NAVAL AVIATION NEWS

Japanese Oil
Night Fighters
Repair Vessel

July 15, 1945
RESTRICTED

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No. 2 of a series.

He took 10 wave-offs

■ Directing the landing of planes aboard a carrier is no job for an amateur. LSO's must combine flying "know how" with cool, quick, minds and be capable of fast, nerveless decisions under trying conditions.

After a strike on Hollandia, a crippled torpedo plane entered the landing circle with only the left wheel down, no flaps, no forward elevator control, no arresting hook. However, the engine was working perfectly, and it was decided to attempt a landing. Over the radio the wounded pilot was instructed to take his time and work with the LSO, Lt. H. I. Proulx, former fighter pilot.

In Lt. Proulx's own words, "He took ten wave-offs before I had him coming in just the way I wanted him; on a course that let the plane sweep around with the least damage. In other words, to bring this plane aboard it was necessary to get it lined up exactly with the center of the deck so that it would not slew over the side in a one-wheel landing. I also had to be sure the plane's speed was slow enough to warrant a 'cut'. On the 11th approach I gave him the 'cut' signal and the pilot made a good landing. The plane slewed as expected, but didn't turn over in the skid, and all three men were lifted out with no additional injuries."

KEEP YOUR EYE ON THE LSO

▶▶ One more case for the record—where a pilot and LSO working together avoided a crash and saved lives ◀◀

JAPANESE OIL

PHOTOGRAPHIC INTELLIGENCE

Oil is one of the vital raw materials for which Japan went to war. In 1942 the Japanese occupied the Netherlands East Indies and other oil-producing areas in the Far East. This steal was accomplished after the enemy already had built up large stocks by increasing imports from the United States and Dutch East Indian refineries. With the recent invasion of Tarakan island in Dutch northeast Borneo, (*picture above*), the Allies recaptured the first major source of crude oil that had been taken from them. They now will be able to obtain some fuel without the necessity of transporting it thousands of miles across the Pacific ocean.

The Jap home islands are cut off from East Indian oil. Many of the enemy's tankers are on the bottom, and U.S. planes based in the Philippines and Okinawa can squeeze off the trickle that island garrisons may try to send. Still available to the enemy, however, are a few fields in the home islands and possibly Karafuto, some synthetic oil plants, and an unknown amount of stored-up oil. Since Japan's army is not nearly so motorized as Germany's, a gasoline pinch would not seem likely to reduce its effectiveness in the same proportion. However, oil supplies have been important targets for U.S. attack since the start of Pacific fighting, and destruction of the enemy's fuel will eventually render his air force, remaining fleet units and other portions of his military structure useless.

JAPANESE USE BOARDED-UP WOODEN DERRICKS AT ONE OF THEIR FEW REMAINING OIL FIELDS AT AKITA IN NORTHWEST HONSHU

ONLY OIL FIELDS LEFT TO JAPS NOW ARE IN NORTHWEST HONSHU, HOKKAIDO, AND POSSIBLY KARAFUTO. THE REST ARE CUT OFF

1. FIELDS

With Most of Enemy's Looted Petroleum Deposits Cut Off, Only a Few Fields Remain to Supply Japan

BEFORE the war, Sumatra was the richest oil producing region of the Far East, yielding about three-fifths of all Dutch East Indies' petroleum. Java and Borneo also were important oil-bearing areas, and the Dutch developed other fields in Ceram and Western New Guinea. Borneo oil proved of special benefit to Japan because that island, the world's third largest, is closest of the Indies to the Jap home islands.

Crudes from Tarakan, just off the east coast of Dutch Borneo, are so good that they can be pumped directly into a ship's tanks without processing. The Dutch were able to wreck some installations before the Japs invaded the Indies, but photographs showed that the Japanese restored many of them. Major oil centers in that area have been under Allied air attack in recent months, and extensive damage to machinery probably has reduced enemy production.

In Burma some oil wells and refineries were available to the Japs, but the British now have regained them. Formosa has a small petroleum production, which, however, must pass Okinawa before reaching the home islands.

Remaining to the enemy are oil fields in northwest Honshu (Akita and Niigata prefectures), some crude production in the northernmost home island of Hokkaido, and possible supplies from Karafuto, which has petroleum deposits.

AMERICAN COMPANIES BUILT MANY OIL FACILITIES IN FAR EAST; INSTALLATIONS CONSEQUENTLY ARE SIMILAR TO THOSE IN U. S.

2. REFINERIES

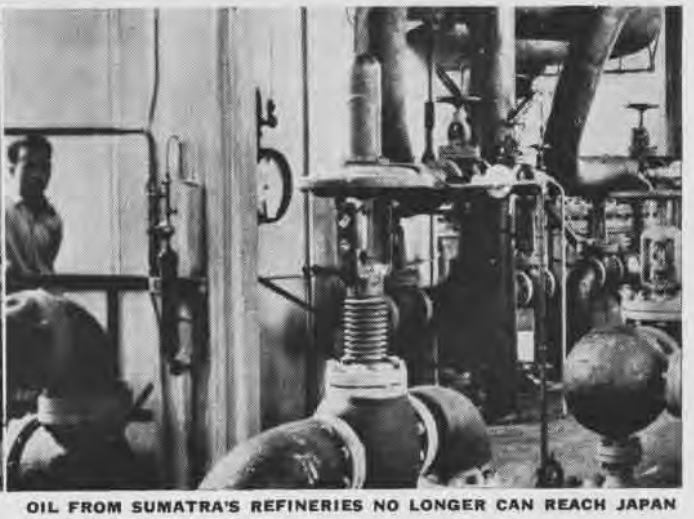
Power Plant, Storage Tanks, Furnaces, Towers for Primary Distillation and Cracking Vital Areas

REFINERIES all over the world resemble each other, not only in design and appearance of equipment, but also in plant layout. Many Far East refineries were built by American construction companies.

Three types of installations are of critical importance in the refinery process and, if wholly or partially destroyed, will result in long production delays. *1.* Most refineries have a power plant, which is necessary to operate the pumps that keep the oil circulating to various units. The boiler-house-type power plant, which also produces steam for refinery use, usually is a concentrated unit, with tall stacks. Seriously damaged boilers require much time to replace. 2. Furnaces and towers for primary distillation and cracking also are vital parts which, if damaged, will halt operations for extended periods. 3. Storage tanks have an important role in the refining process. Reserves of crude petroleum are kept in tanks before refining, and finished products are piped off to other tanks to await transportation or further processing. Extensive damage to tank facilities will hamper functioning of many refineries. Allied bombers have devoted considerable attention to these installations.

Numerous pumps also are used. Small and difficult to identify on photographs, they are vital operating parts.

THIS REFINERY IS IN NIIGATA AREA OF NORTH CENTRAL HONSHU



OIL FROM SUMATRA'S REFINERIES NO LONGER CAN REACH JAPAN

OIL FROM THIS TANK FARM AT BALIKPAPAN IN DUTCH EAST INDIES WILL HAVE DIFFICULTY IN REACHING JAPANESE HOMELAND

JAPANESE USED BRITISH STORAGE FACILITIES AT SINGAPORE. THESE TANKS ON BUKUM ISLAND HELD FUEL FOR ENEMY WARSHIPS

PROBLEM IN ATTACKING OIL STORAGE IS THAT SOME TANKS MAY BE EMPTY. HERE IS PART OF SUPPLY AT NAVAL BASE OF KURE

CIRCULAR OUTLINES OF PROBABLE UNDERGROUND OIL STORAGE TANKS IN PESCADORES INDICATE DISPERSAL OF JAP RESERVES

3. STORAGE

Photographs Show that Main Tank Concentrations Are at Naval Bases or Near Industrial Areas

With East Indies production cut off, Japan's stored up oil reserves on the home islands become of much more precious value. In general, photographs show that largest storage areas are located at naval bases and near important industrial areas. Some oil is kept underground. The Japs evidently make a large circular excavation, insert the tank and cover it with a few feet of earth. Round outlines of these buried tanks often are visible on aerial photographs. It is much more difficult to determine where the Japs have made lateral excavations in hillsides for buried storage. On some Pacific islands, enemy oil dumps were simply piles of fuel drums. Few dumps of this type, however, are seen in photos of the home islands.

Large Jap tank farms have been attacked at Singapore, in French Indo-China, in Chinese coastal cities, and in Formosa. Truk once was the site of large oil storage capacity, and similar installations remain in other outlying bases.

Modern petroleum methods utilize different types and sizes of tanks for crude oil and various kinds of refined products. Tanks containing butane gas, for example, have a plump cylindrical shape and rounded ends and are capable of withstanding heavy pressures. Nevertheless, war emergencies may compel the Japs to put any kind of fuel into any oil tank.

4. SYNTHETICS

With Loss of Stolen Fields, Japan's Synthetic Oil Plants Assume New and Perhaps Critical Importance

GERMANY developed manufacture of synthetic oil more efficiently than any other nation, and it is probable that Japan obtained some technical advice from its ally. Until recently the Japs did not depend on synthetic oil. If and when their reserve stocks are used up, synthetic plants may assume considerable importance.

There are two principal types of processes for making synthetic oil: HYDROGENATION and HYDROCARBON SYNTHESIS. In Manchuria, the Japs also have oil shale deposits which can be treated to yield satisfactory fuel.

HYDROGENATION, by which most German synthetic production was obtained, involves combination of hydrogen gas with carbon in the form of coal, lignite paste, or low-grade oil. This combination takes place in a hydrogenation stall, which is from 60 to 80 feet high, and is made of very thick steel able to withstand pressures of from 3,000 to 9,000 pounds per square inch. Chief products of the stalls are high-grade oil, low-grade oil and methane gas. Most of the high-grade oil is refined to gasoline, while the low-grade oil is re-run through the stalls. Hydrogenation plants can be adjusted to yield many products, including lubricants and high octane blending agents for aviation gas.

By the Fischer-Tropsch process a gas composed equally of carbon monoxide and hydrogen is made into an oil in a reaction chamber in the presence of a catalyst. Oil produced by this method is somewhat similar to crude oil and must be refined.

Low temperature carbonization involves heating coal slowly at about 600° C. Low-grade oil, gas, benzol and poor coke are obtained. The tar oils formed in this process can be "cracked" to yield additional gasoline, diesel and fuel oils. Benzol can be added to gasoline to increase its octane rating.

High temperature carbonization is a similar process except that the coal is heated at a high temperature. Some oil is obtained by this method, but its primary peacetime use is for manufacturing coke and gas.

GASOLINE and fuel oil also can be obtained from Manchurian oil shale. Shale is stripped from coal beds, where it is an excess material. It is crushed, fed into retorts, and heated. Oil is distilled from the shale and then is condensed and run into storage tanks. Refining is carried on later in the same way as with natural crudes.

In 1942, after the Japanese had conquered the East Indies, it was estimated reliably that the Allies still controlled 93 per cent of the world's crude oil production, 88 per cent of its refining capacity, and 90 per cent of its tanker tonnage. The United States alone was reported to be able to produce enough oil in two weeks to keep Japan going for a full war year. Percentages are soaring still higher in the Allies' favor now as fields in Roumania, Burma and the Indies are restored to operation.

Whether Japan will suffer a crippling oil shortage is a matter that time will reveal. It is certain that attacks on oil facilities proved an important means of bringing Germany to her knees. The picture still is fresh of German planes destroyed on their own fields because they lacked fuel to take off and of German panzer drives stalled because vehicles ran out of gas. Destruction of oil resources may not prove similarly disastrous to Japan, but it will take some vital nourishment away from the enemy's war machine.

PLANT AT FUSHUN, MANCHURIA, EXTRACTS OIL FROM SHALE. THE SHA

JAPS OBTAIN OIL FROM COAL AT MITSUI COAL LIQUEFACTION PLANT

CRUSHED AND HEATED IN RETORTS. OIL IS OBTAINED BY DISTILLATION. IT IS CONDENSED AND LATER REFINED BY JAPANESE
ON WEST COAST OF KYUSHU. THIS CAN BE DONE BY SEVERAL PROCESSES. COKE, GAS AND BENZOL ARE PETROLEUM BY-PRODUCTS

GRAMPAW PETTIBONE

Take A Sight

The following is quoted from a bureau conference with a *Liberator* squadron commander upon return from the Pacific:

Q. "How heavily did your navigators lean on electronic devices?"

A. "We used it for convenience, but as to leaning on it, no. It was *sun lines, star sights and DR* that got us baek."

Nothing to Worry About

Shortly after take-off on a group ferry flight in the Western Pacific, an SB2C-4 pilot attempted to switch to his droppable wing tanks. No matter how hard he concentrated, however, he couldn't remember where that particular valve was, nor could he locate it.

Not one to be easily discouraged, this young pilot did a bit of rapid calculation and figured out he had sufficient fuel to reach his destination. It might be a close shave and, unfortunately, there weren't any alternate atolls enroute, but it was a good chance to practice operating at maximum fuel economy. And think of the ribbing he would get if he turned back!—Besides, he would have plenty time on the way to find that drop tank gas valve. So-o-o-o, he continued with the formation.

Two hours later, they approached a weather front and climbed to 11,000 feet to clear it. They all climbed, that is, except this pilot who was nursing his gas. He lagged behind and below, attempting to circle the front. A short

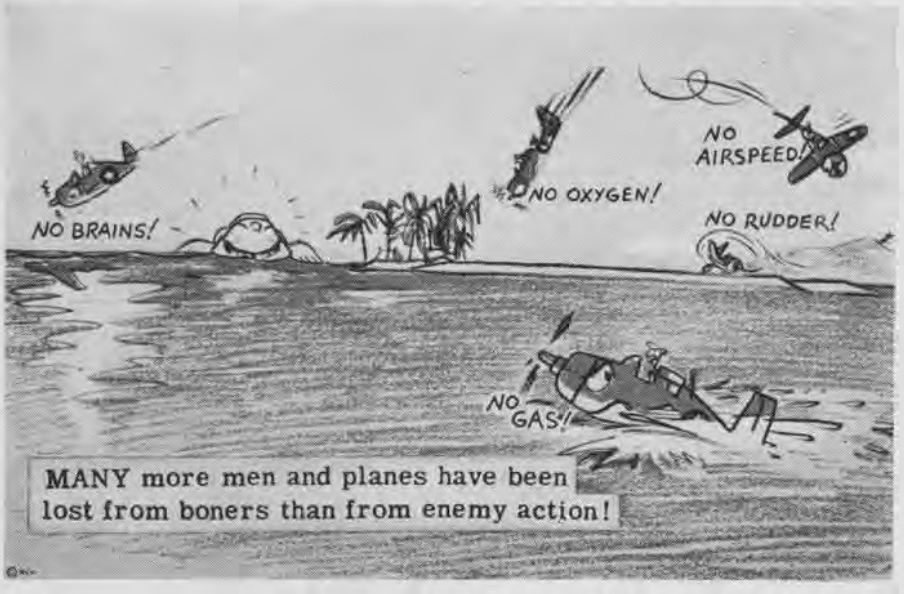
while later, he notified the flight he had lost contact. Upon receipt of this message, the leader directed the next senior pilot to take charge while he turned back to find our hero.

Radio communications were excellent, but visibility conditions prevented the two planes from rendezvousing, even by radar. The lost pilot finally found a light spot in the front and flew through at 200 feet altitude.

Soon thereafter he made radio contact with the island for which he was heading. When he explained that he was lost, he was instructed to turn on his emergency IFF. In his excitement, however, he DETONATED it instead. He then was told to transmit on a medium high frequency. The tower took a bearing on his transmission and gave him his heading to the island. The dark clouds all disappeared and everything seemed rosy again when he sighted the island about 20 miles away.

Five miles later, his engine sputtered and stopped. He still didn't know how to shift to his drop tanks [the report never cleared up why he hadn't requested radio advice on this point]. He evidently didn't know how to prepare for ditching either. Even though he was at 7500 feet when his engine quit, his shoulder straps still were loose when he landed. The fractured jaw he received, plus other contusions and abrasions, left him too dazed to assist his radioman get the life raft out of the plane before it sank.

They still had their life jackets, however, and were floating pretty, fifteen minutes later, when a PBY, sent out by the island AIR-SEA RESCUE SERVICE, dropped a life raft close aboard. They didn't even have to paddle ashore; a minesweeper picked them up.



Grampaw Pettibone Says:

Not a few casualties have resulted because pilots were unfamiliar with some seldom-used switch, lever or piece of special equipment not essential to a check-out flight. The accident board made a potent recommendation regarding this: "each activity prepare a standard checkout procedure, peculiar to its own needs, placing special emphasis on these seldom-used accessories."

Whether you follow the recommendations of this board or not all depends on your attitude. If you want to string this war out as long as possible and lose a lot of your friends, you'll be satisfied merely to show your pilots which way to bend the throttle for take-off (Some of them are bound to get through!). But if you want to get this damn thing over with as soon as possible, you won't be satisfied to turn 'em loose until you're sure they know how to operate every switch, knob, lever, button and gadget in the cockpit.

Combat Strike Group *of F6F's returning from mission circles its home base before landing. Planes in first division get ready to break and feed into landing circle as LSO lands plane aboard deck. Second of three divisions in flight also has four craft, one being hidden from camera by lead plane in the center of this group.*

Why Wear Parachutes

Shortly after an intense fire broke out in the bow compartment and pilot's cockpit of a PB4Y at 6500 feet, the airplane went into a spin and crashed out of control. Of the 13 aboard, there was only one survivor. He was the only man who had been wearing his parachute harness during the flight.

