the weather in the atmosphere is illustrated by clouds and air masses in the Disney manner. The clouds are fluffy and white. Cold areas are shown in blue; warm areas, in pink or red.

Looking at the three-dimensional map, the student sees the masses of air as they might appear to a pilot in the air. Of course, he is not seeing an

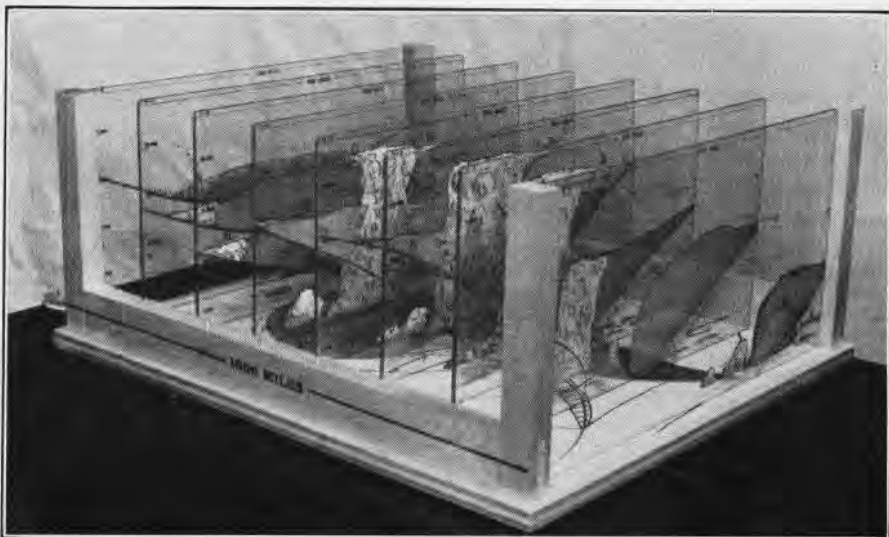
exact reproduction, because the scale on the upright plates has been greatly exaggerated in order to illustrate the aerological masses which a pilot meets in flight.

Models Aid Visualization

To help the student visualize the vertical structure of large cyclonic storms, three models illustrate three kinds of weather that he will most frequently encounter. Using the three-dimensional weather map, the student can familiarize himself with the characteristics of various cloud systems, with attendant precipitation. He then will be able to determine more easily from available surface maps the type of flying conditions that he may expect at various altitudes.

Base maps are printed on plastic-coated heavy paper which can be washed with soap and water when soiled. Both the upright plates and the slide slots are numbered so that the model may be assembled quickly.

The three-dimensional weather map, in sets of three, already has been distributed to aerology schools and naval air stations.



NEW TYPE MAP SHOWS WEATHER CONDITIONS BOTH ON GROUND AND THOUSANDS OF FEET UP

Glider Training Program

MCAS, MARINE GLIDER GROUP 71, EAGLE MOUNTAIN LAKE.—The time is rapidly approaching when the Glider Training Program can swing into action. The main runway on the field is completed and the other runways are now about 75 percent completed. In preparation for this, the big Waco 15-passenger gliders are being assembled and some "Hotspur" (English) gliders are being prepared for service test.

Experimental work in the use of gliders for various purposes is continuing with normal results. Those interested in gliders become enthusiastic after each new accomplishment, while the others are busily engaged in writing swan songs after each new disappointment.

More News on Training Films

With the reminder that films are not to be ordered unless they apply to a specific activity, the Training Division in a series of communications is making an intensified effort to keep all activities informed of films and slides in various series, where they have been distributed and where they may be borrowed. A few of the classifications included in the communications follow in condensed form.

FIGHTER COMBAT TRAINING FILMS.—*The Illuminated Sight in Fixed Gunnery* is the first film to be completed in a series of ten being produced on fighter combat tactics. It is a 22-minute motion picture. Live photography and animation is used to explain how the illuminated sight operates to assist the pilot-gunner in coordinating target range, speed, angle, and other variables.

INSTRUMENT FLIGHT CONTROL SERIES.—The Instrument Flight Control Slide Films are designed for teaching instrument flight control and for refresher courses for all pilots—especially ferry pilots. They have been found particularly effective when used to supplement the Link Trainer syllabus. The series will consist of 22 slide films with voice on records. The first 10 of these have been completed and are being distributed to all NAC, NAS, and Squadrons. Film designation: SN-1059a-j.

NAVY ASHORE INDOCTRINATION.—A new motion picture *Navy Ashore* has been produced in March-of-Time style to explain the various functions of the Bureaus of the United States Navy. This picture is being designated for Pre-Flight School showing and officers' indoctrination. Cadets now in Primary and Intermediate Training at Pensacola and Corpus Christi will be shown



"Peter Piper picked a peck of pickled peppers—Now you fan me for a while!"

the film and others should see it at Pre-Flight School.

JAP ZERO AND QUIZCRAFT FILMS.—A new recognition film made by the United States Army on the Jap Zero has been highly praised. Another type of recognition film, the British Quizcraft series, is also felt to be valuable in Recognition training. Both motion pictures are being distributed to general listing with the feeling that they may be shown repeatedly and duplicated in different training stages, and still serve a valuable purpose. Film Designation: Jap Zero MA-2300; Quizcraft MB-1432 a, b, c, d, e.

THE NAZIS STRIKE.—The Morale picture *The Nazis Strike*, has recently been screened. It is a powerful document telling the story of German aggression from the time troops entered the Rhineland up to the closing days of the conquest of Poland. The audience reaction seemed to indicate that it is even better than the first of the Why We Fight series, *A Prelude to War*. Film Designation: MA-1719b.

Special Training Course Given Line Officers

12 Months' Study and Exams Provided

NAS, CORPUS CHRISTI—Naval Air Training Center, Corpus Christi, Texas, for the past ten months has been conducting a special training course for line officers who had had less than two years of active commissioned duty or less than six months at sea. The



officers are given twelve months to complete the course which includes study and monthly examinations on the subjects of Aeronautics, Navy Regulations, Military Law, Seamanship, Gunnery, and Aerology.

The percentage of failures in the course has averaged only three percent or about twenty out of six hundred officers. Upon successful completion of the course the Commandant writes a letter to the officer noting the fact of completion and congratulating him on his interest in his profession. This letter is made a part of the next Fitness Report that is sent to the Department.

Time's a-Wastin'

Here's a story from the Navy's Pre-Flight School at Iowa City. A cadet who was running on the track stumbled and hit his head against the rail. As he lay on the ground another cadet ran past. He looked down at the fallen comrade and shouted, "Well, don't just lie there. Do some push-ups or something."

Fast-Moving Target Set Up

Runs Over Hill and Dale

NAS, CORPUS CHRISTI—Taking advantage of work already done by the Army at Moore Field, a fast-moving gun target which travels seventeen feet per second has been set up in the Synthetic Training Department. It runs on a kidney-shaped track that has hills and valleys, thus bringing into play vertical as well as lateral sweeps for aiming the free gun.

Pollywog to Shellback

CADET SELECTION BOARD, CHICAGO.—The first young man to join a "Chicago's Own" Naval Aviation squadron recently has had a once-in-a-lifetime experience. He is an ensign on active duty in the Pacific and co-pilot of a large plane. A couple of weeks ago he discovered his passengers on a routine assignment were the Secretary of the Navy and Admiral Chester Nimitz. On crossing the equator in the course of the flight, the Secretary and the Admiral rigged up the necessary equipment and initiated our young ensign into the order of the sons of Neptune in the traditional seagoing ceremony.