In his report of the accident, the survivor said that he was sitting in the waist compartment without earphones when suddenly he smelled smoke and saw the navigator running aft calling to all hands to bail out. Hearing the warning, this man snapped on his parachute and made ready to jump.

The airplane apparently already was in the spin because he was forced to exert a great deal of strength in order to pull himself out of the hatch. (He was seen to clear the plane at approximately 5000 feet.) Just before leaving the plane, he saw the remainder of the crew scrambling around trying to find and get into their 'chute harnesses. One parachute was opened accidentally inside the plane.

▶ *Comment*—**Small wonder that under such circumstances the other occupants of the plane were unable to get set to bail out!**

Protection for flying personnel against such emergencies has been provided—in the form of parachutes and in the order contained in article 6-112 of BuAer Manual requiring that they be worn.

This order has been repeated in Aviation Circular Letter 16-45 which also outlines the pilot's responsibilities in the matter. These are to see that:

a. **All persons aboard wear parachutes or harnesses.**
b. **Harnesses are properly fitted.**
c. **A 'chute is convenient to each individual.**
d. **Each person knows how to use his parachute.**
e. **Each person knows the location of emergency exits and how to open them.**
f. **The "abandon ship" signal and procedure are known and understood by all occupants.**

Responsible squadron commanders and pilots will insure that these common-sense directives are complied with.

Perfect Confidence

A TBF pilot was directed to take his flight to an outlying field for field carrier landing practice. Upon arrival, he circled the field several times before he could spot the landing signal officer. He finally located his man near the end of the runway, made a carrier break-up and started his first approach.

He received no signal from the LSO during his cross-leg. Coming into the groove, he got a "fast" signal and slowed down. He continued to see the "fast" signal, so he continued to slow down until he stalled and mushed into the ground on his right wheel and wing tip.

Fortunately, the pilot did not lose complete control and was able to regain flight, but not before his right wing tip was crushed, the main spar sprung and his right aileron damaged. Also, his abiding faith in the infallibility of LSO's was badly bent, for, as he staggered into the air, he was chagrined to note that the man at the end of the runway was only a civilian workman at "parade rest."

Handling an Emergency

An unusual example of cooperation between the pilot and crew of a TBM-3 recently occurred in an emergency during towing operations while carrier based.

The pilot raised his wing flaps when difficulty was being experienced in streaming the target. The increased airflow forced the tow reel impeller lock aside, whereupon the impeller rotated. The blades snapped off and came through the fuselage *severing both the elevator and rudder tab control rods* and fraying the rudder cable. Some concern was felt at attempting to land the plane aboard ship with no tab control.

Upon being advised of the situation, the flight leader instructed the pilot to make a practice landing approach at 5000 feet with the two crew members working the tabs under direction from the cockpit. Upon completion of this test, the pilot decided that he could bring the plane aboard, operating the tab controls in this manner.

A good landing was made but the two crewmen, who were standing up operating the tab controls, were slightly injured when the plane suddenly decelerated on deck.

Grampaw Pettibone says:

A good job all around!

Torpedo plane squadrons will be interested to know that BuOrd is working on a new brake design for this impeller; a band brake on the impeller shaft.

Some of you may wonder why we are so stingy in giving credit to units and individuals by name. Mainly because there isn't room to publish all such snappy actions and, therefore, to mention only a few names would smack of favoritism.

The same thing applies to the boners which are published for the edification of all hands. Here again, no one is favored by being named; the cases are merely cited as horrible examples.

GRAMPAW'S SAFETY QUIZ

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

1. **Unless specific local instructions to the contrary are in effect, in which direction shall aircraft circle an airport before landing?**
2. **In case of structural or control damage in flight as the result of a failure or collision, what piloting procedure should be followed?**
3. **When are life jackets required to be worn?**
4. **Are BuAer Technical Orders mandatory?**
5. **If anoxia symptoms are noticed by a pilot on an oxygen flight, what should he do?**

Answers on Page 48

Too Soon

A *Corsair* pilot recently made a mistake during a parachute jump over water, which almost cost him his life.

He used the correct procedure during descent to prepare for his water landing—he sat well back in the sling and unfastened his leg and chest straps, crossing his arms around the main sling to keep from falling out. However, when he got near the water—about four feet, according to his estimate—he JUMPED from the sling.

THAT was the mistake. When he jumped, the lanyard from his life jacket to the parachute tore loose, allowing the life raft to drift out of reach before the 'chute collapsed. The initial jerk on the lanyard had also ripped the life jacket and made it useless, thus leaving the pilot without any life saving equipment.

Fortunately for this pilot, help was near at hand; even so, he nearly drowned before a PT boat reached him.

▶ *Comment*—**While you should, if possible, be all set to leave your 'chute the instant your feet touch the water, there are two excellent reasons why you should *never* attempt to jump the last few feet:**

1. Danger of losing your life-saving equipment, as in the above case.

2. Danger of jumping too soon and being knocked unconscious or killed by the impact. This actually has happened in several cases due to the difficulty of accurately judging the combination of height above the water and the rate of descent.

DID YOU KNOW?

Corsair Sets An Endurance Record

Marine Keeps An F4U-1D Up 14 Hours

VMF 215—A Marine captain attached to this squadron set a new endurance record for single engine planes on May 13 when he kept his F4U-1D in flight 14 hours and 7 seconds, bettering an unofficial record of 12 hours set by an Army *Thunderbolt*.

PILOT AFTER 14 HOURS IN THE COCKPIT

The captain took off at 0647 with 752 gallons of gasoline distributed as follows: main tank, 237 gallons; two pylon tanks, 165 gallons each; one center line tank, 174 gallons. When he landed at 2047.01, 33 gallons of gasoline remained in his main tank and the others were exhausted. Five gallons of oil were consumed during the flight. His average indicated speed on the flight was 134 knots.

The pilot's report on the flight contained the following conclusions: "The entire flight was flown with the parachute (1183-P-A-N 6510-1) life jacket and safety belt attached. I had the shoulder straps on at all times under 1000 ft. and when expecting a tank to run dry. I used a standard, but frequently unobtainable rubber sea-foam seat cushion. Circulation was good in my legs. My back and rear were only slightly cramped. I am certain that a flight of this duration would make the pilot acutely uncomfortable if he were using the regular issue mohair cushion. Discomfort leads to pilot fatigue and fatigue to accidents.

"The engine had 251.6 total hours before this flight and 44.4 hours since the last 60-hour check and plug change. Engine was subsequently given a 60-hour check and no unusual wear was detected. The plane had 238.7 hours previous to this and was none the worse afterwards."

Coast Guard Trains Its Rescuers

Pharmacist's Mate Now Specializing

NATB PENSACOLA—With the Coast Guard taking greater part in air/sea rescue, its pharmacist's mates are receiving specialized training in Pensacola's School of Aviation Medicine, after which they will serve as assistants to flight surgeons at Coast Guard stations or advanced bases.

Further medical training has proved necessary, since problems in flying wounded men from ships and rescue points vary widely from usual medical and surgery cases. Wounds aggravated by high altitudes and the effects of cold at those altitudes call for specialized treatment.

The study course emphasizes proper use of oxygen, with "hops" in pressure chambers supplemented by actual high-altitude flights. Newest ditching procedures and survival techniques also are taught. Graduates of the course are qualified to assist in special aviation physical exams given all airmen.

Academy Grads Get Air Training

Reserves, Regulars Under 27 May Apply

Members of the Naval Academy class of 1945 now may forward requests for heavier-than-air flight training to BUPERS. Requests should be forwarded as soon as practicable to facilitate orderly detachment and relief of officers according to ALNAV 62, April 2, 1945.

Requests for flight training also are desired from commissioned and warrant officers of the Regular Navy and Naval Reserve who are not yet 27. Officers who previously submitted applications should resubmit, according to ALNAV 63. Requests from Naval Academy graduates are desired only from members of the classes of 1943, 1944, and 1945.

Wind-Sock Tapers Ground Loops

Coaxes Cadets to Check for Themselves

NAAS BARIN FIELD—Installation of a simple portable wind-sock helped cut ground-looping at the main station here after the safety officer noted there was less of it at outlying fields, where cadets had to make their own wind-checks, than at the main field, where wind courses were readily available and cadets didn't have to check.

A white wind-sock made of light material and set upon a light metal rod about 8 feet high was placed at the end of the runway about 12 feet to the side so pilots could easily see it. A wave-off flagman posted at the end of the runway moves the wind-sock to wherever it is needed.

[DEVELOPED BY LT. (JG) C. G. CHASON, USNR]

SHOWING *land-lubber New Yorkers how the Fleet bases its fighting planes at sea, this realistic model of an aircraft carrier, complete with island and gun emplacements, has been set up in the heart of the Plaza at Rockefeller Center on the site where ice skaters cut fancy patterns when it's winter. Gangplank takes tourists right aboard the flight deck for closer inspection of* The Fighting Lady's *accouterments. In the background, companion skyscrapers of New York's attractive office center form a moat of stone around the sea-gray mistress of battle in "drydock." Cynosure attracted thousands to the Plaza*

GOT ANY QUESTIONS?

THE NAVY REPORTER Broadcasts the ANSWERS

SECNAV'S NEW WEEKLY RADIO PROGRAM BRINGS NAVY, MARINE AND COAST GUARD ENLISTED MEN RELIABLE DOPE STRAIGHT FROM THE HORSE'S MOUTH

The Navy Reporter, a new 15-minute radio program for overseas enlisted men in Navy, Marine Corps and Coast Guard, broadcasts answers to their questions on any subject on the weekly schedule below. "This is YOUR program," said SecNav Forrestal on the first broadcast, "I'm seriously interested in seeing it do a real job.

George Wendell, MoMM1/c, remembered as "Freckles" of Hal Roach Our Gang movie comedies, has been chosen by SecNav as the Washington representative of Overseas Enlisted Men of Navy, Marine Corps and Coast Guard. In the Navy three years, he wears the Purple Heart for injuries during a Jap air raid on Guadalcanal.

"Freckles" reads your question on any subject—demobilization, leave, government insurance, etc.—digs up the right answer and broadcasts it to you. Paul Sullivan, veteran newscaster, handles each program.

There's no charge or entry fee, so mail YOUR question, then listen for the answer on the program. Questions of greatest interest to all will get priority.

On the air, Paul Sullivan, RdM2/c, SecNav Forrestal and George Wendell, MoMM1/c introduced the program

Men who're doing the fighting can send their queries straight to The Navy Reporter who broadcasts answers

BROADCAST TIMES, STATIONS AND FREQUENCIES in the various theatres are as follows: (Times given are Eastern War Time for Atlantic Coast, Pacific War Time for Pacific Coast and Far East.)

ALASKA * ALEUTIANS * CHINA

1545—1600 PWT KROJ San Francisco 17,770 kc.—Each Tues.
2215—2230 PWT KROJ San Francisco 9,897 kc.—Each Tues.

SOUTHWEST PACIFIC * PHILIPPINES

1815—1830 PWT KROJ San Francisco 17,760 kc.—Each Tues.
2215—2230 PWT KNBA Dixon, Ohio 13,050 kc. 15,150 kc.—Each Tues.
0245—0300 PWT KGEI San Francisco 9,550 kc.—Each Wed.

SOUTHWEST PACIFIC * PACIFIC OCEAN AREA

0245—0300 PWT KWIX San Francisco 9,855 kc. 6,105 kc.—Each Wed.

PHILIPPINES * CHINA

2115—2130 PWT KWID San Francisco 11,870 kc.—Each Tues.

ALL PACIFIC—CHINA

2015—2030 PWT KRHO Honolulu 17,800 kc.—Each Thurs.

ENGLAND * EUROPE * MEDITERRANEAN—Each Tuesday

1445—1500 EWT WBOS Boston 15,210 kc.
1745—1800 EWT WCBN New York 11,145 kc.

SOUTH ATLANTIC * AFRICA—Each Tuesday

1315—1330 EWT WLWL Cincinnati 15,230 kc. 17,955 kc.

GREENLAND * ICELAND * ENGLAND—Each Tuesday

1815—1830 EWT WBOS Boston 9,897 kc.

MAIL YOUR QUESTIONS TO:

THE NAVY REPORTER
ARMED FORCES' RADIO
LOS ANGELES, CALIF.

FLIGHT SAFETY

In military operations, an airplane that fails to reach its objective cannot contribute to fulfillment of the mission. Even if it lands with minor damage, time, material, and training invested in the flight are, for the moment, wasted.

As a rule, every pilot has some idea of all the factors concerning his flight before he starts. If his ideas are not precise, or if the situation is not just what he thought it was, an emergency is in the making. An experienced pilot often can meet an emergency early, by reason of long training, and emerge successfully. Experienced and inexperienced pilots alike will do better to avoid all types of emergencies entirely.

Planning for Emergencies

An F7F-2N took off from a local air facility on a contact night navigational training flight accompanied by another F7F-2N. En route, both planes ran into bad weather in the form of rain and poor visibility, whereupon the accompanying plane returned to base. The lone pilot continued on, drifting off course, and finally, due to the lowering ceiling, climbed through the clouds. Despite reception of a clear off-course beam signal from his destination, the pilot again dropped down through the overcast to look around, breaking through at 4000 feet with an actual elevation of 3100 feet. While circling with the right wing down, the aircraft ran out of gas. During unlocking of the safety shoulder straps and reaching down to switch tanks, the aircraft crashed at 210 knots. Observation of terrain at the scene of the totally destroyed aircraft indicated the aircraft hit the ground in an almost-flat right turn in an estimated 10°, or less, bank. The right wing on initial contact leveled the attitude of the plane, whereupon it bounced for 200 yards shedding parts as it went. Miraculously, the cockpits, although severed from each other, remained intact, and pilot and passenger suffered only minor contusions and lacerations.

Comment—a There was failure to comply with a sound squadron doctrine in management of weather on a night navigational training flight. One of the pilots met adverse weather and returned to base, the other continued.

b Once receiving a clear off-course beam from his destination, the pilot on a navigational hop should have been prepared and confident enough to orientate and fly the beam until radio contact could have been established.

c Pilot's inexcusable failure to check his fuel consumption prior to attempting contact flight at low altitude unnecessarily endangered his life.

Upset Calculations

Pilot of FG-1A took off from a local air facility on a routine cross-country flight for his home base. Fuel aboard was sufficient for between three and four hours of normal cruising. Enroute however, high power settings of 32" HG and 2200 RPM were used to hasten arrival. Final two-thirds of the distance was flown through increasing cloudiness and lowered visibility, making identification of check points difficult and, finally, impossible. Attempts to pick up the home range met with no success due to poor radio reception. When the ETA of 0900 was reached, a square search was made for the field for local land marks without success. Ascent and attempt at range orientation failed, due to static. Gas became low, and a landing was made wheels-down. A small elevation along a dirt road caused the aircraft to flip over and cart-wheel. The out-of-gas forced landing was made 40 miles SE of destination.

Comment—a There was a failure to comply with a sound squadron doctrine in management of weather in relation to a routine cross-country flight. Two-thirds of flight was made in adverse weather conditions without adequate radio contact.

b The fact that there was enough fuel aboard for three to four hours of normal cruising, on a flight expected to last one hour, emphasizes how "haste makes waste. The revised power setting *enroute* upset the previously calculated ETA for 0900. The 35" and 2200 RPM further wasted fuel, as evidenced by an out-of-gas landing two hours and thirty-five minutes from time of take-off.

Disregarded Doctrine

An F4U-1 accompanied another F4U-1 on a contact cross-country flight. ETA called for a first stop at Point B. At the time expected to reach this destination, an airfield 15 miles North of Point B was sighted, and the navigational error was rectified by an appropriate course. Ceiling at this time was 900 feet. About 10 miles from Point B, hills rose into the cloud base, and the leader radioed the accompanying plane he was returning to the previously sighted airfield. The accompanying plane, at the time 150 feet abeam and slightly forward, gave no acknowledgment of transmission, continuing on into the clouds. It has not been heard of to date.

Comment—a There was failure to comply with a sound squadron doctrine in management of weather on a contact cross-country flight. One of the pilots met adverse weather and returned, the other continued.

b The five-degree error in navigation on the part of the pilots normally would not have been serious, had not peculiar terrain and weather entered the picture. This does not excuse navigational errors but merely serves to emphasize their importance. It is believed that had navigation been accurate, this accident could have been avoided.

c One of the prime reasons for two planes flying in company on cross-country flights is to provide an additional safety factor. Failure of lead pilot to maintain radio contact with his partner is more than unfortunate.

d Failure of lead pilot to foresee and use visual or acrobatic measures to attract the attention of his partner, 150 feet away, even though radio contact was not satisfactory, and to notify him of his return, leaves the lead pilot definitely responsible, in part at least.

FLIGHT INFORMATION *desk is one of the busiest spots in* NAS ALAMEDA'S *bustling operations building. The two* WAVES *on duty here have the word on all passenger flights and space available for each. They also have information on* NATS *flights from* NAS OAKLAND. *Guard mail flown to other stations in the Naval Air Bases Command funnels through the desk. At least one other West Coast station has adopted this Alameda idea*

25 YEARS AGO THIS MONTH

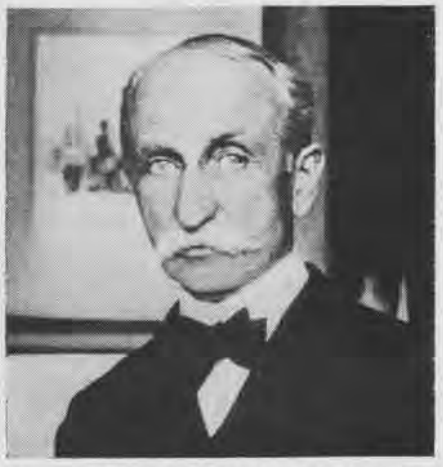
Naval Aviation During July 1920

July 12—Ten bankers and businessmen tried out a new form of commuting recently when they flew in a big redesigned Navy F5L aerial cruiser from New York City to their summer home at Southampton, L. I., more than 100 miles away. The flight was made in 1 hour and 19 minutes, whereas the fastest time made by the Long Island Railroad over this distance is 2 hours and 43 minutes.

According to the host of the aerial party, a bi-weekly service may be organized so that enthusiastic golfers may get an occasional game during the week without the time and trouble of a long trip by train or automobile, and arrive in much fresher condition for their exercise.

July 12—The Wingfoot Lake Air Station at Akron, Ohio, recently was opened for public flights in pony blimps, spherical and kite balloons. The station is being operated by Goodyear Company, and has attracted much interest. Blimps are operated by veteran pilots, most of whom trained U.S. Navy student fliers during the war. The purpose of Goodyear in throwing open the field on Saturdays, Sundays and holidays during the year is to give the public an opportunity at nominal cost to learn the delights and safety of aerial travel in lighter-than-air.

July—Rear Admiral Bradley A. Fiske, who was the first to patent the torpedo plane in 1912, has been advocating building this type of plane for the Navy. According to recent experiments, it has been found that maneuvering a torpedo plane is both dangerous and difficult, as, when attacking, it must dive within 3280 ft. of the ship and launch the torpedo only about 6 ft. above the level of the water. The necessary proximity of the plane to the ship under attack, makes it a



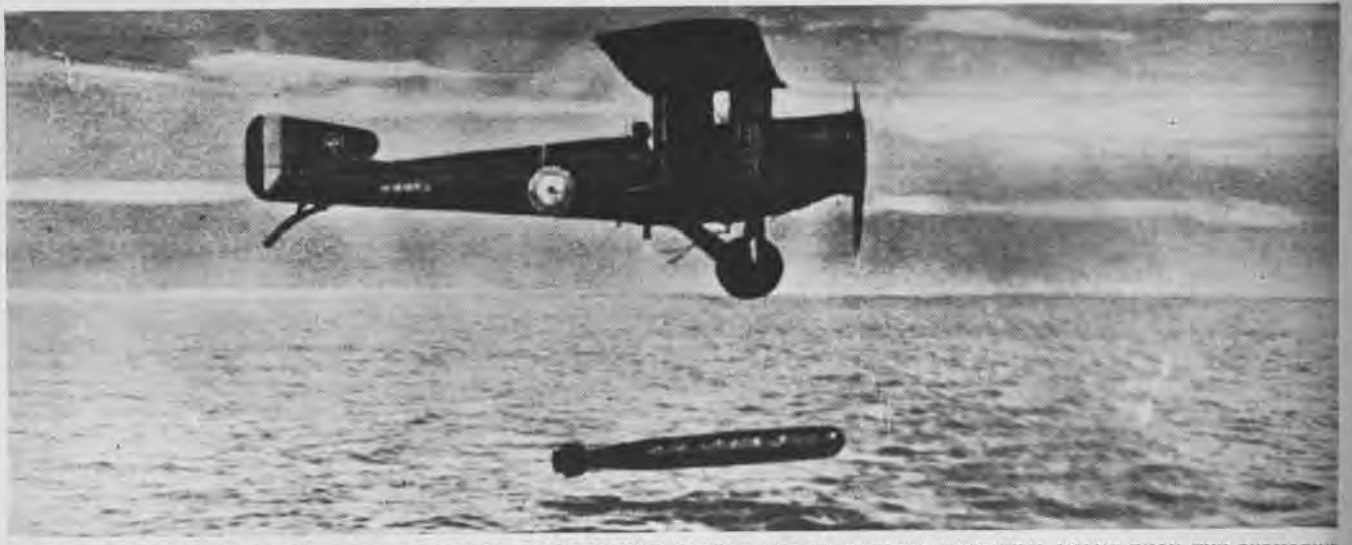
REAR ADMIRAL BRADLEY A. FISKE, U.S.N.

vulnerable target for the ship's gun crews. Future betterment possibly will include launching the torpedo at about 12,000 ft. at a distance of five miles, with use of instruments that readily compute time and exact direction of the launching. Notwithstanding present drawbacks, it now is possible to build good torpedo planes capable of carrying 700-pound torpedoes and having a range of 350 miles.

July 19—The Government has ordered ten armored triplanes from the Boeing Airplane Company of Seattle. The planes are designed to serve in aerial service for ground attack, having a function similar to that of tanks on land. Quarter-inch armor plate protects the fuselage and nacelles, and armament includes a 37-mm. rapid fire gun trained to fire through the floor, two machine guns at the back and two above the wings. Each triplane is to carry a crew of three or four men. Wing spread is 67 ft. and total weight about 3½ tons.

July 26—Guided by radio compass signals, a Navy F5L seaplane left Norfolk and flew 95 miles on a bee-line to pick up the battleship *Ohio* at sea, with no knowledge at the time of take-off of the vessel's location. The seaplane then navigated its return to Norfolk entirely by radio compass. The Navy announced this was the first time radio compass apparatus had been used to direct aircraft to a ship, and that this fine achievement immeasurably increases the value of aviation for naval purposes.

July 26—The mammoth airship hangar being constructed at Lakehurst to house the giant dirigible R-38, purchased from the British, after its flight across the Atlantic, is to be extended 200 ft. over the original specifications. Structure of the hangar will be 1,000 ft. long, 318 ft. wide and 200 ft. high, making it the largest type ever constructed.



BRITISH-TYPE TORPEDO PLANE, A NEW DEVELOPMENT THAT WAS CONSIDERED OF GREATER POTENTIAL VALUE THAN THE SUBMARINE

Twenty-seven years ago the Navy undertook experiments in air/sea rescue to brighten the chances of survival for downed personnel

Survivor had long climb upward before blimp circled and flew over seaplane again to lift the second aviator awaiting "rescue"

AIR/SEA RESCUE–1918 STYLE

PROGRESS that has been made in recovering personnel downed at sea stems from the first Navy attempt at air/sea rescue shown in pictures from the historical files of CORPUS CHRISTI. The experiment was staged after difficulty had been experienced in rescuing personnel from aircraft at sea and took place "with permission of the Bureau of Aeronautics."

In June 1918 Ensign William Humphries, USNR, and Ensign E. M. Baker, USNR, of the NAVAL AIR STATION, KEY WEST, stood precariously on the wingtip of a Curtiss N-9 and waited for a roving blimp to lower a 100-feet rope ladder. As the ladder brushed past, the first pilot tagged on to it, and the blimp circled back to the seaplane to pick up the other "survivor." After he had grasped the ladder and climbed aboard, the ladder was raised and the experiment pronounced complete.

It took World War II, and notably the vast overwater operations in the Pacific, to give air/sea rescue its biggest boost. Perfection still is to be reached, but strides in its direction made during the past couple of years have pushed into service every survival and rescue device that makes any claim to being practical.

Today, airmen downed at sea realize that rescue is more probable than possible, even in the teeth of bitter enemy resistance, as recent recoveries indicate.

AIRCRAFT REPAIR VESSEL

THE NAVY has found a new task for its versatile LST's, converting four of them into Aircraft Repair Vessels, ARV (A) and ARV (E), which will nose onto the beaches behind invasion troops to repair planes before landing strip facilities are completed and ready for use.

Base ships afloat are not a new idea, but a floating A&R shop that can hit the beach and service fighters and bombers in the invasion area is a new one. The four ships have been completed at American Bridge Co. yards near Pittsburgh and sailed down the Ohio and Mississippi Rivers to the Gulf. After shakedown cruises they headed for forward areas to take their places in combat regions.

Two types of ships were built: ARV (A), equipped with machinery to repair airframes, and ARV (E), to handle engines. The former contains 14 different repair shops and the E's eight, including the only shipboard engine test stands in the Navy. The A and E ships go out in pairs, between them equipped to do almost any kind of work except major engine overhauls.

Outwardly, ARV's look almost like any other LST that has brought troops to a Pacific island beachhead. They have the same huge bow doors that swing open and ramps that lower to permit access to well-equipped shops within. Instead of the flat upper deck for loading trucks, both types have deck houses filled with various types of repair shops.

ARV's Contain Shops Which Can Fix Almost Anything That Goes Wrong With Aircraft in Action

NAMES of the four ARV ships were taken from mythology. The two E ships are *Aventinus*, son of Hercules, and *Chloris*, goddess of flowers. Names of the A ships are *Fabius*, son of Hercules by a nymph, and *Magara*, daughter of Hercules.

The A ships have the following shops aboard them: airframes, carbon-dioxide transfer, fabric and upholstery, instruments, landing gear and hydraulics, machine, oxygen transfer, paint and dope, plating and anodizing, radio and radar, tie rod and cable; welding, heat treatment and metal, woodworking, sandblasting and metalizing. Shops aboard the two E ships are accessories, aviation electrical, engine quick-change and build-up, inspection, machine, ordnance, propeller and storage battery. Between the two types, going to a beachhead in pairs, the ships have all necessary machinery to do repair work for planes that land on captured or newly-built airstrips before Acorns and CASU's get set up for operations.

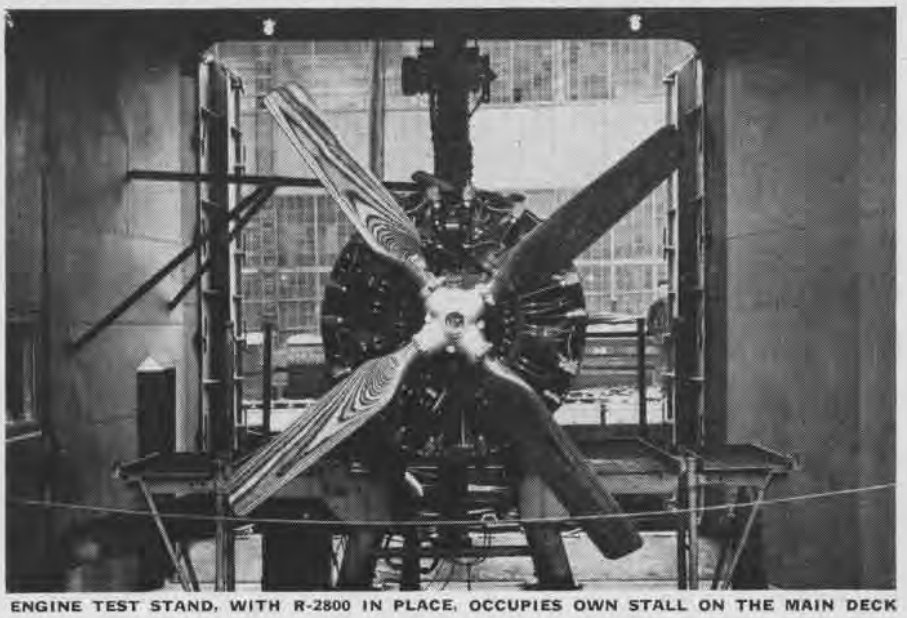
The new ARV's will go in with convoys and go to the beach after ammunition and food ships are unloaded. They may be kept on the beach to provide aircraft maintenance facilities after CASU's begin work, or until withdrawn for re-outfitting to follow another landing. Thus they may stay in the same area for several months. They do not serve as supply issue ships, but carry parts to support shops on board.

Post-war use may be found for the ARV (A)'s and ARV (E)'s as ships of the train, since most aircraft carriers or seaplane tenders, outside the larger ones, do not carry the wide variety of equipment found on the repair ships.

When operating in direct support of air strip maintenance, the ships depend on supply ships or barges for spare parts. They can put small repair parties ashore or operate at anchor off a beachhead. In addition to an intercommunicating system on the ships, they can be linked together by a phone system while on the beach.

As the ARV's were sailed down the Mississippi by their small ferry crews, only a few of their complement were aboard. At New Orleans they took on most of their crews, obtained from ABATU, St. Louis, or from Norfolk. Complement of the ships were about the same as an AVP. Approximately half were assigned to the V division, the rest to ship's company. Each ship is well-equipped with antiaircraft guns to protect herself while nosed up on a beach or while moving in a convoy.

SHAPING MACHINE ONE OF MODERN EQUIPMENT TYPES INSTALLED ABOARD VESSELS



ENGINE TEST STAND, WITH R-2800 IN PLACE, OCCUPIES OWN STALL ON THE MAIN DECK

CONTROL PANEL FOR ENGINE TEST STAND; ARV (E) IS ONLY NAVY SHIP WITH A STAND

Crewman operates drill press aboard one of the A type aircraft repair vessels. The A and E types team up in pairs, between them providing almost every type of machine to fix damaged planes

Propeller shop on ARV is equipped to do major repairs. Here crewmen adjust sling on a Hamilton Standard propeller. Overhead hoist can travel the whole length of the ship machine shop

Ships Carry Wide Variety of Vehicles to Transport Jobs to or from an Airstrip to be Repaired

AIRCRAFT repair ships are well-equipped with mobile equipment to bring aircraft parts to and from landing strips. A pair of A and E ships have the following aboard: one mobile machine shop truck, one machine-shop trailer, welding shop truck, two line maintenance power supply jeeps, one radio/radar maintenance truck, four cargo trucks, four weapon carriers, eight jeeps, six tractors, four jeep trailers, two portable floodlight trailers, four air-compressors, six power units, two 36′ launches, four fork-lift trucks, two rearming boats, two propeller trailers, one torpedo-topping compressor, 12 engine transportation stands.

Not all of shops aboard A and E ships are equipped to do major overhaul work, some being designed only for minor repairs, while others can make major repairs or top overhauls.

In the interior of the ship, an overhead crane moves the length of the big forward compartment in which LST's usually carry tanks. Various shops line both sides of the compartment. The main deck house, an innovation on ARV's, contains the engine-test stand, engine shop, carburetor-test shop, boiler and evaporator room and auxiliary machinery on an E ship. On an A ship it contains auxiliary machinery, boiler and evaporator, laundry, dope and drying room, and wing shop.

To make the new ships efficient, only a minimum of equipment necessary to perform the work defined for each shop is carried. There is little duplication of heavy or bulky equipment, such as work benches and installed machinery.

Like other Navy ships, ARV's have their own water-purifying machines to provide drinking and fresh water for boilers. Units are larger than those put in an ordinary LST, which carries a considerably smaller crew.

ARV's would have been produced earlier in the war had not the demand for LST's to carry invasion troops been so heavy. Long planned and carefully designed by BUAER Maintenance division and BUSHIPS, the new aircraft repair vessels are headed for important duty overseas, helping to convert former enemy-held land to quick use.

Looking forward on machine shop deck, with ramp doors open in background. Milling machine and shaper in foreground, propeller shop in rear left and ample storage bins on right

First aircraft repair vessel to be launched at American Bridge company yards near Pittsburgh, slides down ways sidewise. *Aventinus* was first of four new ARV's built for invasion action

TOKYO TALKS

—To Japan and Empire

In the deciding battle for Okinawa, at various places the Army and civilians formed groups to carry out sword-slashing attacks. At this particular moment, the Military Aviation Cadet School has a secret process for the sword-slashing method of fighting tactics, known as the sure-killing sword. The whole school is making progress in unison in mastering the secret process, but at the same time they are passing this progress on to the entire Army. All the officers and men of the Imperial Army, by wielding the sure-killing sword and by executing body-crashing tactics, are expected to achieve unerring results in battle.

—To China and Manchuria

Fifty-nine U.S. planes recently raided the city of Hong Kong and dropped a huge number of bombs of highly incendiary nature. As a result of this wanton attack, the business center and many residential areas were turned into a blazing inferno.

—To Japan

Despite the clever and gallant fight put up by our land forces on Okinawa, the war situation is still not in our favor. If we only had the aircraft strong enough to smash the enemy's supply line, we would have definitely smashed the enemy in Okinawa. The enemy admits that our planes are superior, thus in order to defeat those who are seeking to invade our homeland, our only road is to make more of these superior aircraft. As the enemy approaches our homeland, his supply line will be extended.

—To The United States

The grand fortress of the Japanese mainland is defended by all sorts of artillery positions which are connected with one another by underground communications lines. Thus no matter how severely enemy warships may bombard Japan proper, underground positions will remain intact. No bombing attacks will destroy these positions though the enemy may be able to deliver heavy losses to cities and factories.

—To Japan and Empire

Britain and America have now reduced the German people to a status worse than that of slaves. They have put all activity under strict control. The Soviet Union, on the other hand, is encouraging cultural activity by holding musical concerts and opening theaters, and has even recognized the activity of labor unions.