THE F4U, ALL-AROUND STURDY FIGHTER, HAS HIGH TOP SPEED, GOOD RATE OF CLIMB, EXCELLENT DIVING CHARACTERISTICS AND GOOD AILERON CONTROL

The Corsairs Are Coming

Buair Awaits Further Test of F4U's Mettle in the Crucible of Conflict. NAS San Diego Suggests New Starting Procedure

FROM the assembly lines of three major aircraft manufacturers, the *Corsair*, the Navy's latest fighter, is starting to roll at a faster clip. The *Corsair* was originally designed as the F4U-1 by Chance Vought Division of United Aircraft, by whom it is being manufactured at Stratford, Conn. A few *Corsairs*, as FG1's, have already been wheeled out of the Goodyear plant at Akron. They will also be produced, as F3A-1's, by Brewster, now operating with Henry

J. Kaiser, of Liberty Ship fame, as its chairman.

NEWS LETTER'S picture section reveals the *Corsair* on the line at the Chance Vought plant, in various stages of fabrication. Old-timers in plants are adept in the work of assembling planes, and switch-overs from other plants and newcomers, men and women alike, acquire a working technical knowledge in a short while, gradually developing speed and skill.

New Starting Procedure Suggested by NAS, San Diego

VF-12 at San Diego has experimented with starting the F4U-1 and suggests certain changes in procedure which are based upon its experience with the new method. San Diego's suggestions are listed below, and are followed by Buaer's comment:

I.

1. Make sure gas is on reserve.
2. Throttle full forward—Mixture control full aft (in cut-off).
3. All switches off—Pull prop through 3 or 4 Revs.

II.

1. Throttle full aft—Mixture control full aft (in cut-off).
2. Battery and Instrument switches on.
3. Fuel pump flicked with left hand ($\frac{1}{2}$ second duration), while priming with right, to keep fuel pressure up to about 5 pounds.
4. Engine cold prime 12 quick shots. Engine hot prime 3-4 quick shots.

III.

1. Throttle just forward of red line—Mixture forward about 1 inch.
2. All clear. Ignition on.
3. Flip fuel pump on and off ($\frac{1}{2}$ second duration) once, actuating starter immediately, holding starter lever back to keep booster engaged until engine is running well.
4. Ease mixture control forward to a point about $\frac{1}{2}$ inch aft of auto lean until engine runs smoothly. Do not push mixture control past auto lean until engine has been running well for at least 30 seconds or backfire may result especially if engine has been loaded up.

IV.

1. Jockeying mixture control about $\frac{1}{4}$ inch each way, if engine does not fire, may cause engine to catch.

V.

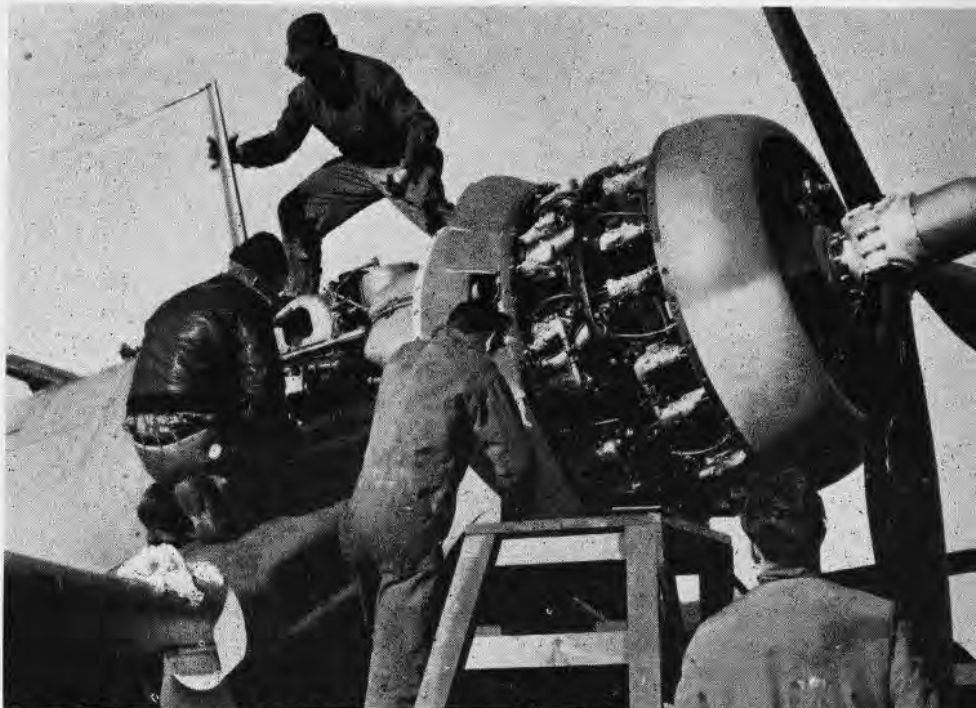
1. If engine catches fire turn ignition switch off. Battery and instrument switches on. Do not touch throttle or mixture control if this occurs.

VI.

1. On third shell and every third shell thereafter, pull prop through again and prime two flicks. If engine did not fire on previous shell, do not prime.



CLIQUE FASTENERS THAT TEMPORARILY HOLD RIB STIFFENERS ARE BEING REPLACED BY RIVETS



SERVICE PERSONNEL MAKE THE FINAL CHECK OF THE PLANE BEFORE ITS FLY-AWAY TO THE NAVY
WOMEN ARE ASSEMBLING OIL TANKS AND AIR DUCTS ON THE CENTER SECTION OF THE NEW PLANE





SERVICE CHECK-UP ON THE WING FOLDING MECHANISM IS BEING MADE BEFORE TEST FLIGHT
GIRL INSTALLS RADIO EQUIPMENT IN AFTER SECTION, WHILE THE MAN TESTS RIGIDITY OF FIN



Bureau Says

The recommended priming procedure for model F4U-1 airplanes is to hold primer on steady for 3 to 5 seconds at 15 pounds pressure for a cold engine and 1 to 2 seconds for a warm engine. This priming should be done immediately prior to firing the cartridge.

The higher fuel pressure is preferred because the priming jets do not give satisfactory atomization at low fuel pressures. It is preferred to hold the primer on steady rather than flick it on and off, since the fuel pressure drops below the value for satisfactory atomization every time the primer is cut off.

The engine may be started with mixture control in either *Idle Cut-Off* or *Auto Rich*. If started in the former position, the auxiliary fuel pump may be on when firing the cartridge, but the mixture control should be moved to *Auto Rich* as soon as engine fires. If the engine does not continue to run, however, the mixture control should be returned immediately to *Idle Cut-Off* in order to prevent flooding. When starting in *Auto Rich* position, the mixture control should be left in *Idle Cut-Off* until immediately prior to firing the cartridge.

The auxiliary fuel pump, used for priming, should be switched off before the mixture control is placed in *Auto Rich*. It may be left off until the engine is running smoothly or turned on as soon as the engine fires. However, when the engine is not running, the mixture control should never be moved out of the *Idle Cut-Off* position while the auxiliary fuel pump is on.

Jockeying the mixture control back and forth while the engine is running may be of assistance when starting in cold weather, but it should be done with care. The distance the mixture control is moved back and forth is of minor importance as long as it is moved in and out of *Idle Cut-Off*, since the amount of fuel permitted to flow at low engine speeds is practically independent of mixture control position.

¶The saddest case of this war is the sailor who faithfully wrote his girl twice a day, and after 4 months got a notice that she'd married the postman.