—To South America

The use of poison gas against Japanese forces is now being openly advocated by U.S. newspapers. The New York [*Herald*] *Tribune* states: ". . . the use of poisonous gases is the most efficacious weapon for finishing off soldiers such as those that are fighting in Okinawa and those which the U.S. troops will have to meet in Japan itself."

—To the United States

Reports have been received that scores of B-24's and B-17's have reached Philippine bases from Europe. Also large transport planes have been arriving laden with materials which are being used to expand and strengthen the airfields in the Okinawa Islands.

—To Home and Empire

Reconstruction work in areas devastated by air raids is steadily being carried out, and sanitation problems which were at first of some concern to the authorities are being taken care of. The outbreak of infectious diseases is to date comparatively small and is being held down to a minimum as compared to the epidemic of diphtheria and cerebro-spinal meningitis of last winter.

—To Japan and Empire

There is still a demand for a considerably greater number of laborers for the coal-mining industry. In order to alleviate this situation, it has been decided that those who have changed their positions from factory work to other work, and war victims, will be employed in this field.

—To Japan

According to a dispatch from Rio de Janeiro, the Brazilian Government declared war against Japan on June 6. It has also been reported that the Polish Government in Exile in London has joined the Allies against Japan, and that combat units of the exile government, under the strategy and guidance of the British naval command have already begun operations against Japan.

—To the United States

Never before in the history of modern warfare has an enemy attempted to invade a natural fortress so impregnable as Japan's home island. Never before has an enemy been met by a defender nation of 90 million people, every man, woman and child of which is determined to die rather than surrender.

—To U.S. Pacific Forces

A very effective substitute for quinine as a cure for malaria has been discovered by Professor Matsuoka of the Keio Medical College. One single injection of this new remedy obtained from a certain element contained in human hair is sufficient to cure the worst case of malaria. Japanese factories have begun large-scale production of this new medicine in view of the great demand for such an effective remedy in the South Pacific.

—To the United States

The *People's Handbook for Resistance Combat*, recently distributed to the civilian volunteer corps and regular Army units, deals among other things with methods of shooting down paratroopers, hand-to-hand combat, interception of trucks, bodily attacks against tanks, hand grenade tactics, and defense measures against gas and flame throwers.

—To the United States

The object of enemy air raids is manifold. First, the Americans aim at lowering the morale of the people at large by bombing them out of their homes. Second, they intend to destroy the political and economic centers of Japan. Third, they mean to break up industries of military importance. In short they intend to destroy Japan's striking power. As for the homeless, they are taken to the country where they will be taken care of. There they will tend to be optimists rather than pessimists, and there they will surely find their fighting morale higher than they would have done in the cities.

—To the United States

Another concrete step forward toward consummation of the defense of the homeland against enemy invasion was taken today when it was revealed that the War Office is to take over direct charge of motor truck and other small freight transportation. It is understood that the new step was taken in view of the recently intensified enemy air raids and is mainly designed to facilitate and speed up transportation of military supplies within the homeland.

—To the United States

The Greek Government claims that Greece has been at war with Japan ever since Japan entered the war with the Allies. The Greek Government also disclosed that the Greek Fleet has already participated in operations against Japan.

SHOW ME THE WAY TO GO HOME

Link Problem

Mid-lat. 30° N, Mid-long. 87° W, Pt. Option: 0800; Lat. 29° 05′ N, Long. 87° 54′ W; Cus 100°, Sp. 20 k, W/V 165°/15 k, TAS 160 k, Alt. 1000 ft., Var. 9° E.

Timing:

0800: Depart 5 mi. ahead of Pt. Option on MH 000°
0807: Wind changes to 150°/30 k.
0812: MH 103°
0822: MH 185°
0828: Wind changes to 340°/25 k.
0830: U.S. Destroyer sighted 10 mi. on port beam. Start interception Pt. Option.

1. What is 0828 position?
2. What is position of U. S. Destroyer?
3. What is ETI?
4. What is EPI?

(Answers on page 48)

NAVY'S HOTTEST PILOTS

Night FIGHTERS

THE LAST word in Navy night fighter operations is "splash." In the Fleet, that call at night means one Jap plane intercepted and shot down! Without intensive VF(N) training, even the hottest day fighter pilot can't fly his *Hellcat* off a carrier deck at night, intercept an attacking Jap, "splash" it, and come back aboard safely. Because night fighting is a highly specialized field of aviation, night kills rate highest honors in the Fleet. Actually, night fighting is a teamwork proposition. When the Fighter Director calls, "I have a customer for you," no "splash" can follow unless there is and has been the closest cooperation between pilot, FDO, and radar maintenance officer. Starting from scratch, Naval Aviation has developed a powerful defensive and offensive night air arm. With VF(N) units carrying the fight to the enemy at night, carrier war now is waged 24 hours a day.

Night FIGHTERS Born in Blitz, VF(N)'s Turn To Tokyo

WHEN Winston Churchill said "Never have so many owed so much to so few," he included the world's first night fighter pilots. A new type of aerial warfare, night fighting had its birth in the skies over blacked-out London when Goering sent his *Luftwaffe* to blitz Britain out of the war in September 1940. Today night fighter pilots, using techniques and equipment developed by the Navy, fly off CV's to strike blows at Japan.

When England's handful of *Spitfires* and *Hurricanes* made the *Luftwaffe's* daylight blitz too costly, Germany turned to night raids. Necessity being the mother of invention, Royal Air Force used what it had available and sent up radar-rigged Boulton–Paul *Defiants* to fight at night. Using these planes, RAF developed the world's first effective night fighter defensive tactics. Night raids against Britain slackened. As Allied air strength grew, night fighting too turned to the offensive.

It was from this RAF background, and from early operational experiences of Navy, Marine and Army flyers in the South Pacific, that Naval Aviation began the building of its night fighter program. From the beginning, Navy's problem was basically different from that of RAF or Army. Both the plane and its equipment had to meet performance characteristics for carrier use. While RAF, and later AAF and Marine Corps, could use heavier planes with a radar operator aboard, Navy built its VF(N) program around single-seat, carrier type fighters.

American forces bumped into their first major night operational problems on Guadalcanal. There the Japs used "Washing Machine Charley" to keep attacking Marines sleepless around the clock. Lacking both equipment and experience required effectively to combat night bombing activities, American forces improvised with what they had. Army pilots first tried stopping "Washing Machine Charley" with A-20's, and had some success using P-38's in close cooperation with searchlights and anti-aircraft fire. Navy, at that time, had no satisfactory equipment available for night fighting. A period of experimentation and development, obviously, was necessary.

Moving to meet these new operational demands, Navy commissioned a night fighter experimental and development

unit at NAS QUONSET POINT in 1942. Known as *Project Affirm*, this unit carried on all phases of development and experimental work and served as both source and clearing house for all information concerning night fighting equipment, doctrine and tactics.

A man who had gone through the early electronic development work as a member of the famed RAF American Eagle squadron during the Blitz was officer-in-charge. Project Affirm set out immediately to fit the best available electronic gear into the best available naval aircraft that could be had.

Massachusetts Institute of Technology's radiation laboratory, which had carried out extensive radar research, supplied the electronic gear. Project Affirm selected the *Corsair* as the best available aircraft. With this working combination, experiments and developments in night fighter installations, performance tactics and procedure began.

In April 1943 Navy's first VF(N) squadron formed at Project Affirm with 18 pilots, 6 ground officers and 30 enlisted men. Again Navy used what was available. Only five pilots had instrument time, all lacked night fighting experience and electronics training. Three of the 18 pilots were qualified in *Corsairs*, three in *Wildcats* and the rest had flown only SNJ's.

Half this original squadron, VF(N) 75, went to the Pacific in August 1943. Shore based in the Solomons, its first night operational duty was washing out "Washing Machine Charley." The science of electronics entered the Pacific picture with this first Navy night fighter squadron. Soon more and more Jap night bombers were failing to return. Shore-based night fighters, both Navy and Marine, had won their first defensive battle. Like RAF, successful defensive night fighter action led naturally into night fighter offensive work. Starting in the Solomons, American air forces took over the job of keeping Jap garrisons awake around the clock.

Night fighters went aboard carriers for the first time in January 1944. Two squadrons, one flying *Corsairs*, the other *Hellcats*, went aboard four CV's. While they maintained squadron identity, these first ship-based Navy night fighters actually were broken into six-pilot units. They used defensive doctrine developed during 12 nights of continuous and intensive night fighter practice.

Night fighter work of these first two ship-based squadrons was largely defensive. Their first night interception came early in 1944 when the leader of VF(N) 101, flying a *Corsair*, "splashed" a Jap *Betty* near Truk. On succeeding nights, three more Jap night intruders were shot down. One fell in flames over the task force, and from the bridge an admiral radioed, "Well done."

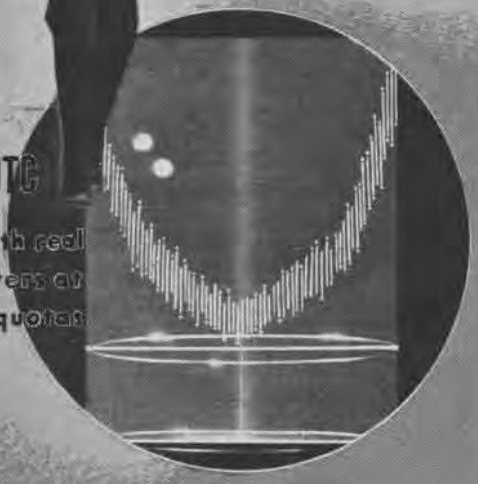
From this carrier night fighter beginning, VF(N) pilots gradually turned to offensive action, flying intruder, heckler and zipper missions against enemy shore bases and fleet units. Next step in the developing night fighter program was the night carrier. In the summer of 1944 a night air group consisting of NACTULANT-trained VF(N)'s and VT(N)'s went aboard a CVL to become Navy's first complete night carrier operation. Their work in successive Fleet actions in Philippine and China Sea waters was highly effective, defensively and offensively.

Meanwhile Project Affirm, having served its original purpose, was divided. Technical departments went to NAS PATUXENT RIVER, and training activities came under cognizance of Night Attack and Combat Training Unit, Atlantic.

Sharing with pilots the credit for night fighting successes are the men who developed radar and VHF radio equipment without which operations would be impossible. This gear is being constantly improved on basis of Fleet experience.

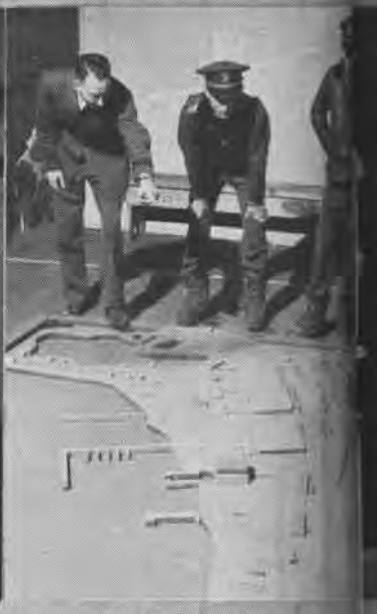
Every night interception begins on the ground. From GCI (ground control intercept) stations like Charlestown's *Cousin*, fighter-director officers send out "blip-by-blip" reports to the night fighter pilot as he presses home his interception. While the GCI's function and performance are in most respects identical to the daytime operation, the no-visibility factor necessitates the ultimate in precision and dependability. As the loudspeaker of the GCI unit, it's the FDO's job to transmit all pertinent information on the target—its course, speed, altitude, and relative position. Night fighter pilots on training hops work with specified GCI stations. Split-second precision and the general spirit of teamwork and mutual confidence built up between pilots and FDO's in training are carried through to the Fleet where it pays off in Jap planes "splashed"—the goal toward which both strive.

NIGHT FIGHTERS GET $20,000 GRADU



FLEET & NAOTC

Qualified pilots with real
esire to fly fighters a
ight fill VF(N) quotas



PRE-ELECTRONICS

5 WEEKS

Pilots without previous night fighter experience report to NAAS Kingsville, Texas where they receive necessary background in electronics principles

ELECTRONICS

6 WEEKS

VF(N)'s at NAS Vero Beach, Fla., still training as individuals, get their first real taste of night flying in radar-rigged Hellcats and Beechcraft trainers

SQUADRON TRAINING

9 WEEKS

Night Fighter pilots begin their squadron work at NAS Boca Chica Fla., where for the first time they come under the Night Attack & Combat Training Unit

Night FIGHTERS

Pilots Train for Night Carrier Duty

IN SELECTING night fighter pilots, Navy skims the cream from a reservoir of Naval Aviators, including operationally experienced officers back from the Fleet and selected graduates of Pensacola and Corpus Christi. Requests for VF(N) duty are weighed carefully by those in charge of selection.

Selected pilots, when they've successfully completed a nine-month course that includes $20,000 worth of electronics and instrument training, can call themselves Navy Night Fighters. They're qualified and equipped to fly and fight at night wherever their carrier takes them.

Mediocrity has no place in night fighting. Men who can't or don't bother to fly a fighter well in daylight can't qualify. Officers who make up VF(N) squadrons, like the personnel of any crack military organization, must have supreme confidence in their own ability and the worth of their equipment. Above all, VF(N) officers must have a desire to be night fighter pilots. They must be able to grasp information quickly and they must enjoy instrument flying.

Qualified VF(N) pilots back from combat in the Pacific say its safer flying at night. Under cover of darkness they know that their superior training and better electronic equipment gives them a more decided edge over the enemy than they would have in daylight. In addition, Jap flak isn't as heavy or as accurate after dark, pilots back from the Fleet report. These are significant factors to pilots.

E COURSE

COMBAT

GROUP TRAINING

9 WEEKS

At NAAF Westerly, R. I., and NAAF Charlestown, R. I., VF(N)'s practice night attack work. At NAAF Martha's Vineyard, VT(N)'s, VF(N)'s form

UNTIL recently, all night fighter training came under direct cognizance of Night Attack & Combat Training Unit, Atlantic. Pilots, direct from NAOTC, took preliminary electronics and fighter training at Vero Beach, Fla., and then reported to NAAF CHARLESTOWN, R. I., where they joined experienced pilots to form training squadrons, prior to joining operational squadrons.

Now all pilots selected for night fighter duty, veterans without VF(N) experience and newly commissioned officers alike, report to NAAS KINGSVILLE, TEXAS for five weeks of pre-electronics training. From Kingsville, pilots report to NAS VERO BEACH, FLA., for six weeks of electronics training. Both Kingsville and Vero Beach stages are under general direction of the Naval Air Operational Training Command. Marine night fighter pilots, after training at Kingsville and Vero Beach, go directly to EAGLE MOUNTAIN LAKE, TEXAS for the attack syllabus.

Navy night fighter trainees report to NAS BOCA CHICA, FLA., for nine weeks of squadron work in fighter tactics and defensive training. Here, for the first time in the VF(N) program, pilots work in units.

The final nine weeks of training is received in the COMFAIRQUONSET area starting at Westerly, R. I., moving next to Charlestown and ending at Martha's Vineyard. During their nine weeks in the New England area VF(N)'s complete group training and qualify for carrier duty on CVE's operating in the area. Training at Boca Chica and in Rhode Island is under the command of NACTULANT and the general direction of COMAIRLANT.

Night fighter squadrons and air groups next report to NAS BARBER'S POINT, on Oahu, where they acquire the final polish required for offensive and defensive night carrier operations in the Pacific.

Night torpedo pilots and crewmen, after receiving three months of preliminary training at Kingsville, report directly to COMFAIRQUONSET. VT(N) units train as squadrons at NAAF SANFORD, ME., and then report to NAAF MARTHA'S VINEYARD for air group work with training VF(N) squadrons.

Night FIGHTERS Ground Training is Night-Adapted

THE NIGHT fighter pilot's ground training has two primary missions: instruction in use of electronic equipment and practical adaption of previously acquired knowledge to night use.

Basic pre-requisite for any night fighter pilot is an understanding of and a respect for night vision. To night-adapt his eyes, a pilot wears red goggles for 30 minutes in ordinary light or remains in complete darkness for half an hour. One flash of light when the eyes are not covered by red goggles ends the night-adaption. Any VF(N) who fails to night-adapt and stay night-adapted is more likely to be "splashed" than to "splash."

For that reason all ground school work is night-adapted. Pilots, relying on their rods alone, learn to recognize planes and ships, to work navigation problems and to carry out other duties required of all fighter pilots operating in combat areas.

In the Fleet, night fighter pilots, because of their added training and the special electronic gear on their planes, quickly established a reputation as good navigators. Night fighters frequently lead day groups to the target on pre-dawn strikes and guide returning planes back to the carrier. VF(N) pilots, too, are logical choices in the Fleet for air/sea rescue work because their radar equipment is ideal for picking up life raft reflector signals.

GROUND training in navigation largely is a case of giving pilots a chance to practice work they already have had and sometimes failed to master in previous courses. In cockpits of Link trainers, pilots work out fundamental carrier navigation dead-reckoning problems with the MARK III board. Final problem in the VF(N) navigation syllabus is a simulated night strike on Japan's capital city of Tokyo.

While it's possible for a night fighter to splash a bandit without actually seeing it, most commands insist on a visual. Night recognition is so different from day recognition it was necessary for NACTULANT to develop an entirely new system. In setting up their classes NACTULANT took the advice of returning night fighter pilots who said: "Make 'em as dark as possible and show stern views."

Pilots who pioneered night fighting in the Fleet and those now assigned VF(N) duty there got their first practical electronics instruction in radar-rigged Link trainers.

In the safety of a darkened Link cockpit, a VF(N) pilot gains the radar experience required for split-second reaction and interpreting judgment necessary for a night fighter interception and "splash". In the radar Link, pilots simulate changes in speed and evasive action in both azimuth and elevation. A counter records the "splashes."

AFTER each Link hop, pilot and radar officer get together for a de-briefing sessions. These de-briefings, like those radar maintenance officers hold after night flights in the Fleet, materially aid pilots in improving their use of radar equipment on the plane. All radar maintenance officers attached to night fighter units receive part of their training under NACTULANT.

Ground Control Intercept officers who direct the VF(N)'s during their training also give communications lectures. Complete cooperation and understanding between FDO and pilot is essential. Successful missions result only when these officers operate as a team. Procedure on the part of both the director and the night fighter pilot must be perfect.

To simulate actual conditions pilots will encounter on a night strike, this room is darkened during briefing. Night fighter pilots sitting on balcony listen as the ACI officer briefs them for raid

Pilots' eyes must be night-adapted to distinguish between friendly and enemy plane shadows on the night recognition screen. Pilots sit at distances simulating actual ranges of 550, 400, 250 feet.

A NAVY PHOTOGRAPHER LEFT HIS CAMERA LENS OPEN FOR A FEW MINUTES TO RECORD CHARLESTOWN FIELD VF(N) TRAFFIC PATTERNS

Flight Training

IT TAKES both skill and desire to transform an ordinary Naval Aviator into a competent night fighter pilot. Night fighter duty requires ceaseless practice and the highest flying skill. But VF(N) pilots don't have to be super-aviators.

Naval Aviators who train to fight in *Hellcats* flown off carrier decks at night, learn early they can't fly by the seat of their pants. From the very first, they're taught to use their instruments, fly by them, trust them.

To make a safe approach to the ship at night requires ability to fly instruments comfortably and precisely. The pilot must be able to maneuver his plane on instruments to a degree that enables him to make a successful interception on an airplane that is using evasive action including rapid changes of altitude, radical turns and abrupt changes of speed.

Operationally experienced night fighter pilots serve in liaison capacities giving training squadrons the word on VF(N) duty in the Fleet. Operations at Charlestown, R. I., NACTULANT headquarters, in most respects simulate those of a night carrier. To preserve night vision of pilots, the entire station is blacked-out. Only lights showing are red. Runway lights, wing-tip lights on the planes, beam from the tower, and even lighting in operations, ready room and heads are designed for night adaption of the pilot's eyes.

Since precision and skill in night flying only can be obtained by constant practice, NACTULANT insists that training night fighters fly as much as possible. At Charlestown the pilot who logs the most hours of night flying each week receives a desk model of his F6F. Even long weekends are allotted on a basis of night hours logged. Training VF(N) pilots begin their night fighter intercept work in SNB's rigged with radar. In these and later in *Hellcats*, they carry out GCI searches and fly practice "heckler", "intruder", and "zipper" missions.

Completely to simulate carrier operations, the Charlestown field is rigged for catapult launchings and for arrested landings. In the Fleet night fighters always are catapulted off. Lso's on duty with NACTULANT hold bounce drills and conduct lectures on night landing operations.

BEFORE shoving off for Barber's Point and operational night fighter duty in the Fleet, every pilot spends several days on a CVE operating in the Quonset area, completing carrier qualifications. Later at NACTUPAC they receive intensive night carrier practice.

Early in their training, pilots learn the 4C's of night fighting—Climb, Confess, Communicate, Comply. Remembering this doctrine in any emergency can save the pilot's own skin and also give his fighter director a second chance to vector him back for a "splash" after he's reported "no joy" on his initial interception attempt on the Jap plane.

Night FIGHTERS

THEIR EXPLOITS WIN NAVY'S RECOGNITION

NIGHT fighter pilots, by their skill and daring, are writing one of Naval Aviation's most dramatic chapters. For security reasons most of their story has remained untold until now, and some must remain so. Action reports like these indicate why men in the Fleet call night fighters the Navy's "hottest" pilots.

Aboard the world's first night carrier, Night Air Group 41 made aviation history during the last half of 1944. This specially trained group of night fighter and night torpedo pilots, skippered by Comdr. Turner F. Caldwell, carried forward and developed the tactics and techniques pioneered by personnel in early Navy and Marine night fighter squadrons in the Pacific. Commander Caldwell made these comments in an official interview:

Night carrier—"We joined the Fleet in the latter part of August 1944, in time to take part in the Palau campaign, the Mindanao campaign, and then Luzon, not to mention Formosa, Okinawa, and other little side trips. We got a break one night in the latter part of September. One of our patrols in the late evening chased a *Dinah* out to 80 miles at 32,000 ft. and shot him down after dusk, and returned to land in total darkness during a heavy thunder storm. The four planes got aboard in very good order. . . . Finally, by the first part of October, we were converted over to full night status. . . . That is when we really began to learn things."

Battle for Leyte Gulf—". . . torpedo planes in that engagement did quite a bit of scouting . . . they scouted all night long and tracked the northern

force of the Japanese fleet. The next night they tracked until about two o'clock in the morning, following the Jap battleships through the San Bernadino Straits."

Night Air/Sea Rescue — "Around that same time we went into Air/Sea Rescue at night. There were some planes that went into the water about that time, a large group of them. The night fighters went out, sighted flash lights on the water and kept the people in sight, and brought destroyers over to them. That got quite a big hand for us from the Fleet, especially from the boys that were picked up. . . . The night fighters performed a signal service in Air/Sea

Rescue. . . . If the guy in the water has a light of any kind, the night fighter can keep him spotted indefinitely, and that just extends the time in which he can be kept in sight and the rescue destroyer gotten over there to pick him up and get him dried off."

Night Attacks on Luzon—". . . we kept at least one plane over Luzon all night long. . . . Around midnight the planes had a round trip of close to 600 miles, which meant, in one case I remember, gas enough to stay over the target nine minutes. However, we did keep planes in their all night long. . . . As soon as we started keeping our 24-hour patrol, the suicide business dropped off to a considerable extent. . . . By keeping a plane over Clark field and another over the Manila field area, anybody showing a light would be hopped on, and it kept them in their foxholes.

Intruder Missions "The intruder phase of night attack, that is, sending over fighters with the primary object of shooting down enemy planes. . . . We did quite a few over Luzon and three over Formosa. . . . There were a number of peculiar instances involved. . . . A Jap plane over Manila bay was illuminated by his own searchlights; so he turned his lights on. The searchlights went out, but he left his lights on; so our fighter went down and let him have it."

Zipper Patrols—". . . a patrol of which one end of the flight is in darkness, is called a *Zipper*. Their value was several times demonstrated, and very spectacularly in one incident off Luzon. The zipper patrol was headed for the northern end of the island to cover a group of airfields up there. Just at sunset they passed over a group of six *Bettys* coming in to attack the Fleet. Our people attacked, scattering them and shooting down three. If they hadn't caught those Japs, we figure they would have arrived on the scene as the regular day patrols were landing, it would have been a scene of some confusion."

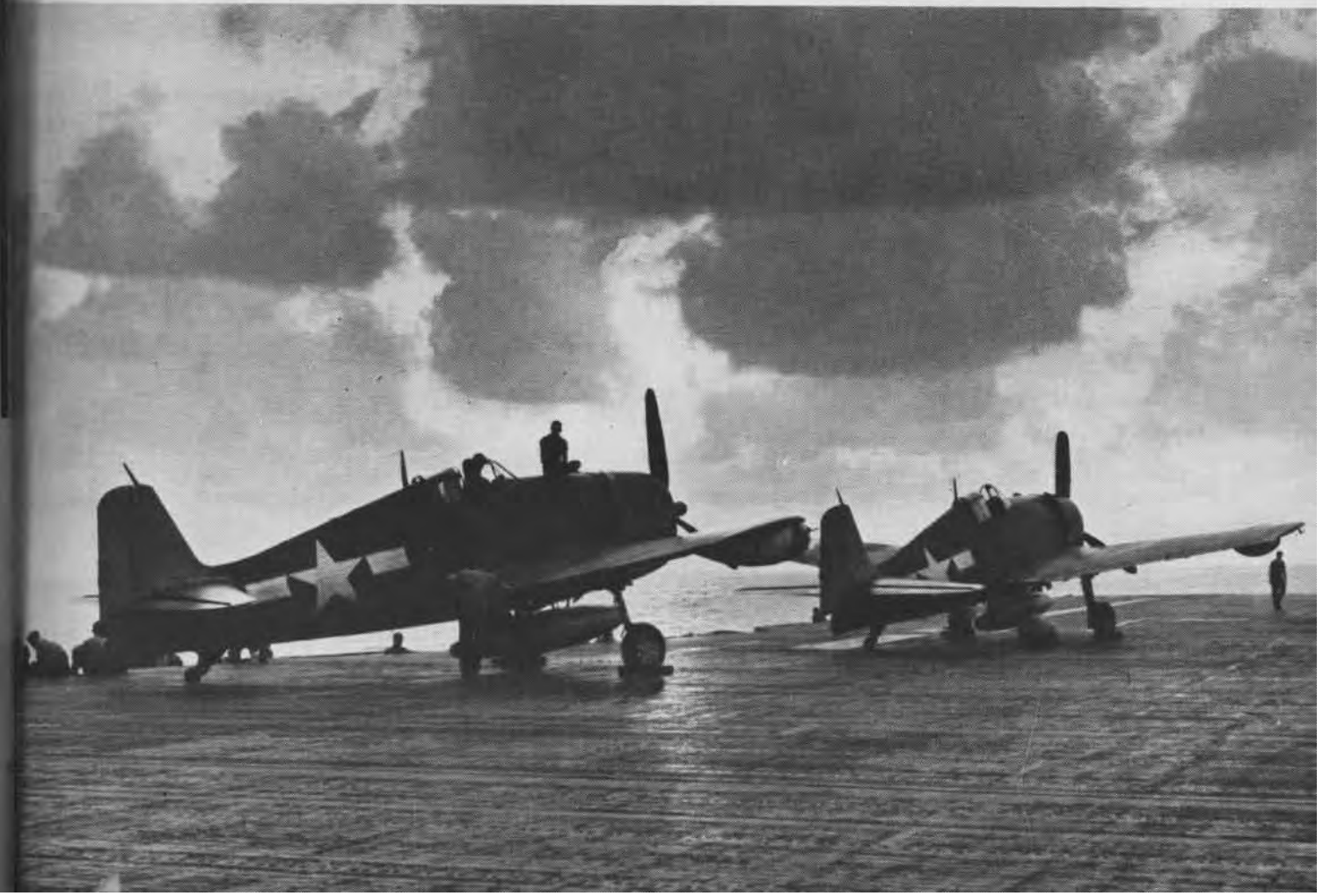
Box Score—". . . final results of our cruise were 46 planes shot down in the air, about 30 of them at night. We got 20 or more planes on the ground and we sank three ships. Only one was sunk at night, but it proved it could be done."

ACTION REPORT: "At 1715 four planes took off for a TDADCAP over Okinawa. After being vectored in at 150 degrees it was suggested the problem be broken off due to poor information. Lt. D. E. Runion, leading the flight, requested permission to continue, and it was given. Almost immediately the VF spotted AA fire from our surface craft and headed in that direction. Planes went to an area two miles north of the DD's and took up a starboard orbit locating a bogey at three o'clock to the south. The bogey was 1000 ft. above our

planes which were orbitting at 5500 ft. The *Val* pushed over and started to dive on our destroyer. Lt. (jg) W. J. Squires closed to 1000 ft. and opened up at a 45-degree angle from the same level. The *Val* then pushed over in a steeper dive and Squires slid onto his tail and continued firing until the *Val* caught fire in the starboard wing root. At this time the *Val* was down to 800 ft. so the attacking plane broke off to starboard and the *Val* crashed into the water where it burned and sank. During the entire dive the destroyer was firing. Squires pressed home his attack through the DD fire and shot down the enemy plane, causing it to miss the destroyer in its suicide dive. The Jap hit the water about 10 to 15 feet from the bow of the destroyer and went up in smoke."

A NACTULant trained night fighter pilot brings his *Hellcat* in for a night landing on a training carrier operating in the Quonset Point area. Night carrier operations require real precision flying

Crewmen prepare two night fighter *Hellcats* for a dusk take-off from deck of a task force carrier in Pacific. These VF(N)'s will fly night CAP while the day fighters and their crews get needed sleep



SHORE STATIONS

▶NATTC MEMPHIS—When an SK was called to chapel last Friday, she arrived just in time to hear the boot choir burst out with Happy Birthday. The honoree, somewhat of a vocalist herself, reciprocated with *The Last Rose of Summer.*

▶NAS HONOLULU—Posted by the slot-machines in the officers' club, famous for their failure to pay-off, is the following sign: "In case of an air raid, stand here. These things have never been hit yet."

▶NAS FORT LAUDERDALE—AN AMM reported with his friend Sparky, who is an air-going cocker with 150 hours in his flight log. Sparky, who joined the Navy when he was two months old, was transferred to the Aleutians after he had finished boot.

Sparky's battle station in the PV, his favorite plane, was under the turret. His record is 15 missions over enemy territory. His relaxing station at home in the quonset hut was near the oil stove. When the Red Cross gave out blue scarves during the cold snaps, Sparky accepted one and wore it sarong-fashion.

Sparky was a hardy soul. Not anything bothered him very much except the MAA's. If they came in late at night or early in the morning to arouse his masters, he would nip them. Outside of MAA's, he loved all sailors.

▶NAGS MIAMI—George Lizard Nelson, born 16 February 1945 in the vicinity of the NAVAL AIR GUNNERS SCHOOL, departed this life 2 May 1945 at the age of two months and fourteen days.

George Lizard Nelson is mourned not only by all hands aboard, but also by his sole playmate, Wishie, the turtle who is very deeply grieved.

George lost his life in the hangar building during a dance he was attending. After falling to the floor, he was trampled beyond medical aid by the unsuspecting rug cutters. Such is the life of a Lizard!

▶NAS PATUXENT—The first day the *Mars* came to Patuxent she lay in VR-8's seaplane basin, when a station bus happened to be going by. One of the air station's sailors, noticing the world's largest flying boat, asked the bus driver, "Is that the regular *Mars?*"

"I don't know whether she's the regular *Mars* or not," replied the driver, "or, whether she's just the USNR."

▶MCAS CHERRY POINT—The well-known love of a dog for its master had its counterpart recently when a member of the station squadron made a touching request for a 71-hour pass.

Approaching his first sergeant's desk with hesitant steps, the young Marine, obviously in great sorrow, voiced his request.

"And what do you want a three-day pass for?" continued the sergeant in the stock manner.

"I just got to go home. My dog got hit by a car." The words came out in a rush as the applicant struggled to maintain his composure.

The sergeant had difficulty suppressing a smile.

"It's no laughing matter, Sergeant." He hesitated, slightly hurt, "You see I love my dog."

"I'm sorry, fellow. I think I know how you feel," the Sergeant soothed him. "Let's go in and see the old man."

The boy got his pass.

▶NATTC NORMAN—A man's best friend is supposed to be his mother but a shore-patrol chief here runs "mama" a close second.

The other night when a fire-fighter was seized with a terrific tummyache, the chief obligingly went over to the dispensary to get some paragoric for the stricken sailor. Upon being asked by the medical officer whom the paragoric was for, the chief had a lapse of memory, stammered, grew red in the face and downed the medicine himself.

▶NAS HONOLULU—A CPO of the docking crews went over to the cargo terminal building to see the Jap suicide plane. After he had seen all he wanted, he mounted his iron steed, a motor scooter, and in high gear zipped around the west end of the building, just as the street cleaner came from the opposite direction. The resultant crash made the wreck of the Old 97 seem like child's play. The chief swears by the Bible he went around the rotor-broom three times before he got untangled, and that he was none too sure at that time his iron steed hadn't been hit by a Jap suicide plane.

▶NAS GLENVIEW—An officer returning to NAS, Glenview, reported that when they arrived in an Australian port, two 12-year-old boys paddled their little canvas canoe alongside the troopship. He leaned over the rail and asked them what they wanted. They told him they wished to come aboard. His answer, of course, was no. But the boys insisted.

"Now get out of here," the officer said sternly, irritated at their persistence. "You can't come aboard! So, scram!"

One of the boys looked the Naval Officer in the eye and asked, "Are you the captain of this ship?"

"No, I'm not," the officer answered. "But I'm the third officer!"

The small boy rising in his canoe said, "Well, then, you had better learn to be more respectful to your superiors. I'm captain of this one."

Advance Bases

LET NANEWS HEAR FROM YOU!

▶CGAS SAN DIEGO—With the ease and confidence of a bos'n's mate with eight hash marks, two enlisted SPARS are operating the running boat that plies between here and NAS SAN DIEGO and the city dock at San Diego. The feminine sailors are S1c and S2c and are assigned to the running boat as COXSWAINS.