Notes on Instrument Flying

Qualifications and Clearances, Topics of Letter Reprinted

The attention of all flying personnel is directed to SecNav Ltr. to all ships and stations, Op-40-A-KB, SO 11231018, Serial 209040, dated 23 November 1942, incorporated in the Navy Department Bulletin of 1 December 1942 on the subjects of Instrument Flying Qualifications, Instrument Flight Clearances, Civil Airways Flying. Paragraphs 6 and 8 are quoted below:

"6. An instrument qualification certificate, BuAer Form 4120 for naval pilots and BuAer Form 4120-A for Marine Corps pilots, will be issued by commanding officers to pilots who have demonstrated their proficiency in instrument flying by passing the tests outlined in paragraph 5 above. This certificate will state the general type for which qualified as (a) single-engine planes, (b) multi-engine landplanes, or (c) multi-engine seaplanes. Requalification by completing the tests outlined in paragraph 5 above is required at least once during each fiscal year. *Commanding officers will suspend and reclaim the certificates of those pilots who fail during any 3 successive months to maintain a monthly average of instrument flight time of 1 hour for single-engine pilots and 2½ hours for multi-engine pilots.* These certificates will not be reissued until the pilot has again demonstrated his instrument-flying proficiency by passing the tests prescribed in paragraph 5 above.

"8. Instrument flight clearances will be governed by the following considerations:

"(a) Qualified instrument pilots may proceed on an instrument flight for an airport having contact weather conditions or for an airport at which instrument conditions exist, or are forecast, when such instrument conditions result from below-minimum visibility only (such as smoke or haze). *Pilots may not proceed on an instrument flight for an airport at which instrument conditions exist, or are forecast, when such instrument conditions result from any condition other than below-minimum visibility, as specified above, except as modified by commanding officers for over the airways flights of multi-engine airplanes in the case of especially qualified*

pilots. Pilots holding such a waiver must have been successfully checked for instrument qualifications within the past quarter, as set forth in paragraph 5 above, or, in lieu thereof, must have flown for not less than 5 hours under actual instrument conditions during this period. In no case shall pilots flying the airways clear for an airport at which instrument conditions exist, or are forecast, unless an alternate airport, qualifying as such under reference (a), is available within the remaining safe range of the aircraft at the expected time of arrival at the point of destination.

"(b) Pilots clearing for instrument flights, as provided above, will have fulfilled, additionally, the following requirements:

1. Have at least 750 hours' total naval, Marine Corps, Coast Guard, or commercial flying experience.
2. Have at least 25 hours' experience within the previous 3 months in the model of airplane for which clearance is desired.
3. Have a currently valid instrument qualification certificate (N. Aero 4120 or 4120-A).
4. Have landed within the past 12 months at the airport for which clearance is desired, if instrument conditions prevail thereat.
5. Have restudied the flying and instrument landing rules of the airport for which clearance is desired and the arrangement of radio facilities along the route, together with current and pertinent 'Notices to Airmen.'
6. Have an airplane equipped with two-way radio and the instruments necessary to follow the procedure required by the Civil Air Regulations."

It should be noted that the above prohibits a local flight from an airport where instrument conditions exist.

Training Carrier Sails Again

U. S. S. *Wolverine*.—Without fanfare, the Great Lakes training carrier U. S. S. *Wolverine* quietly slipped out of her winter berth at Navy Pier in March and is once again out in the Lake ready to resume qualification operations. The 4,000th landing was made aboard, a record for 4 months of operations.

The *Wolverine* is anxiously awaiting her sister ship, the U. S. S. *Sable*, to join her in Buffalo. Ice conditions will probably delay her arrival until the 1st of May. The two training carriers, operating full time here on the Lakes, should be able to relieve East and West Coast ACV's for combat duty.

This Clears Up Everything

MEMORANDUM

From: _____

To: _____

Subject: _____

References:

(a) Memo. Aer-A-MAO'D, A7-3 (1), 17547, of 5 February 1943.

(b) Memo Aer-A-CEO, A7-3 (1), A6-5 (4), 124383 of 5 September 1942.

1. Reference (a) failed to cancel reference (b).

2. Reference (b) is cancelled.

★ ★ ★

"This is apparent when one considers the fact that, in each case, one of the conditions of equilibrium is automatically satisfied (either summation of forces along the line along which none of the restraints has a component or summation of moments about the line about which none of the restraints produces moment), or cannot be satisfied, leaving only five independent conditions of equilibrium to be satisfied by the six restraints."

—From a Bureau training text.

★ ★ ★

"The Order issued at Naval Air Station, Jacksonville, Florida (reference (f)), mentioned by you in reference (d), does not comply with the spirit of the Commandant's Order, Reference (b), (and as now amended in reference (c) and directions have been issued to have the Naval Air Station Order revised. In this connection, see reference (g) (enclosure (B)), Reference (g), together with reference (c), should clear up the misunderstanding at the Naval Air Station, Jacksonville. Our letter to Naval Air Station, Jacksonville (reference (g) and your letter (reference (d))) were written the same day, and evidently crossed in the mail."

—From a naval officer's letter.

¶Will you repeat that, please?—Ed.

★ ★ ★

The following pithy sentence was received from a Marine Glider Group:

"In the interest of brevity and the elimination of useless work, this organization reports that it has no news items suitable for submission at this time."

¶No news is good news, we hope?—Ed.

USE YOUR CHECK-OFF LIST



Theory Makes Better Pilots

Improves Understanding of Flight

NRAB, ANACOSTIA.—The most important thing an Aviation Cadet must learn is to fly skillfully. The only place he can learn is in the air, with the help of a competent instructor. However, knowing why the plane is airborne in flight, and what to expect under any given set of circumstances, can be absorbed to some extent on the ground.

While it is assumed by many cadets and some pilots that such courses as theory of flight can be dispensed with in wartime, every training program (English, Canadian, etc.) that has tried to drop it from the Ground School syllabus has experienced a higher accident rate. The fact still remains, as borne out by statistical evidence, that instantaneous judgment so necessary to flying improves with the pilot's thorough understanding of the

plane. He need not be a theorist, but the fundamentals of how and why an airplane flies must be part of himself.

Latin-American Officers In Training

Mexico Sends Quota

NAS, CORPUS CHRISTI—Mexico joined many other Latin-American countries in sending groups of officers to the Naval Air Training Center, Corpus Christi, for training, when seven officers of the Mexican Army Air Corps and thirteen officer cadets arrived early in February. Both officers and cadets will remain here for approximately eight months, and they started out making good impressions by desiring to purchase United States War Bonds. Other Latin-American groups here for training are: Argentina, Brazil, Colombia, Chile, Ecuador, Peru, Uruguay, and Cuba.

Of the ten Peruvian officers who completed training at the Naval Air Training Center, Corpus Christi, early

in February, five have ferried aircraft back to Peru. Word was received of their safe arrival while the other five were awaiting orders.

New Station Commissioned

NAS, OTTUMWA.—This station, out where the tall corn grows, is now operating in full swing following its commissioning ceremonies recently. All planes of the station were in operation on the day following the ceremonies, new aviation cadets logging 100 hours' flying time. The station has a complement of 617 officers and enlisted men.

Moderate Speed

NAS, GROSSE ILE, MICH.—A new ground school officer was calculating the speed of a certain plane overhead. After a moment he came to the conclusion that it was traveling at the rate of 780 miles per hour. A British cadet quickly piped up: "One of your American planes, no doubt, sir."

What's Wrong With This Picture?

How far would you go before the gremlins got you—if this is what you saw on *your* instrument panel? For the benefit of all Dilberts, answer is on page 32.



SHORE STATIONS

Retain Manual Arming System?

Bureau Answers Query Based on British Experience

NAS, PENSACOLA.—After reading January 15, 1943, issue of NEWS LETTER one officer who has served with the British offers the following comments:

"It was noted under 'Armament' that there is an intention of doing away with the manual arming system. The British employed only electrical arming and release on their early PBV planes. However, they reported several instances where the electrical system failed and where manual systems would have resulted in a kill.

"Would it not be better to retain an emergency manual arming system with perhaps an unsecured end in bomber's compartment with plenty of slack such that a long positive pull would be required for arming? The objectionable tension on the manual system caused by wing movement or other inadvertent movements of arming cables would thus be prevented."