▶NAS SEATTLE—Stewards on waking duty at the BOQ take no chances on being blamed for the oversleeping of residents. When they wake up a slumbering BOQer, they ask him to initial a "receipt" acknowledging he's out of the arms of Morpheus.

▶MCAS EL TORO—Borrowers at the station library almost got biscuits with their books recently. Deciding to make their own paste, the library assistants borrowed flour from the mess hall, mixed it carefully with the proper amount of water and applied it to the books needing card envelopes. Books were left open to dry and, when next noticed, the envelopes had risen noticeably from the covers of the book.

The levity of the envelopes was traced to the flour. Upon investigation it was found the flour had already been mixed with baking powder.

▶NAS MINNEAPOLIS—The station's welfare and recreational department has devised a plan whereby all ship's company may have an opportunity to try out Minnesota fishing. Arrangements have been made with a hotel at Mille Lacs, one of Minnesota's largest lakes, to accommodate 35 men. The lake is famous for its wall-eyed pike, favorite of Minnesota fishermen.

▶NAS HONOLULU—On a GTC examination for non-rated men, given recently by VR-12 education, this question was asked: "Name three carries used in life saving." Among the answers received was this one: "*Wasp, Essex* and *Enterprise.*"

▶MCAS EL TORO—When the Red Cross mobile blood bank arrived at this station, more than six hundred men and women reported as volunteer donors. This was almost twice as many as could be accepted. With time and equipment available only 372 blood donations could actually be taken.

SURVIVAL TRAINING UNIT AT MCAS CHERRY POINT TEACHES AIRCREWMEN AND PILOTS HOW TO COMPETENTLY MEET AN EMERGENCY

SURVIVAL TRAINING

FLIGHT personnel leaving MCAS CHERRY POINT for combat duty have the best possible chance of surviving under crash or emergency landing conditions. The Survival Training Unit at this station familiarizes pilots and aircrewmen with Land and Sea Survival.

Each week, 100 men report for instruction in the 19 hour survival course. Training films introduce each subject. This is followed by lectures, active participation in a problem, and a final check-out through the boondocks.

The course is divided into two phases: LAND SURVIVAL and SEA SURVIVAL. After becoming thoroughly familiar with all types of equipment, men are instructed in how to use it. Knowledge of Arctic and Pacific areas is stressed as well as determination to see any emergency through, and the use of ordinary old fashioned common sense.

SEA SURVIVAL

USE OF CLOTHING AS A MEANS OF FLOATATION IS REHEARSED BY SURVIVAL STUDENTS

MARINE aviation personnel forced down in strange waters rely on information and techniques learned at the Survival Training Unit, MCAS CHERRY POINT. The training crews receive enables them competently to meet an emergency, thus affording better chance of safely returning to base.

A man may ditch and live if he keeps his wits and remembers what he has been taught. In combat swimming pools, classes make simulated parachute landings, review methods of harness release, water entry, inflation of life vest, breaking out rafts and securing equipment. In addition, methods of using clothing for floatation are practiced.

Riding a plane in also is discussed and rehearsed through use of a dummy fuselage and cockpit. This training aid slides into the water and simulates a water crash. Pilots and aircrewmen are taught what to salvage for later use plus the factors involved in determining advisability of inflating the life vest or raft. Individual practice perfects the procedure.

After safely entering the water, Leathernecks must be familiar with all types of rafts, what they contain and proper discipline in a raft. Students are taught how to fish and catch rain water, methods of protecting themselves from exposure, and seamanship.

Correct use of signaling equipment may mean life or death, and crews are carefully drilled in all available means of contact. They are shown how the sail cloth can be used as a rescue aid and signal panel, loading safety and proper firing position of Very's projector and flares, Gibson Girl radio, signaling mirrors and smoke grenades.

Pilots and aircrewmen are brought up to date on all current information relative to modifications and new types of equipment. A series of lectures also is given on drift, wind, land falls, sharks, barracuda and physalia. Marines who complete the course are equipped to meet most emergencies and survive.

MARINES BECOME THOROUGHLY FAMILIAR WITH ALL TYPES OF EQUIPMENT, AND THEN ARE TAUGHT HOW TO USE IT SUCCESSFULLY

IN BOONDOCKS OF NORTH CAROLINA, MEN ARE TAUGHT HOW TO CONSTRUCT SHELTERS, BUILD FIRES AND SURVIVE IN JUNGLE AREA

SURVIVAL ON LAND

Survival in a jungle depends on a man's knowledge and his ingenuity. The Survival Training Unit makes sure every student completing the course knows what to do and how to live in a strange environment.

Water supply and substitutes are major items in survival knowledge. Men are shown how to procure water from underground plants, methods of purification with halazone tablets, and ways to improvise containers from natural sources such as coconuts or plane parts.

Food is equally important. Lectures are given pilots and aircrewmen on types of animal food, fish and fur-bearing animals. Fundamental principles of fishing are discussed as well as use of fishing equipment contained in the survival kit. Facts on trapping and hunting enable a survivor to build traps, snares and deadfalls.

Preparing fish and game for eating requires a knowledge of firemaking and cooking. Students are shown how to build fires, roast, bake, or boil food to increase edibility.

Map and compass work orientation by sun and stars are stressed as well as terrain features and methods of travel over water by self-made rafts. Information on bogs, quagmires, quicksand, and swamps also protect the pilot.

The course ends with a comprehensive field trip that serves as a check-out on each individual. The class is taken to a rendezvous in a dense wooded area. Survival trainees are checked out on the compass and then lost in pairs to try out their abilities.

SNARES AND TRAPS SUPPLY FOOD FOR MEN

LOST MEN FIND WAY BY USING A COMPASS

LECTURES SUPPLEMENT FIELD TRAINING

QUOTE FROM THE NEW YORK TIMES: **"The Marines went forward cautiously to pick up their wounded and bring in their dead in the bitter fighting on Okinawa. As they did this, they counted 300 dead Japanese and found that some of the enemy dead and wounded were wearing Marine Corps uniforms and were armed with United States weapons."**

HIT reminds me of another one of these wolves-in-sheeps'-clothing reports that I read frum a VMF squadron's report while serving aboard one of our *Essex* class carriers.

ACTION REPORT: **"During the day several B-24's were sighted in the target area. One of these planes was intercepted by 3 F4U's of the CAP which had been vectored out on a bogey. This plane, at first thought to be an *Emily*, had no identifying insignia and when the CAP pilots, flying abeam of it on parallel course, attempted to identify themselves, the B-24 opened fire and dove for the undercast. Believing it to be enemy, despite its type, the three F4U's pilots attacked it at 1850, flaming the port wing root. A violent explosion occurred in the B-24 which disappeared in a diving turn into the undercast."**

ATTER readin these reports hit seems to yer Uncle Kim that this is "i-denti-fication aginst re-cog-nition." Our en'mies tried to outsharp us by a-dressin up in our clothes and by a-usin our muskets and our airy-planes. We re-cog-nized 'em as fr'endly, but becaze they acted like Japs, we i-den-to-fied 'em as a en'my more danger-ous than the copperhead. Thar hoss-tile way of actin showed us they wuz our en'mies even if they wuz dressed in our clothes. And I spect our men fit 'em jist about like we fight copperheads here in the mountains.

And if this B-24 wuz manned by our men, they acted so suspicy like our en'my that thar wuz no other choice left fer our fighter planes but to shoot hit down.

EXCERPT FROM A FLEET REPORT: **"Pressure should never be relaxed on the importance of knowing and identifying all Japanese and American aircraft and vessels. Pilots must be impressed not only with the importance of carrying out missions properly, but of returning to the ship with specific information for intelligence on exactly what they saw. Vague reports to intelligence are not much help, obviously."**

THIS jist about hits the nails on the head. You've probably heerd this question ast meny times: "Why do I need to know anymore than whether hit's fr'endly or en'my?" Hit don't take much hoss-sense to know hit makes a helluva lot o' difference whether ye saw "15 old *Nates* 'r somethin like that" or 15 of the newest and best en'my planes. It might not make much difference to you whether ye can tell one frum tother but whut about yer buddy whose job hit is to plan the next operation?

And it seems to me ye ought to know whether that flock o' ships ye happened to see had a few warships along fer pertection or whether hit wuz a helpless convoy jist astin fer the "deep six."

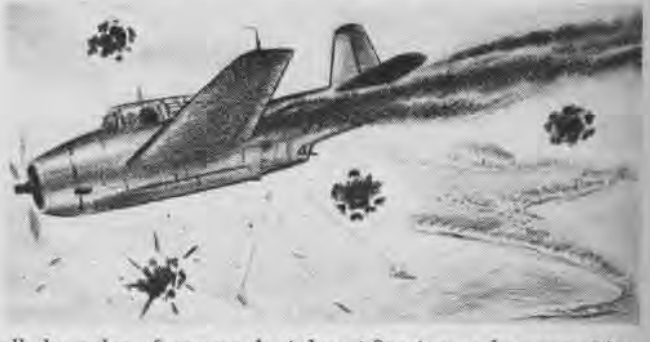
We mought say that in addin up the score, hit heps to know jist exackly whut ye sunk or whut ye shot down. Hit is quite surprisin how much knowledge our experts git by addin up the right scores.

EXCERPT FROM ACTION REPORTS: **". . . Several friendly planes were destroyed by ship's gunners. Some of these were fighters, two B-25's, one PBM and one an SBD.**

". . . AA fire from the beach brought down two F6F's, 3 P-38's and 1 B-24 which was coming in for an emergency landing . . .

"Small craft opened fire and numerous hits were seen to be made on TBF. Plane crashed in flames . . . body of pilot recovered."

YE'VE probably read some of these reports before. If ye have, you know they don't make very good readin now'r any other time. Mebbe ye didn't know that we keep on a-gittin reports like these almost every day. If yer old Uncle Kim wuz airyplane pilot, I'll tell ye whut I'd do. I'd be daddurned shore that I knowed and obeyed



all the rules of approach, i-dent-i-fication and re-cog-nition. I'd do my best not to fergit a one of my signals sich as a-lowerin th' flaps and the landin gear when I got ready to sit my chicken down on the carrier to roost.

As I've told ye meny times before, hit aint allus becaze of mistakes made by our airyplane pilots that they git shot down but a good meny of these tradegies wouldn't happen if they didn't git thar signals mixed 'nd made daddurned shore the tother fellars knowed who they wuz. Hit stands to reason, the way I see the situashion, that our buddies on the ships don't want to shoot us down but they don't have no choice if we go at 'em like a hawk atter a chicken. They don't have a very long time to make up thar minds whether we're a fr'end 'r en'my. They usually shart a-shootin and ast questions atterwards if and when our airyplane pilots act jist the least bit like they're astin fer trouble.

BEST ANSWERS

The Far East

PICK THE BEST *choice to complete the statements below, then check your answers on page 48.*

1. Japan has obtained oil for its war machine principally from—

- ☐ *a*–Venezuela
- ☐ *b*–Korea
- ☐ *c*–The Netherlands Indies
- ☐ *d*–Manchuria

2. Saipan is located in the—

- ☐ *a*–Gilberts
- ☐ *b*–Marianas
- ☐ *c*–Marshalls
- ☐ *d*–Bonins

3. Japan has secured her main supply of tin and rubber from—

- ☐ *a*–Malaya
- ☐ *b*–Burma
- ☐ *c*–Thailand
- ☐ *d*–Borneo

4. The Chinese port near the mouth of the Yangtze River is—

- ☐ *a*–Peiping
- ☐ *b*–Canton
- ☐ *c*–Hong Kong
- ☐ *d*–Shanghai

5. The second largest city of Japan is—

- ☐ *a*–Osaka
- ☐ *b*–Tokyo
- ☐ *c*–Yokohoma
- ☐ *d*–Yawata

6. The pre-war Alaskan base nearest to Japan was at—

- ☐ *a*–Kodiak
- ☐ *b*–Dutch Harbor
- ☐ *c*–Attu
- ☐ *d*–Batavia

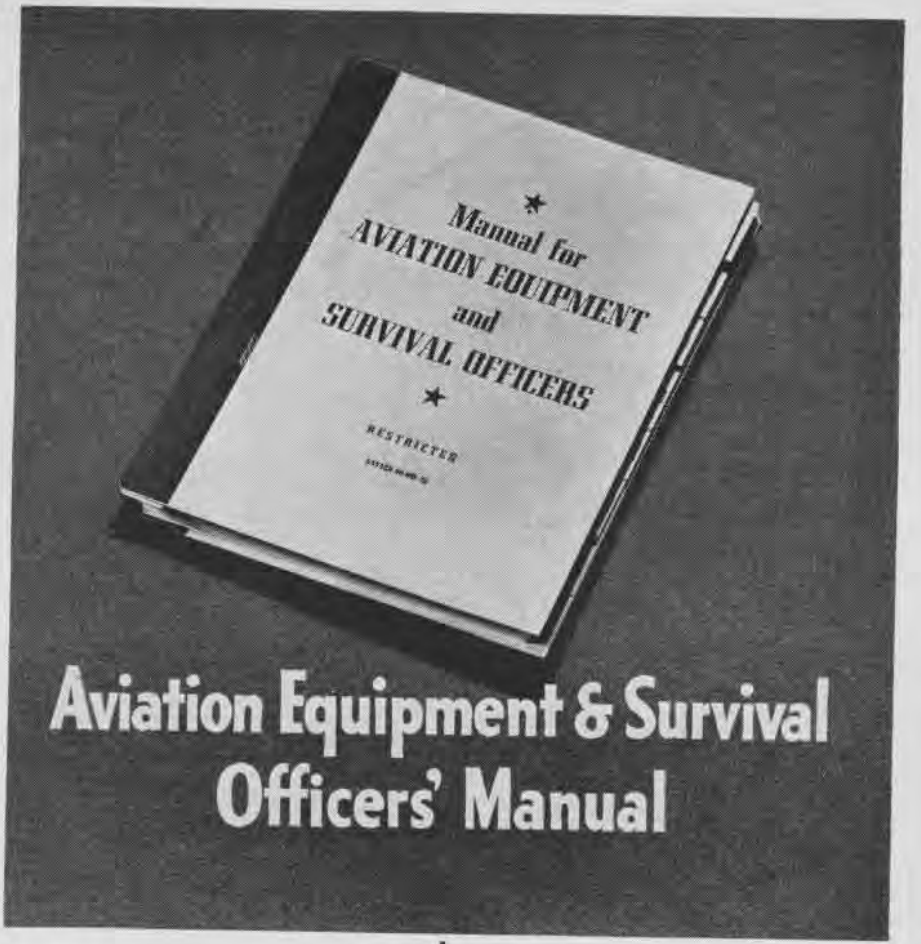
7. Japan occupied all of the following cities except—

- ☐ *a*–Singapore
- ☐ *b*–Shanghai
- ☐ *c*–Calcutta
- ☐ *d*–Batavia

8. Borneo is an important source of the following product—

- ☐ *a*–oil
- ☐ *b*–coal
- ☐ *c*–steel
- ☐ *d*–silk

Squadrons
LET NANEWS HEAR FROM YOU!



Aviation Equipment & Survival Officers' Manual

THE FIRST section of this RESTRICTED *Manual* consists of description of current oxygen and survival equipment, safety equipment, including parachutes, aviation clothing and gear, supply procedure and flight safety. The second section, the *Supplement*, contains copies of technical notes and orders and booklets referenced in the first section. The *Manual* is in loose-leaf form to permit revision.

The *Manual* has been prepared primarily for squadron AESO's. However, it should prove useful to other personnel concerned with the equipment discussed.

Distribution of the AESO *Manual* now is under way on a basis of one-per-squadron, air group, carrier, and air station, and two-per-HEDRON and -CASU. Extra copies are available.

Certain booklets of the *Supplement* must be packaged separately owing to their difference in size. Pamphlets desired should be checked on the blank.

USE THIS FORM TO ORDER MANUAL

TO: Office of the Chief of Naval Operations, Op-33J11, Navy Dept., Washington 25, D.C.

SUBJ: Aviation Equipment and Survival Officers' Manual, Request for.

It is requested that copies of the subject manual and pamphlets be sent as indicated to this activity:

COPIES PAMPHLETS

—— *Aviation Equipment and Survival Officers' Manual*
—— *Oxygen Sense*
—— *Parachute Sense*
—— *Dunking Sense*
—— *Survival on Land & Sea*
—— *Parachute Training Manual, BuPers*
—— AN 03-50A-5 (Diluter, Demand Oxygen Regulator)
—— AN 03-50B-6 (Type A14, Demand Oxygen Mask)

FROM: (Unit Commander):.....

Delivery Address: .....

Attn.: .....

1 Photo surface model process begins with preparation of photo mosaic of area to be covered. From this mosaic, a copy negative and positive transparency are made on ordinary film

2 Clay-covered model is placed on enlarger table. Positive transparency is projected on clay and this image guides modeler as he creates the general detail of the terrain's contours

PHOTO SURFACE MODELS ARE AERIAL PHOTOS SUPERIMPOSED ON THREE-DIMENSIONAL CLAY MODEL. FLAT MAP BECOMES MODEL (ABOVE)

3 When the clay model is completed, plaster is poured over it to produce a negative mold. In this negative mold many positive models may be cast to be developed later as time permits

4 Into this negative mold, damp molders' paper, which dries hard into the shape into which it is pounded, is tamped down hard. Adhesive holds several layers of paper together

SURFACE MODELS

QUANTITY production of terrain models for use in tactical planning and in briefing personnel now is possible by means of a quick, accurate technique developed by BUAER Special Devices Division for printing a photograph of terrain onto a relief model.