Bureau Says

Electrical arming systems in present-day airplanes are much improved over those systems used with the early British Catalinas. It is expected that their operation will be as nearly completely satisfactory as it is possible to attain. The presence of a manual arming system would do little good to a bomber who discovers that his electrical arming system is inoperative; the bombs must be dropped and strike the water and prove to be duds before the failure of the arming system could be determined. In this case, how would the manual arming system help out?

Aerology as a Life Saver

Auxiliary Tasks Speed Search

NAS, BERMUDA.—The Aerology Department has been doing an excellent job of forecasting weather for aircraft, ships, and even submarines. It has also been called upon to furnish information on wind direction and velocity

in ocean areas for the purpose of determining locations and positions of life rafts and small boats known to be drifting in those areas.

In one instance, Aerology information made it possible for a patrol plane to locate a small boat without any extended search although the boat had been adrift for 3 days. It had been sighted, then lost because of bad weather. For the next 3 days the weather was so bad that it was impossible to fly. On the fourth day planes took off in search of the small boat and, with the information given by Aerology, flew right to it. Similar searches have been conducted for survivors, using an oil stick for a starting point.

"Reading Room" Exploited

Magazine Racks Strategically Placed Obstruct Traffic

NAS, SANFORD.—The traditional graveyard for Sears, Roebuck catalogues and the oldest reading room known to man has at last found its place in the training effort.

The great possibilities of this time-honored sanctuary were realized by a bright young officer in VB2-1, NAS, Sanford, who had been confronted with trying to get the pilots in the squadron to read certain technical material on a voluntary basis. He had been putting his material on the reading tables in the ready room, but it always seemed that the pilots would rather rest their minds with lighter stuff.

The first realization that he had hit upon this great idea came during rush hour one morning. Loud oaths were issuing from the sanctuary and a long and angry queue was forming outside. Investigating this seemingly demoralizing situation, it was found

that this B. Y. O. had had some magazine racks strategically placed, well stacked with his reading matter, and it was being devoured from cover to cover.

If the powers that be can see their way clear, installation will be requested of additional plumbing facilities in the hangar, marked "Urgent—vital war material."

It's 'The Virgin Squeal'

Going to press for the first time is a new weekly newspaper, published locally by Navy men stationed at St. Thomas, Virgin Islands. Preparation for news stories and gossip columns was well under way when the editors suddenly realized their publication had no name.

That problem didn't bother them long. A suggestion from a sailor on the editorial staff was immediately accepted over all others.

New name: *The Virgin Squeal*.

NAS, Patuxent is Commissioned

Becomes East Coast Terminal for Naval Air Transport Service

A new Naval Air Station, Patuxent, situated on a 6,500-acre tract at Cedar Point, Md., 60 airline miles southeast of Washington, D. C., was commissioned recently.

Patuxent (*Pa-tux'ent*) will be one of the finest and largest Navy aviation establishments in the East when construction work is completed. Facilities for both land and seaplanes have been installed, while docks also have been constructed for vessels which will handle freight in connection with activities of the air transport unit.

Patuxent will combine the flying and operating aspects of experimental work previously conducted at Anacostia, Norfolk, and NAF, Philadelphia. It will serve also as the East Coast terminal for Naval Air Transport Service, now located at Norfolk. The station will have several thousand officers and men.

USE YOUR CHECK-OFF LIST



Portable Jig Developed

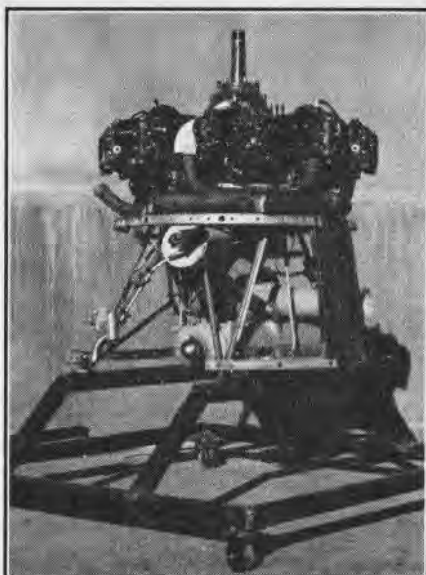
Simplifies Assembling Engines on Mounts

NAS, LOS ALAMITOS.—The A & R Department of this station has developed a portable jig for assembling engines on their mounts, which has cut by at least fifty percent the time a plane is away from the flight line for engine changes. The time is saved by securing the engine to its mount and then attaching the engine and mount as a single unit to the plane's firewall.

This is a much simpler operation than the old system of attaching the engine to the mount while the mount was secured to the firewall. Under the new system when a plane comes in for an engine change its mount and motor are both removed. An already assembled mount and engine wait on the jig, which is then wheeled over to the plane. The new unit is quickly and easily attached to the firewall and the plane is ready to go back to the line. The shift now takes only about two hours.

Bureau Says

The functions of this portable jig are now accomplished by the quick-change engine stand which has been furnished to various Naval Air Stations by BuAer (Contract NXS-



PORTABLE JIG TO ASSEMBLE ENGINE ON MOUNT

12014) or by the airplane manufacturer, as part of the quick-change engine unit.

No advantage can be seen for this jig over the quick-change stand with the possible exception of the reduced size of the jig, which is more in line with the size of the engine shown in photographs than the heavier and larger quick-change stand. An advantage of the quick-change stand over this jig is that the mount and engine are held in the horizontal (flight) position, which should facilitate the transfer to the plane and the work on the engine.

More on Life Rafts

NAS, JACKSONVILLE.—Should a definite policy be set up for distributing and maintaining life jackets and rafts? The answer to this question may be contained in the following recommendations which are based upon the experience of the life raft and jacket officer of the Naval Air Station at Jacksonville.

The organization to provide distribution, care, and maintenance of jackets should depend on the size of the squadron and type of flying. However, any squadron will require the basic organization shown below.

FUNCTION	PROVIDED FOR BY
Direction.....	Officer in Charge.
Distribution.....	Parachute Room (Life Jackets). Line Chiefs and raft loft (Life Rafts).
Instruction in Use.....	Typed or Mimeographed notices supplemented by Verbal Instructions and demonstrations.
Maintenance.....	Engineering Chief and one or more enlisted men, part or full time.

(4) Inflation pump, if a large number of rafts are to be handled.

(5) Spare parts, replacement kit, talcum powder, cold patching rubber cement, extra fabric and patches.

(6) Extra bottles for rafts.

(7) Spare springs, releases, rubbers, and extra CO₂ bottles for life jackets.

(8) Bulletin on Naval Aero Specifications, Overhaul of Life Rafts—Process. P. O. 23a, 12 June 1942, superseding P. O. 23-13, September 1934, Technical Note 1-43, 6 January 43, One Man Parachute Type Life Raft, Packing, Operation, Inspection, and Maintenance of.

The following suggestions are also made:

(1) Send two or more men from the squadron to the nearest A & R shop for 2 days to receive instructions in maintaining the jackets and rafts.

(2) Provide all minor maintenance at the individual squadron where practicable. Inspection, small patches, repacking.

(3) When a jacket or raft is beyond repair at the squadron, supply should immediately issue a replacement for the one turned in. The current method of returning the same jacket or raft to the squadron after repairs is not satisfactory. The squadron either has to keep extra rafts and jackets on hand or will be short for a considerable period. In many instances the raft or jacket will not be returned. The same situation applies to the CO₂ life raft bottles sent in for refill. The current method results in rush orders being given to A & R which only upsets A & R's scheduling and operations. If a sufficient extra supply were kept on hand at supply to be issued immediately when defective rafts or life jackets were turned in or bottles returned for refilling, the current difficulties could be eliminated.