Photo Surface Models, which combine the basic characteristics of terrain models and aerial photographs, have the additional advantages of being very light, yet sturdy and are more accurate than handmade models. They make it possible, for example, for each pilot on a mission and for landing craft coxswains to carry a model of the objective.

An experienced two-man team, consisting of a photographer and a terrain-model maker, may be trained to produce Photo Surface Models in about 15 days. An instruction manual, *Photo Surface Modeling*, DEVICE 16-B-2 (CONAVAER NO. 30-160R-31), was issued by Special Devices Div.

Following are the steps in making Photo Surface Models:

1. From a photograph or photo-mosaic of the area to be represented, a copy negative and a positive transparency are made.

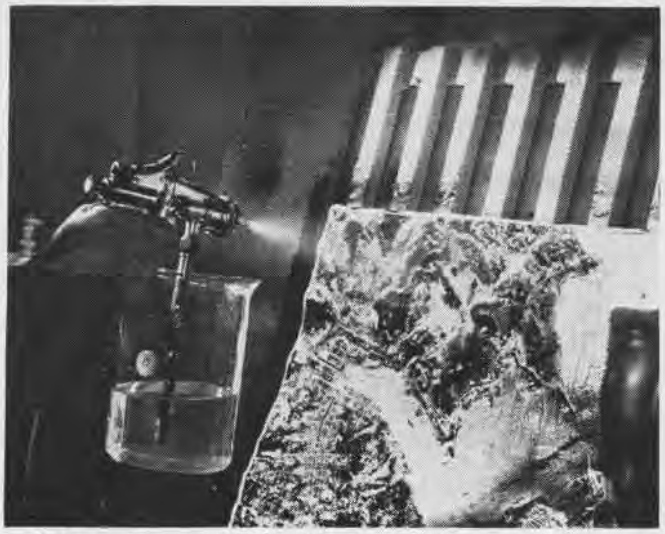
2. The positive transparency is put into a photographic enlarger. On the enlarger table a clay terrain model is made, with the terrain image from the transparency falling onto the clay as a guide for modeler. From this, a plaster negative mold is made.

3. Then, many paper models are cast in this negative mold. These paper models, which are exact reproductions of the original model, are coated with a photo-sensitive emulsion.

4. The copy negative is placed in the enlarger. Sensitized models, placed on the enlarger table, are exposed to the image from the negative. Standard photographic development procedure then follows, producing a photo image on each model.

TWO KITS have been prepared to facilitate PSM production. Basic PSM kit, DEVICE 16-B-2-i, provides spray guns, modeling clay, ventilating fan, and other special non-expendable materials unlikely to be found in most photographic darkrooms. Because of the high cost and high priority of equipment in the kit, it is available only to activities having personnel trained in PSM production. Expendable Materials Kit, DEVICE 16-B-2-j, contains molding papers, adhesives, special emulsions and chemicals. Each kit supplies all expendable materials needed (except plaster) for production of 25 models measuring two feet square.

5 On completed models, a sealer is sprayed to seal tiny holes. Then photo-sensitive emulsion is sprayed on to model, thus making sheet of sensitized paper in shape of terrain in question



6 Photo-sensitive model is placed on enlarger and exposed to the copy negative of photo mosaic. Then model is "developed" with spray gun, with regular photographic chemicals

WITH SAFETY ARM IN THIS POSITION, THE PISTOL CAN OPERATE

WITH SAFETY "ON," FIRING PIN CAN'T GO FORWARD FAR ENOUGH

INSIDE OF PISTOL SHOWS PIN IN POSITION TO STRIKE PRIMER

THICKNESS OF SAFETY PREVENTS PIN FROM GOING BEYOND THIS

VERY'S PISTOL SAFETY

FROM *an Air/Sea rescue report: "Small Very's pistol contained in the pyrotechnic kit unsatisfactory; 6 shells failed to go off."*

THE PILOT who made out the report had been forced down at sea and tried to attract rescuers by firing the six red-star Very's cartridges. As each failed to ignite, he tossed it away and tried another, without success.

▶ Investigation was made by BUAER and other officials. *Their findings:* ". . . that unsatisfactory performance of the Very's pistol was due to improper checking-out of the pilot."

The pilot had not been told, nor remembered, that there was a safety catch on the projector that must be moved out of the way before the firing pin can plunge ahead far enough to fire the shell. This was not an isolated case. Other personnel forced down have reported they could not fire the shells, and investigation showed failure was due to the same reason. The safety is included on the projector for the same reason it is put on a shotgun—to prevent accidental discharge.

The pyrotechnic projector and six waterproofed shells are included in the emergency equipment container of all multi-place life rafts and the model PK-1 Pararaft kit. Separately, the projector and shells are BUORD items, but packaged by BUAER in a waterproof container, they carry the ASO number R83-K-710-309. Cartridges are in plastic containers, sealed with wax for greater protection.

When the safety catch is turned to OFF position on the hand projector, and the firing pin pulled back and released, the pin will go forward far enough to strike the cartridge. A spring causes it then to return to its normal position about a quarter-inch away from the cartridge. If the safety is not taken OFF, the pin cannot get any closer than that to the percussion cap. This is what happened when the pilot mentioned above failed to move the safety catch.

Another instance reported where the cartridges would not fire was found due to an accumulation on the primer of paraffin used to waterproof the shells. The pilot who was forced down was able to fire them after he had cleaned off the coating.

Pilots and aircrewmen will do well to check out on *all* equipment in their life rafts before they are forced down at sea and find out too late they do not know how to operate some of the gear.

TECHNICALLY SPEAKING

Navy's Tank Works Best on F4U

VBF-95—The P-38 pylon tank has proved unsatisfactory in combat maneuvers and high-speed dives used in rocket and bombing runs on *Corsairs*, this squadron has found. Three F4U's sustained torn skin on the under surface of the flap and the flap-gap doors were damaged.

It is believed that an extreme burble has caused an accelerated metal fatigue. Excessive buffeting has been encountered in 40° to 50° dives with speeds ranging from 280 to 350 knots indicated.

It is recomended that the Navy Standard Universal 150-gallon tank be used exclusively on the *Corsair* except for ferry or other restricted flight where the Lockheed 165-gallon tank has proved satisfactory.

▶ ***BuAer Comment*—The subject of flap buffet and partial loss of control of the airplane in loadings involving pylon installations of tanks or 1,000-lb. bombs is covered in *F4U-F3A-FG Aircraft Bulletin #158*. As stated therein, these conditions are considerably alleviated if the Universal tank is installed instead of the Lockheed tank. BuAer concurs with the recommendation of VBF-95 that use of the Lockheed tank be confined, wherever possible, to ferry or similar restricted flight.**

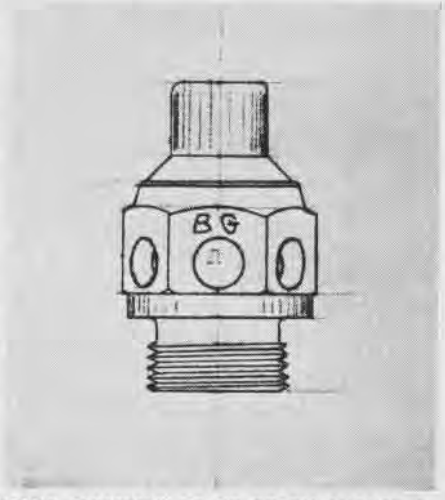
PYLON TANK DAMAGES CORSAIR WING FLAPS

Depreservation Valve Aids Job

At present it is necessary to remove lower intake pipes during depreservation to prevent "hydraulic-ing" of the lower cylinders. An alternate procedure is to use the new-type check valve, so constructed that full suction through intake manifolds will be maintained on the intake stroke and excess oil forced out through the check valve on the compression stroke.

Instructions for using the alternate procedure for removing preservation compound from lower intake pipes are contained in REVISION NO. 1 dated 5 April to *General Engine Bulletin #38*.

The check valves are used in place of front spark plugs in the four lower cylinders of single row engines and the five lower cylinders of two row engines. Both lead wires to the lower cylinder are disconnected and, in the case of tubular harnesses, leads are grounded to prevent sparking. Engines with cast harnesses are to have leads disconnected at the harness. Engine is pulled through four times by hand with the valves installed, started and operated at



VALVE ASSEMBLY TO BE READY AUGUST 1

800 to 1000 rpm for 30 seconds. Check valves then are removed. spark plugs replaced and ignition wires connected.

Relief valve assembly part NO. A-4442 stock number R85-BG-A4442 will be available through normal channels approximately 1 August 1945.

Squadron Reports On New F4U-4

VBF-2—This squadron, one of the first to be equipped with the new F4U-4, reports the seat to be very uncomfortable for hops of more than one hour.

CALIBER .50 rounds jamming between "lead-in" chute and inboard ammunition box at first caused trouble when the plane's wings folded. A different method of loading solved this trouble.

Squadron personnel describe the F4U-4's new console electronics panel and double panel red lighting for instrument board as a pilot's dream.

▶ ***BuAer Comment*— BuAer has received reports from several NAS Patuxent River and ferry pilots who have flown this plane on flights of six to seven hours without undue criticism of the comfort or general suitability of the seat installation. However, concensus on this seat is that the vertical adjustment should be obtainable without tilting the seat pan. Therefore BuAer has initiated a change request to provide a high-strength, more comfortable seat. BuAer has not heard of .50 cal. jams mentioned, but apparently VBF-2 has remedied this trouble.**

Portable Aid Charges 20 MM Gun

Ordnancemen of Fourth Marine Air Wing have developed a portable device that permits operating 20 mm aircraft guns after they have been removed from planes for servicing.

When ordnancemen wanted to remove 20 mm guns from the planes for thorough checking, in addition to routine daily cleaning, there was one stumbling block—some type of hydraulic charger system had to be devised to operate the gun after it had been removed from the plane. Its functioning then could be checked.

MARINES RIG DEVICE FOR SERVICING GUN

Construction of this device was simple. A bench was made on which to rest the guns and house a hand-pump-operated hydraulic pressure tank-charger. The hydraulic charger is equipped with a change knob controlling release of hydraulic fluid enabling an ordnanceman to operate the breech block at any desired speed during a check. The device easily can be constructed by aviation units from local available material.

[DESIGNED BY LT. T. A. BORING AND M/SGT. ROBERT J. CLEVELAND]

▶ ***BuOrd Comment*—This appears to be a practical device for use in maintenance of 20 mm guns. For schematic diagram of the hydraulic connection, see "Training Device for 20 mm Aircraft Gun," Aviation Ordnance section, *NANews*, 3/15/45.**

New G-Suit Can Keep Pilot Afloat

The new light-weight coverall-type anti-blackout suit, now being supplied to the Fleet, can be used to supply additional buoyancy to fighter pilots forced into the drink while wearing this equipment. So that the G-suit can be used as an auxiliary life jacket, a special oral inflation valve is provided.

This valve is supplied with each suit and can be found in the left breast pockets secured by a piece of nylon cord. Necessity for inserting the valve into the end of the air connection tube without delay upon entering the water, is shown by an excerpt from reports on a simulated ditching test recently made with the suit by MAG-91 *at* MCAS, CHERRY POINT.

▸After inflating and boarding the pararaft, he re-entered the water, wearing the life jacket and anti-blackout suit. He inflated the suit with the plug-in valve, and found that together with the inflated life jacket, his whole body was buoyed to the surface.

He next discarded the life jacket and depended entirely on the inflated suit to keep him afloat. With the legs zipped-up, the suit had a tendency to stand him on his head in the water; but with legs un-zipped, he had no difficulty keeping his head awash.

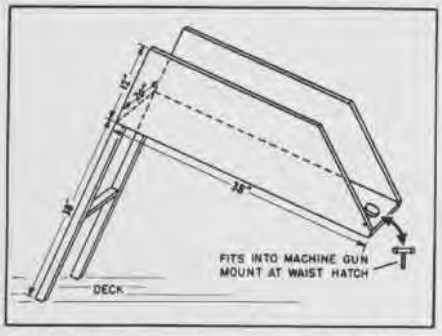
After coming out of the water it was discovered that about a half gallon of water had accumulated in bladders of the suit. Water had entered through the male quick-disconnect on the air inlet hose while the wearer was inflating the raft and swimming about in the water. Water was easily removed by hanging the suit upside-down.

Fabric of the suit did not appear to be damaged in any way by immersion, although it was slightly bleached by chlorine in the swimming pool water.

It is recommended that pilots be advised to insert the plug-in valve into the male quick-disconnect before—or as soon as possible after—ditching, to prevent entrance of water into the bladders and to avoid reduction in buoyancy of the suit.

Chute Helps Launch Equipment

Rescue Squadron 2 has developed a waist-hatch chute for launching Gibson



PLYWOOD CHUTE LAUNCHES RESCUE GEAR

Girl, life raft, shipwreck kit and other air-sea rescue equipment from a PBM while in flight.

The chute is constructed of ¾" plywood. At the outer end of the chute is a small dowell which fits into the machine gun mount at the waist hatch, thus securing it while launching is going on. Shipwreck kit and MK IV life rafts are connected with 100 ft. of floating line. Dimensions of the chute are shown in the drawing.

New Glasses Cut Glare on Water

Glasses, Sun, N-1, Type I, Contract NXAX-66844, have been developed by BUMED to protect dark-adaptation, and

GLASSES EASE EYESTRAIN AND HEADACHES

for use in surface search when glare is present. These sunglasses are polarizing and transmit 12% of light.

They eliminate more than 90% of the surface glare from water and a large proportion of glare from other reflecting surfaces, owing to their polarizing properties. The glasses will reduce eyestrain, headache, and conjunctivitis frequently caused by excessive sunlight during search.

It has been conclusively demonstrated that personnel exposed to sunlight by day fail to adapt to darkness properly at night. They lose a degree of visual ability, both in late twilight and nearly total darkness, equivalent to requiring, to see an object, more than twice the illumination, less than half the distance, or greater than twice the size of the approaching object, as compared to properly protected personnel.

The sunglasses purposely are not made dark enough to permit looking directly at the sun, and not designed to be used by observers searching the area near the sun for aircraft. Other special aids are provided for this purpose.

These sunglasses now are available. It is considered essential that all personnel exposed to sunlight be provided with them, particularly those who anticipate duty at night when dark-adaptation is needed, or those participating in surface search where glare is present.

Damage to dark-adaptation by sunlight is slow in recovery. A few hours' exposure will result in retinal damage lasting days, and a week's exposure may require a month for recovery. Consequently, glasses should be worn at all times, at least a month in advance of the period when acute night vision is necessary. Bright cloudy days are nearly as dangerous as clear days. Failure to maintain protection provided by the sunglasses for a few hours will lose the advantage gained by proper wearing of the sunglasses for weeks.

Previously supplied sunglasses, with colored glass lenses, do not adequately protect against the effects of sunlight on dark-adaptation and should not be used, because of the false sense of security they give.

Use of the glasses, Sun, N-1, Type I, does not remove the necessity for use of the red dark-adaptation goggles, N-2, Type C; night lookouts must continue to use the latter goggles before going on watch.

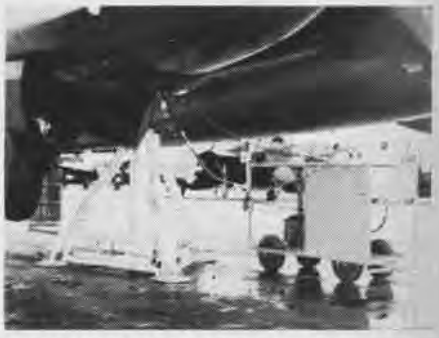
Portable Test Stand Saves Time

VRS-1 has constructed a portable hydraulic test stand that has saved many hours work for the hydraulic crew. It is an important time saver, in addition to keeping engine turn-ups to a minimum, particularly in the hangar area.

The test stand duplicates a standard hydraulic power system, including the reservoir, filters, unloader valve, relief valve, accumulator, hydraulic pump and the necessary control valves. Power is supplied by a 3HP, 100-volt AC motor. With the exception of the motor, parts for the test stand were obtained from ship-fitter's shop and salvaged planes.

[DESIGNED BY W. M. GOTTSCHLICH, AMMIC AND CARL HOLM, AMMHIC]

▸***BuAer Comment*—This test stand indicates careful planning and clever construction. However, it is considered that this unit is of value only to activities servicing one type of aircraft where only one operating pressure would be encountered. In-**



PORTABLE TEST STAND SIMPLIFIES WORK

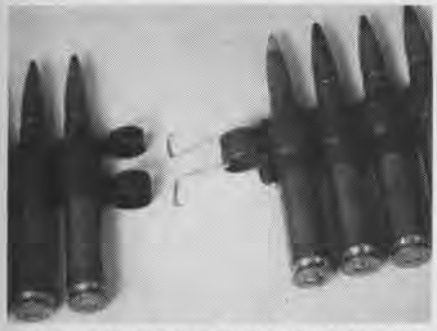
corporation of additional unloader valves, pre-set to the pressure ranges of the various aircraft to be serviced, and capable of being utilized as required, would increase utility of the rig. A wider wheel tread would improve lateral stability when moving the stand over rough fields. In addition, all hydraulic equipment used in the field and on the flight line should be protected by line caps on fittings and tubing ends.