(4) The bureau should issue complete instructions on the maintenance and handling of life rafts and jackets. A single manual providing instructions for all types of floatation equipment would be particularly useful. Items of interest include—stowage, use, inspection periods, inspection methods, repair methods, parts lists, and repair equipment list.

(5) The bureau should investigate the current requirement of holding the CO₂ bottles within one-hundredth of a pound within the maximum and

minimum. This requirement is possibly too stringent. If one ounce was permitted ordinary post office scales can be used for checking the bottles and holdover delays at A & R eliminated.

(6) A Rudum should be issued on the Type D cable type bottle. The head on this bottle is easily dented, possibly preventing operation. The shielded cable breaks very readily. The raft fabric is in some instances punctured by the shielded cable.

(7) All rafts should be checked when first received by a squadron and the bottles weighed. This is a necessary precaution to check on damage at the factory in shipment or sabotage.

Building Housing Units

USMCAS, MOJAVE, CALIF.—Progress is being made in setting up the various shops of the A & R Dept. at this Marine Corps Air Station. Some

difficulty in obtaining necessary materials has been encountered, but it is hoped that it will soon be overcome.

Another type of building is expected to be under way soon when the proposed housing units to accommodate civilian personnel of the station enter the construction stage.

Island Welders in Building Feat

Project Wins Coveted "E"

NAS, BERMUDA.—The feat of turning two small islands into a first class air station has brought the Army-Navy "E" award to a team of contractors in Bermuda. Two years ago, NAS Bermuda seemed an impossibility because of the vast filling-in required and because this area is so undermined by caves. The caves had to be filled in. Numerous piles had to be sunk deep down to form strong bedding for the

structures. Dredging was needed to deepen the channel and suck the bottom up to enlarge the island and form a causeway linking the station to the mainland. It took a year to complete that phase of the work alone. The contracting team was McGraw & Co. and Purdy-Henderson.

A year ago the air station was just a hangar, a mess hall, two barracks and a sprinkling of excavations, surrounded by a field of thick and sticky mud. The awarding of the "E" has meant the passing of a pioneering stage, departure of the contractors, swan-song of the big "cats" and steamshovels working noisily all night. A Construction Battalion is here to pick up where the contractors left off. It will pave the roads, round off the rough edges and give NAS Bermuda the touches that will change it from a new station to one that will settle down and busy itself at becoming established.

Ready Weather Map Devised

NAS, ALAMEDA.—This station has devised a simple ready weather reference map that has aroused considerable interest with many visitors who have seen it.

Regional sectional maps (scale 1 inch equals 16 miles) were cut, matched, and mounted on a sheet-metal background. The mounting of the maps was done by a paperhanger so that the finished job has all meridians carefully matched, and the map is free from wrinkles.

The board is 5'6" x 9', which comprises a section of the United States north and south from the Mexican border to Seattle, and east to Kansas City. The call letters of all the weather-reporting stations have been put on the board in 1/2-inch letters. In addition, the operating areas themselves have been blocked out and the weather indicated on these. This includes gunnery areas, bombing areas, and auxiliary air facilities. To indicate the weather, celluloid letters that have a small magnet in them are used. These letters are 5/8 of an inch high by 1/2 of an inch across.

A red "X" is used to indicate no flying conditions, a green "N" for instrument weather, and a white "C" for contact conditions. These letters are placed over the reporting stations ac-

ording to the type of weather reported. The weather data is kept current by Aerology on hourly sequence, in addition to any special reports. A form is kept on the corner of the map upon which is written the last time the weather was entered on the map and by whom. The celluloid letters are called "Quixet, Magnetic," and are manufactured by Hamilton Dwight Co., New York City, and are relatively inexpensive.

The map is placed in front of the flight desk where weather data is available to all pilots making out a flight clearance, as well as to all flight desk personnel.

Experience has proven that this map is quite as successful as more complicated installations with lights requiring special wiring and other complicated mechanical arrangements. (See *Weather Board Man*, NEWS LETTER, April 15, 1943.)



MAP IS PLACED IN FRONT OF FLIGHT DESK WHERE IT IS EASILY ACCESSIBLE TO ALL PILOTS

TECHNICALLY SPEAKING

New Device Releases Tow Sleeves

Loss of Equipment Reduced

NAS, CORPUS CHRISTI.—A new method of releasing tow sleeves, which is expected to decrease the number of sleeves lost in the sea, has been devised by an ordnanceman in the Gunnery Department of Squadron VN17D8 (VO-VCS) at this station.

Inexperienced cadets on their first tow-hop releases often had trouble finding the release toggle which was installed down among the flare releases and other gadgets on the starboard side of the pilot's seat. Cadets have been known to pull everything except the correct toggle and finally have to land in the bay with the sleeve still streaming behind.

The new device is made from twin charging handles for wing guns, found among miscellaneous gear in the ordnance shack. These were bracketed together and installed on the rear mounting post of the fixed gun. With the toggles now in plain view, there should be no recurrence of the old uncertainty. And the days when tow planes circled the landing area four or five times while a Dilbert pulled and tugged on anything handy and a tow pilot swore—they days is gone forever. "We hope!" adds the station.

The Following Shows the Number and Date of Issue of the Last Service and Obsolete Airplane Bulletins and Changes (Contract Changes Are Not Recorded)

AIRPLANE	BULLETIN	DATE	CHANGE	DATE	AIRPLANE	BULLETIN	DATE	CHANGE	DATE
BD-1	9	9-19-42	13	1-30-43	PBY-3	82	10-17-42	127	3-1-43
BD-2	2	10-2-42	16	3-6-43	PBY-4	56	6-9-42	94	3-1-43
BT-1	27	4-28-42	77	3-2-43	PBY-5	27	1-22-43	110	3-20-43
F2A-1	8	1-8-42	39	10-15-42	PBY-5A	33	1-23-43	102	3-9-43
F2A-2	20	1-14-43	58	10-15-42	PBY-5B	4	1-22-43	14	2-9-43
F2A-2P	8	1-14-43	20	10-15-42	PBY-5C	1	1-10-42	36	1-23-43
F2A-3	24	1-14-43	56	10-15-42	PBY-5D	1	11-15-42	36	3-18-43
F2A-3P	17	8-20-42	46	10-15-42	PBY-5E	0		29	3-18-43
F3F-1	58	12-11-42	70	6-22-42	PBY-5F	10	1-29-43	17	3-11-43
F3F-2	46	12-11-42	48	6-22-42	PBY-5G	3	5-23-41	21	9-1-42
F3F-3	23	12-11-42	28	6-22-42	PBY-5H	3	5-23-41	22	9-1-42
F4F-3	35	2-26-43	122	2-19-43	PBY-5I	0		22	9-1-42
F4F-3A	8	2-26-43	103	2-19-43	PBY-5J	7	3-23-43	11	12-22-42
F4F-4	25	2-26-43	78	2-17-43	PBY-5K	4	1-4-43	2	11-2-42
F4F-7	5	2-26-43	28	2-17-43	PBY-5L	6	2-22-43	8	3-6-43
FM-1	5	2-26-43	17	2-19-43	PBY-5M	3	2-22-43	0	
FAU-1	7	2-6-43	25	3-18-43	PBY-5N	7	8-24-42	21	2-3-43
GB-1	13	2-5-43	12	2-5-43	PBY-5O	7	8-27-42	17	2-3-43
GB-2	5	2-5-43	7	1-22-43	PBY-5P	9	8-24-42	17	11-18-42
GH-1	5	3-6-43	3	3-6-43	PBY-5Q	2	8-24-42	5	2-3-43
J2F-1	38	7-27-42	55	1-21-43	PBY-5R	1	1-8-43	1	2-3-43
J2F-2	19	9-11-42	36	1-21-43	PBY-5S	68	2-26-42	122	2-27-43
J2F-2A	12	9-11-42	37	1-21-43	PBY-5T	52	2-24-42	114	2-27-43
J2F-3	13	9-11-42	26	1-21-43	PBY-5U	45	11-10-42	93	2-3-43
J2F-4	8	9-11-42	19	1-21-43	PBY-5V	30	11-10-42	53	2-3-43
J2F-5	9	1-2-43	12	1-21-43	PBY-5W	47	11-10-42	100	2-3-43
JRB-1	10	1-13-43	10	2-17-43	PBY-5X	33	11-10-42	63	2-3-43
JRB-2	9	1-13-43	11	2-17-43	PBY-5Y	61	3-18-43	106	3-11-43
JRF-1	8	7-23-42	7	9-25-42	PBY-5Z	48	3-18-43	88	3-11-43
JRF-1A	8	7-23-42	8	9-25-42	PBY-6A	8	3-18-43	9	2-10-43
JRF-4	4	7-23-42	5	9-25-42	PBY-6B	2	3-18-43	7	9-25-42
JRF-5	4	7-23-42	3	9-25-42	PBY-6C	3	3-18-43	1	2-12-43
JRS-1	21	6-18-41	55	1-7-43	PBY-6D	0		2	1-4-43
JR2S-2	1	7-1-42	0		PBY-6E	61	11-19-42	139	11-4-42
N3N-1	32	11-5-42	76	2-3-43	PBY-6F	44	11-19-42	104	11-4-42
N3N-3	18	11-5-42	36	2-3-43	PBY-6G	25	11-19-42	42	11-4-42
NJ-1	13	8-19-42	17	3-20-43	PBY-6H	1	11-19-42	9	1-28-43
NP-1	13	9-31-42	16	12-26-42	PBY-6I	5	3-6-43	6	1-21-43
NR-1	5	9-14-42	18	3-18-43	PBY-6J	12	2-15-43	66	1-21-43
N2S-1	14	3-20-43	29	10-26-42	PBY-6K	10	12-19-42	14	1-20-43
N2S-2	9	3-20-43	11	8-17-42	PBY-6L	10	1-20-43	14	1-2-43
N2S-3	9	3-20-43	21	10-26-42	PBY-6M	17	1-20-43	17	1-8-43
N2S-4	3	3-18-43	3	2-23-43	PBY-6N	10	3-3-43	9	2-10-43
OS2N-1	20	11-27-42	26	3-25-43	PBY-6O	8	10-24-42	28	1-4-43
OS2U-1	42	11-27-42	60	3-13-43	PBY-6P	79	1-20-43	114	8-14-42
OS2U-2	53	11-27-42	72	3-13-43	PBY-6Q	8	6-26-42	8	8-14-42
OS2U-3	46	11-27-42	58	3-13-43	PBY-6R	69	1-20-43	88	8-14-42
PV-1	1	1-20-43	8	3-13-43	PBY-6S	6	6-26-42	8	8-14-42
PV-3	4	1-20-43	4	3-8-43	PBY-6T	15	2-19-43	32	3-6-43
PBM-1	9	8-27-42	44	1-28-43	PBY-6U	8	2-19-43	15	3-8-43
PBM-3	12	3-18-43	42	3-22-43	PBY-6V	1	2-19-43	2	1-20-43
PBM-3C	4	3-18-43	22	3-23-43	PBY-6W	32	1-20-43	61	8-14-42
PBM-3R	1	1-5-43	1	1-21-43	PBY-6X	6	6-26-42	8	8-14-42
PBO-1	2	7-1-42	9	1-14-43	PBY-6Y	52	5-30-42	123	8-4-42
PBY-1	93	10-17-42	175	1-21-43	PBY-6Z	10	2-16-42	30	8-4-42
PBY-2	78	10-17-42	139	1-21-43	PBY-7A	50	3-5-43	97	3-8-43

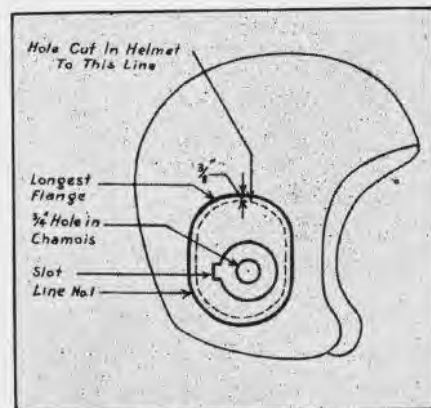
*Cancelled

Earphone Receptacles



NEW RECEPTACLES IMPROVE RADIO RECEPTION

Deliveries are now being made of helmet earphone receptacles designed to provide both ear comfort and improved radio reception. Instructions for the attachment of these receptacles are included with each pair. It is believed that they can be attached readily to helmets now being used, by first removing the powder puffs and leather phone cups. The purchase is under Contract N288s-9336, and quantities can be obtained through the central supply points or Aviation Supply Annexes. The stock number assigned is (R)16-R-0439.



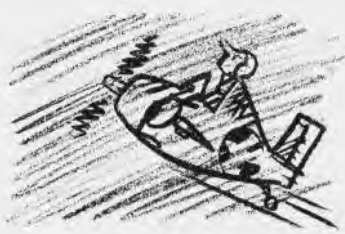
THEY CAN BE ATTACHED TO HELMETS NOW USED

"I LIKE ALL PLANES"

—was Dilbert's Toast to RECOGNITION



1 Dilbert flew through the air with the greatest of ease. This included Sundays and holidays.



2 Rain, lightning, fog, and the winds never disturbed Dilbert. Not even the instrument panel!



3 One day a Mitsubishi 97 sneaked out of a cloud and made a face. Dilbert yawned.



4 Of course he didn't believe in Recognition and thought it was a B-26 with a sore throat.



5 "Take C U R O for that cough!" he signaled to the wily Jap, then rocked with laughter.



6 Suddenly he discovered that was no cough—just a machine gun sputtering lead—aplenty!



7 Stark terror seized Dilbert. He had a gun but was so befuddled he couldn't locate the switch.



8 The Jap shot off Wings, Engine, Fuselage, Tail—leaving Dilbert soaring on a self-bailer.



9 He dropped down . . . down . . . chanting strains of Mozart's Requiem—the one in D Minor.



10 By chance all this happened above a carrier, and Dilbert floated down right next to it.



11 U. S. AA's rattled and barked and the joyful Jap became honorable dead pigeon . . . BUT



12 No one gave Dilbert any credit. His stupidity cost the Navy one hard-hitting Grumman!

A&R

CRASH PROCEDURE

NAS, DALLAS.—A basic Assembly and Repair program has enabled this station to reduce the time required to return planes to service, and maintain an even work load in the shops.

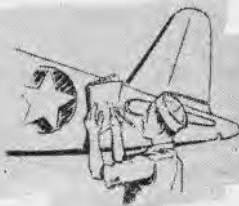
Briefly, the system provides for the replacement with spare parts of all items by groups—i. e., stabilizer group, rudder group, left wing panel group, etc. All removed parts are turned over to the Inspection Dept. Each group is broken down into component parts: Interplane struts, ailerons, flying and drag wires, etc.

Six Major Steps



1. Disassembly at Scene of Crash and Return to Station

Upon receipt of notice of crash, the Salvage Unit which is a part of the Inspection Department proceeds and returns to the Station with the wrecked plane. Before disassembly at the scene a description of the apparent damage is itemized on a specially prepared form. Upon return to the Station the Planning Unit is notified by means of an AVO attached to the damage report.



2. Estimator's report

An estimator who is a member of the Planning Group inspects the damaged plane and determines by groups the replacements required to return the plane to commission, and if damage has occurred to the fuselage.



3. Institution of Work Order

A work order is then prepared from the estimator's report detailing the replacements to be made (by groups)

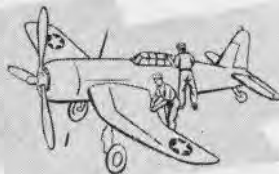
and in case of damage to the fuselage the routing of it to the fuselage repair group of the Metal Shop, the Fabric Shop for recovering, the Dope Shop for doping and then return to the Airplane Assembly Shop.

Each step is indicated in sequence with an estimated completion date on each step. One copy of the work order delivered to the Airplane Disassembly Unit for action, one delivered to the Inspection Division and one to the Matériel Section which is charged with the procurement and availability of material by the date specified on the order.



4. Disassembly and Fuselage Repair

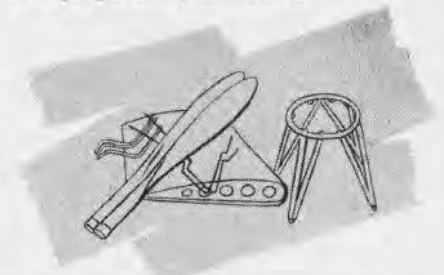
The Airplane Disassembly Unit upon receipt of work order removes all groups as specified and turns them over to the Inspection Division for further action (to be discussed in a subsequent paragraph) and routes the fuselage as indicated, attaching to it the original work order. The Planning Unit is notified upon completion of each operation by the shop or unit concerned so that a proper progress control can be maintained.



5. Final Assembly

Upon completion of the fuselage it is then routed to Airplane Assembly

for final assembly and rigging. Upon completion of this operation and final inspection, the airplane is turned over to the Maintenance Division for flight test preparatory to service.



6. Matériel Section Responsibility

During the interim in which the fuselage is passing through the various stages, the Matériel Section is procuring the groups as shown on the work order copy delivered to them at the start of the operation and at the time the fuselage reaches the airplane Assembly Unit the material is delivered on a toter especially constructed for that purpose.

It has been assumed in the foregoing that the fuselage has been damaged. However, in a good number of cases no work on the fuselage is required. In such cases the routing is from Airplane Disassembly to Airplane Assembly with the Matériel Section supplying the groups required in the same manner.

The damaged and also the useable parts removed to accomplish the necessary work are inspected by the Inspection Division, tagged as to whether ready for reissue, requiring repair, or to be salvaged and turned in to the supply department. Material to be repaired is withdrawn from Supply at a later date on the instructions of the Planning Unit on Title X in such a manner as to maintain a constant work load in the individual shops.

"Water Landing Field" For Seaplane Operations

NAS, CORPUS CHRISTI—Squadron VN17D8 at Corpus Christi (VO-VCS) can boast of something unusual in seaplane operations—a "water landing field." Dredged to an average depth of six feet from a bay where the average depth was only two to three feet, the field has four extending waterways and differs from standard landing fields only in that the off-runway areas cannot be used for taxiing, taking off, and landing. In these off-runway areas only boats specially designed for shallow water can operate. The most desirable feature of this "water field" arrangement is that the water remains reasonably calm under wind conditions with velocities up to 35 knots from any direction.

To prevent cross traffic during operations on all courses, a situation which arose because all planes must be launched and recovered under all wind conditions from a combination of four ramps and one crane located at fixed places, the field has been outlined by a series of stakes at short intervals which clearly indicate the limits of each runway.

For night operations, oil road lamps are placed at each stake, outlining the entire available landing area. Power landings at night must be started between 150 and 200 feet and completed with precision to insure landing in the area. A visual light system of red, green, and white lights located in the tower was devised by the squadron to solve the taxi problem during night operations. No more than three planes are permitted on the water at any one time. This visual light system was necessary because the N3N-3 has no radio, and it was found to work more satisfactorily than radio control with the other squadron planes, the OS2U-3's.

Safety Flare Pot

NAS, NEW ORLEANS.—A gadget that will eliminate the danger of planes catching fire should they strike or run over flare pots used for night flying guides, has been developed by three enlisted men at this station.

The safety flare pot has a safety ring perched atop a pin. The ring is fastened to a metal cup that is held directly above the flame openings in the pot.

(Succeeds list dated February 25, 1943)

LIST OF THE LATEST NUMBERS OF ENGINE BULLETINS AND CHANGES

APRIL 3, 1943

ENGINE	PRATT & WHITNEY		WRIGHT		DATE
	BULLETIN	CHANGE	BULLETIN	CHANGE	
R-2600			*71	Undated. 2-8-43.
R-2600			†72	
R-2600-8				*5	Undated. Do. Do.
R-2600-8A				*4	
R-2600-12				*4	

*These changes and bulletin were inadvertently forwarded undated.
†This bulletin was numbered 71 in error.

In this open position, the flare pot can "burn" as under ordinary circumstances; however, should any portion of the ring, cup, or pot, be upset or struck, the ring will slip from the pin, releasing a spring around the pin. This action will force the cup over the flame openings, extinguishing the fire.

Plane-Towing Jeep Performs Well

NAS, OAKLAND.—A rig, attachable to a jeep, has been perfected to serve as a plane tow. An elevated bucket on the rear of the jeep holds the tail wheel, which in itself serves the same purpose as the fifth wheel on the old wagon or modern trailer.

When the plane is brought in on a highway, the wings are removed from flying position and attached alongside the fuselage by means of several pieces of 5-ply plywood used as

racks. These racks are hinged for convenient handling and cut to accommodate the wings. The forward rack is attached to the rear hinge fittings of the lower wings, while the after racks, which fit on top and bottom of the wings, are attached to the lift handles near the empennage. The after racks serve not only to hold up the wings but to keep them from swaying, since they are joined by means of a pipe on one side and a bungee cord on the other.

Plexiglas Sheets in PBY-5 Waist Gun Blister

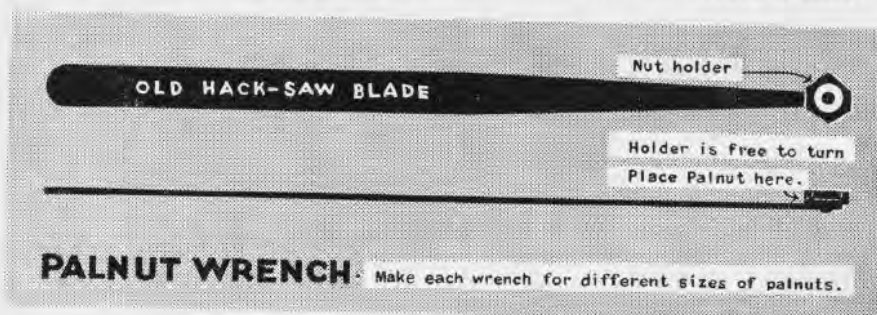
Reports have been received from the service to the effect that replacement Plexiglas sheets do not fit the frames of the outer rotating shield in the waist gun blisters of the PBY-5 and PBY-5A airplanes. Originally, considerable breakage of the plastic

(Continued on p. 32)

Palnut Wrench

NAS, SEATTLE.—A very convenient method of starting palnuts in tight places has been devised by one of this station's A & R civilian employees. The materials used are a second-hand hacksaw blade and a piece of aluminum shaped in the size

of a nut. The shaped nut is used as a holder for the palnut. The operation is simply as follows: Place the palnut on the holder. Reach into stud by grasping the handle and with free fingers turn palnut. The drawing illustrates how the wrench is made.



Control Locks for Rudder and Aileron

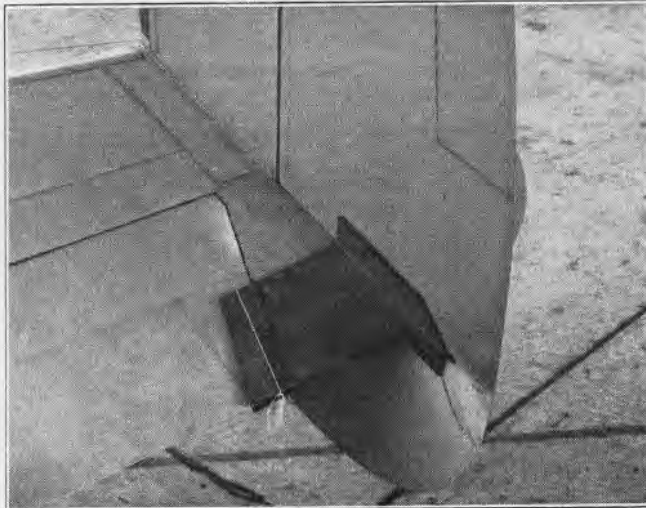
Strain on Cables Removed

FLEET AIR WING EIGHT, PACIFIC FLEET.—After experiencing the usual difficulties with conventional battens—which deserved epithets such as bulky, unwieldy, warpable and not easily stowed—Machinist Sydney W. Jarboe of this command designed a set of control locks that have proved their merit on PV-1s during storms and high winds.

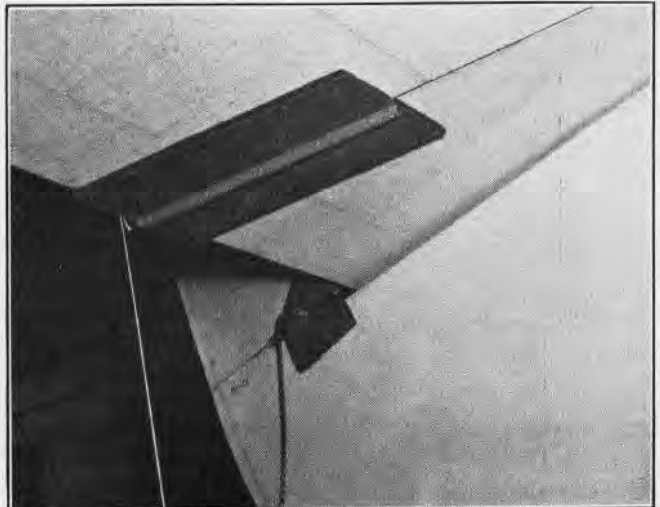
Although small, the battens hold the controls in a

rigid position, preventing the surfaces from beating back and forth. These control locks remove the strain on the cables and sheaves leading to control surface. They are, in addition, small and compact and can be manufactured in the average metal shop. They are easily attached, detached, and stowed.

The locks can also be used on other twin rudder aircraft having a different angle on the outboard edge of elevators by slotting the upper plate between the middle and elevator locks.



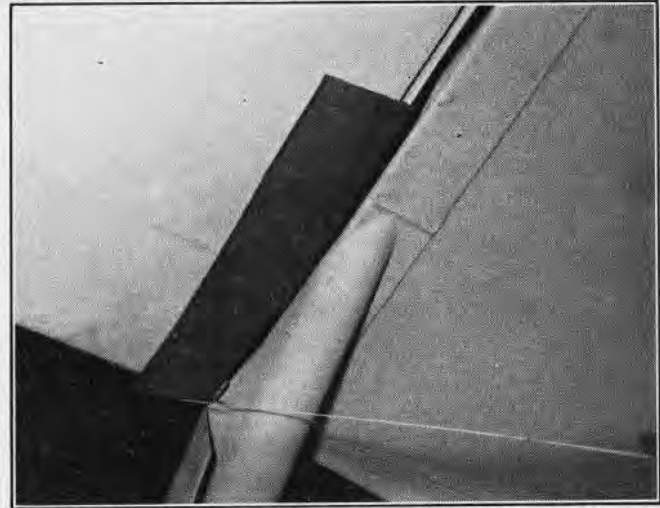
BATTENS, ALTHOUGH SMALL, HOLD RUDDER AND ELEVATOR SECURELY



BOTTOM VIEW. LOCKS CAN ALSO BE USED ON TWIN RUDDER AIRCRAFT



AILERON BATTEN, TOP VIEW. THE LOCKS REMOVE STRAIN ON CABLES



AILERON FROM BELOW. BATTENS ARE EASILY ATTACHED AND REMOVED

parts had been reported as being due to the impact of water in taxiing or during circular take-off. To correct this condition on the shield, the design of the frame was modified to incorporate a four-piece plastic enclosure instead of the larger one-piece enclosure then being used.

It should be noted by service units that the small Plexiglas sections will fit only into the new frame, part No. 28A-5104, since the location of the cross braces is slightly different in the two frames. Airplanes equipped with the old style frame part No. 28A-5021, must use the single sheet of Plexiglas, part No. 28A-5026, in order to insure proper fitting.

U. S. M. C., remarked to a fellow Marine: "Don't worry. Remember that only one shell has your name on it."

"I'm not worrying about that one," the Marine replied. "I don't like the shells addressed, 'To whom it may concern.'"

Sentry: Halt, who goes there?

Voice: An American.

Sentry: Repeat the second verse of "The Star Spangled Banner."

Voice: Sorry, I don't know it.

Sentry: Pass on, American!

(Erratum)

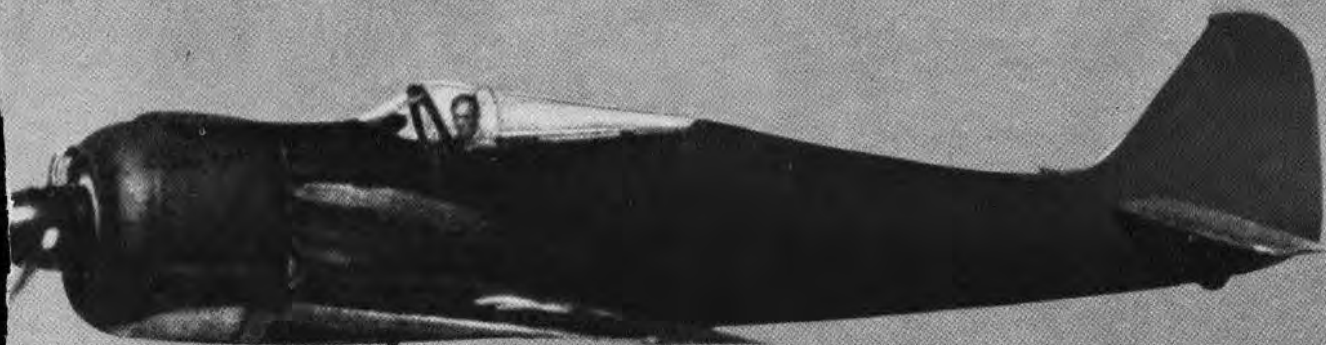
What's wrong with this picture?

Answer to Panel Board Teaser on p. 24 should read: *Iceing Trouble (Cruising)*

Solomon Islands (by way of Kansas City): During a particularly vicious Jap attack, Capt. John Little,



On Patrol



FOCKE-WULF FW 190 GERMAN FIGHTER

Span: 34 feet 6 inches.
Length: 29 feet 1 inch.

Service Ceiling: 37,000 feet (not loaded) 36,000 feet (normal load).
Maximum speed: 395 m. p. h. at 17,000 feet.

DISTINGUISHING FEATURES—Short blunt nose with large spinner. Short thick tapered wings with blunt tips. Fuselage narrow aft of wings. Rectangular stabilizer and tail plane. Tall fin and rudder. Small low cockpit tapering into fuselage.

INTEREST—This is the only single-engine German fighter with a radial engine. The use of an air-cooled engine represents a radical change in German fighter philosophy. The "190" looks more like an American plane than any previous German design. First used over Europe in the summer of 1941, the "190" is now also said to be in use by the Japanese in the Southwest Pacific where it is known as "Fred."