Belt Connector Prevents Delay

CASU 22—Designed principally as a time saver in loading VF and VT squadrons conducting gunnery operations, a new ammunition belt connector was rigged from .032 arming wire. The wire is bent into a double hook shape approximately one and one-half inches in length.

With the normal load one hundred to one hundred fifty rounds of ammunition for each wing gun, time required to reload has been delaying following flights. A second belt is connected to the first and fed directly into the gun when the last round is fired. The belt connector is so designed as not to permit belt-feed pawl and arm to engage the leading round of the second belt.

[DESIGNED BY CAL C. HORNBEAK, AOM3c]



HOOK SHAPED WIRE FEEDS SECOND BELT

Mock Gun Charger Aids Pilots

MCAS EL TORO—A mock-up gun charger has been developed to demonstrate to the pilots the results of activating the gun charger on fixed wing guns of TBF and TBM aircraft.

The system consists of a supply tank, lines to hydraulic hand pump, control valve, charger and return lines to supply tank. An F4U accumulator tank is used as the supply tank. The pump was obtained from a wreck.

The pump supplies hydraulic fluid from tank to control valve, activating the charger. Release of the valve permits fluid to return to supply tank.

▶ ***BuOrd Comment*** **— Aviation Ordnance Column in NANews 15 March 1945 had an article on a training device for 20 mm. aircraft gun, using a similarly-constructed device. The illustrated mock-up gun charger seems to be a good adaptation of such a device for the .50 cal. gun.**

EL TORO SHOWS GUN CHARGER ACTIVATION

SCREEN NEWS

Cat's Eyes for Airmen. When two planes are approaching each other at night, the guy who sees the other fellow first may have as much of an advantage as the two-gun expert who's first on the draw. Improvement of night vision, therefore, rates one of those high priorities always associated with training matters in "the kill or be killed" class. Hence the Film:

MN-3462 *Night Vision for Airmen.* Restricted, 19 min.

SYNOPSIS: After showing one of our planes shot down at night because an enemy pilot saw him first, the film takes the human eye apart to see what makes it see—particularly in the dark. The blind spot which interferes with direct vision at night is effectively demonstrated. Animated drawings show the day nerves and night nerves at work.

These anatomical and physiological facts about dark-adapting of the eyes are then translated into practical use by a pilot who is shown using off-center vision, at night, with proper scanning technique. The film also touches briefly on cockpit lights, flight level and reasons for wearing red goggles.

Casting out Fear. "I'm just no good." "I must be losing my mind." "Everybody's picking on me." "I wish I were dead." Such symptoms of mental disturbance short of insanity, in which emotions are tossed around like a plane in a thunderhead, are not uncommon results of the abrupt transition from easy-going civilian life to the rigors of wartime training. A half-hour motion picture probes the nature of these disturbances and tells what can be done about them:

MG-4068 *The Inside Story* — Restricted, 28 min.

CONTENTS: A normal young American fresh from a protected home—complete with his own room, gin rummy games with the family and soft living—suddenly is thrown on his own in a boot training camp —complete with noise, confusion, no privacy and stiff discipline. Most of the film takes in the gradual development of a worry "complex," the victim's quiet, reassuring interview with an officer of the Mental Health Department, and the cure effected through an understanding of causes motivating the shadowy shenanigans of the mind. Such intangibles as "underground" battling of the subconscious against the conscious mind, truth about so-called "nervous breakdowns," nature of an inferiority complex, and anatomy of fear—are hauled out of the medical dictionary and made understandable to the layman.

Packaged Death.

MN-3383a *The Butterfly Bomb—4 lb. Fragmentation Bomb*—Restricted, 15 min.

CONTENTS: Shows the complete package of bombs and how they are packed together. Explains action of the M 111-A2 fuze in breaking the package apart, how to set the fuze, maximum and minimum dropping altitudes, action of an individual bomb in the air, arming of bomb, rotation of vanes, action of impact fuze, the time fuze and the anti-disturbance fuze. Emphasizes carefulness in handling.

Death Takes the Rule-Breaker. For some time, now, in a special section of NAVAL AVIATION NEWS, cartoon character Grampaw Pettibone has been purpling in the face and pulling out his whiskers over the lives and equipment lost from carelessness in avoidable air accidents. Grampaw is explosively and profanely certain that rules are simply experience translated into warnings for others and that those who ignore experience have large vacuums where their brains ought to be. Pettibone makes his screen debut in the first of a series of short films dealing with various angles of flight safety:

MN-4353j *Flight Safety—Dive Bombing Crashes.* Restricted, 4 min.

PILOT PAYS TOP PRICE FOR CARELESSNESS

SYNOPSIS: A dive-bombing pilot concentrates so hard on the target that he fails to watch his altimeter, thus ignoring vital rule, and at 1000' altitude sees his mistake —too late. He is unable to pull out of the dive and pays the top price for his error. Pettibone, at his apoplectic worst, deplores the needless sacrifice of life and warns other pilots to stick by the rules, watch the altimeter on the way down and live to dive-bomb again.

Where to Get 'Em. Central Aviation Film Libraries and Sub Libraries are listed below. Check your nearest Library before ordering.

Naval

ABATU, NAS St. Louis
CASUs 2, 4, 23, 24, 31, 32, (F) 42
CASU ComDet., Port Hueneme
ComAirPac
ComAirSubFwdArea
Hedrons 2, 4
NAB Seattle
NAC Navy #3149
NAMC Philadelphia
NAOTC Jacksonville
NAS Alameda
NAS Atlanta
NAS Brunswick
NAS Clinton
NAS Grosse Ile
NAS Kodiak
NAS Moffet
NAS New York
NAS Norfolk
NAS Patuxent
NAS Quonset
NAS San Diego
NAS Willow Grove
NAS Navy #115
NAS Navy #117
NAS Navy #720
NATB Pensacola
NATB Corpus Christi
NATEC Lakehurst
Navy #3233
TAL Navy #116

Marine

MCAD Miramar
MCAS Cherry Point
MCAS Eagle Mt. Lake
MCAS El Centro
MCAS El Toro
MCAS Mojave
MCAS Navy #61
MCAS Parris Island
MCAS Quantico
MCAS Santa Barbara
4th MAW

Rivet Gun Handles Small Jobs

NAS SQUANTUM — A metalsmith at this station's CASU detachment has developed a handy pneumatic rivet gun and drill unit for small jobs in metal work. The entire unit weighs about 30 pounds and can be carried around in a canvas bag shaped to fit the oxygen bottle.

The unit consists of a 514 cu. in. oxygen bottle charged with air to 1800 psi. Other parts are a Model N441 regulator, seven feet of high pressure hose, a quick disconnect fitting, an air drill or rivet gun. Under normal operations, the air supply is sufficient for 25 minutes. Operating pressure is limited to 50 psi by the regulator.

Expediting of small jobs such as patching and drilling of stop holes can be done on the plane while still on the line. The unit proved valuable in repairing planes between flights.

[DEVELOPED BY JOHN R. KAISER, AM1C]

RIVET GUN WILL HANDLE SMALL JOBS WELL

Photo Litho Stock List Ready

Attention of all ships and stations is called to the *Standard Photo-Lithographic Stock List and Quarterly Report* which was issued on 1 July 1945. All photo-lithographic equipment and supplies now in stock appear on the list.

Copies of the stock list may be requested from BUAER, Publications Branch by ordering NAVAER 2078. The photo-lithographic supply points located at NASD, PHILADELPHIA; ASA, NSD, OAKLAND; NASD, OAHU; ASD, Navy No. 939; and ASD, Navy No. 3205, also have been forwarded copies of the stock list.

Reference is made to All Ships and Stations letter OP30-2CX15-dh, 154130, dated 9 April 1945, reprinted in *Navy Department Bulletin* of 15 April 1945, which outlines policies established for procurement and issue of photo-lithographic materials.

Still Doing It!

NAS NEW ORLEANS—Recent accident at this station impresses the moral that dangers of misfires and hangfires still exist, even with small arms and pyrotechnic ammunition.

After the control officer had tried to fire a flare shell which did not go off, he handed it to an enlisted man. The shell went off in the enlisted man's hand when he tapped the primer with metal object. RESULT: lacerations and burn of the hand.

The man knew the possible results of striking the primer, but did so apparently without thinking.

▶ *BuAer Comment*—Mi Gawd!

Painting of Jugs and Breakers

BUAER has recommended that one-gallon jugs and four-and-a-half-gallon water breakers, now dark colors, be painted bright orange-yellow, the same as other survival equipment, to improve their visibility and usefulness in service.

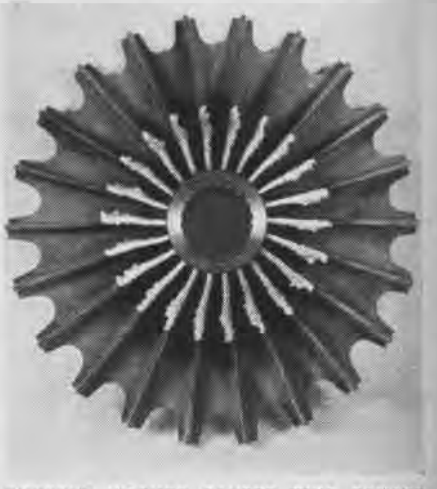
The floating jugs and water-breakers are tossed out of planes being ditched.

YELLOW LACQUER IMPROVES JUG ON RIGHT

Action has been initiated to change color of this equipment currently under procurement. For equipment in service, BUAER recommends that the jugs and water breakers be painted with two coats of AN-L-29 glossy orange-yellow lacquer, Stock No. R52-L-1034. No surface treatment prior to painting is necessary other than careful cleaning with a Stoddard solvent or naphtha.

Loose Objects Damage Impeller

During inspection and repair of engine installations great care must be taken to prevent possibility of allowing nuts, washers, rivets, bits of safety wire, and other objects to be dropped into the induction system. Numerous cases have been reported of nicked impellers, caused by objects inadvertently or carelessly allowed to enter the induction system. When carburetors or intake ducts are removed, covers immediately should be placed over the exposed openings.



DROPPED WASHER CAUSED THIS DAMAGE

Damage caused by foreign objects may range from an impeller only slightly nicked to one severely mutilated, with appreciable loss in blower efficiency.

Due to design of F4U-4 aircraft induction system, special care must be exercised by personnel servicing this type aircraft while working on any part in the engine accessory compartment. The induction system is so designed that during engine operation in neutral blower, loose objects, which have been allowed to drop to the bottom of the accessory compartment, may be swept through the take-off air intake entrances and into the plane's induction system.

ISLAND REPAIR WORK

No fancy lathes, test stands or tools help the aviation machinist's mates who are working over *Privateer* engines at this advanced Naval Aviation base on Okinawa. CASU's working under such conditions have to get their repair work done despite any enemy attacks or lack of proper tools to do the job at hand. Besides the big PB4Y-2's, these technicians also have to keep flying the *Corsairs* seen in the background. The Navy lost no time in converting Okinawa's flatlands into air strips to launch fighters to help ward off Jap Kamikaze attacks on ships offshore and to harry enemy shipping in nearby waters of the East China Sea. Long-range *Privateers* with their heavier armament can extend their search missions over long reaches of the Pacific and go on strikes against Japan proper. But the ACORN and the CASU's have to do their job first before the planes can take to the air on repeated strikes. A lot of planning has to go into establishing such a base.

Marines Build A Paving Roller

MCAS EL TORO—In need of a motor paving roller, but without funds for its purchase, the station Buildings and

MACHINE BUILT ENTIRELY FROM SALVAGE

Grounds department proved the old adage, "Necessity is the mother of invention."

The garage, incinerator, and salvage departments were thoroughly combed by three Leathernecks and their search uncovered two surveyed hot water boilers, a 9.3 horsepower lawn-mower motor, chains, sprocket, jeep transmission, truck axles, spindle assembly, and an SBD crank.

From this motley assortment, the men assembled a roller whose estimated value is $1,500. Representing 186 working hours, the roller weighs 1300 lbs. and moves at a speed of 141 feet per minute. Its top plate affords flexibility over rough terrain.

[DESIGNED BY HAROLD V. BISSELL, MT/SGT., SHERMAN L. POUNDS, Pfc., FRANK A. MICHALEK, Pfc.]

New Idea Speeds Up Storekeeping

NSD NEWPORT—A substantial saving in time, labor and money resulted at this activity through use of small pallet issue boxes for shipment, storage and issue of materials.

These boxes, 4' x 4' x 18" deep, are sturdily constructed and are divided into small and large sections for accommodation of materials of various sizes. Sections are removable, providing a container of great flexibility. Each section contains an invoice pocket, made of wood or fiber board, for receiving the invoice or stub that must accompany issued material. Permanent usefulness of the unit as a full size box is not impaired, and the box itself, which is nailed to the pallet, may be removed when desired.

[DESIGNED BY SAMUEL PRESCOTT]

PALLET BOX SECTIONS ALL ARE REMOVABLE

Attachment Regulates Hole Depth

MINY—One man can now do the work of six through use of a micrometer attachment for an air drill designed by a machinist at this yard under the Navy's beneficial suggestion program. The micrometer attachment, made for pneumatic drilling machines, makes precision depth drilling possible.

The device, primarily designed to facilitate and improve drilling operations in connection with faces and backs of propellers, may be utilized in any application where precision depth drilling is required.

Essentially the micrometer attachment is a knurled sleeve, suitably calibrated, attached to drill chuck by threaded connections. The drill, held in chuck, projects beyond end of micrometer attachment and the operator varies projection distance by revolving threaded calibration sleeve a required number of turns. With the attachment depth can be adjusted to within .001".

NEW DEVICE SPEEDS DRILLING OPERATIONS

Two lock nuts for the threaded stop at point of attachment lock the attachment in position when required depth adjustment is made. By pre-setting his tool, the operator is relieved of necessity of stopping and starting the machine to check and re-check depth of drilled hole. Prior to use of the attachment, holes frequently were drilled too deep, necessitating welding. Adoption of the device, it is estimated, will result in a net annual saving of $3500 at the MARE ISLAND NAVY YARD.

[DESIGNED BY HARRY HETU]

MARINES OBSERVE PLANE THROUGH GLASS

Crash Truck Rigged With Turret

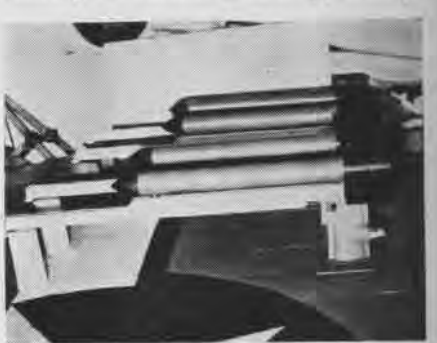
MCAS MOJAVE—Something new has been added to a crash truck at this station. A plexiglas turret has been fitted into the cut-out center of the combination crash and fire truck's top that enables a man to observe with greater ease the flight of the rescue plane leading the truck to the scene of the crash.

Rocket Heads Must Be On Tight

BUORD has isued an ordnance handling instruction on 2.25" aircraft rockets (SCAR) which modifies directions for assembling the sub-caliber rockets to insure tight fit between the head and the motor assembly. Accuracy is improved and possibility of gas leaks during firing obviated.

Before the two units are screwed together, luting is carefully applied to mating threads. Suitable luting compounds for this use are: crater compound, or red or white lead, of such consistency that a brush can be used.

If the vise for assembling rockets (MK 1, MOD. 0) is available, it should be used for holding the motor while the head is screwed on and tightened with a Stillson wrench. If vise is not available, a Stillson wrench is used on the head and another on the motor—but only in the space forward of front launcher button. Seat the head on the motor with the tightest possible fit without distorting the members or without marring the outside surface appreciably.



MK 6 ADAPTER HOLDS SCARS ON AIRCRAFT

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Committee Studies Nomenclature System

For several years standardization of aircraft ordnance and armament equipment has been accomplished by the Navy, Army, and British under auspices of the JOINT AIRCRAFT COMMITTEE with a view, on one hand, of reducing production difficulties, and, on the other, of insuring interchangeability of equipment and component parts among the three services. Efficient use of standard articles requires a system of nomenclature under which various interchangeable items may be identified by maintenance personnel.

It appears that each service has proceeded with use of its own nomenclature, and little is known of the method of employment of the nomenclature system of the other services. The committees accomplishing standardization now are working to inform all cognizant personnel of the several nomenclature systems.

The ARMY ORDNANCE DEPARTMENT uses the following system: designations T1, T2, etc., indicate a developmental item. While in the developmental stage when a major change is incorporated, the item will take the designation T1E1, T2E1, *etc.* Such designation indicates a change affecting military characteristics or installation. When an item has been adopted as standard by the ORDNANCE TECHNICAL COMMITTEE, it is given the designation M1, M2, *etc.*

When a change that is considered major occurs in an item adopted as standard (such as one that affects military characteristics, installations, manufacture, storage or use) the designation changes to M1A1, M1A2, *etc.* The designation M1B2, *etc.*, or M1A1B1, indicates that a different type material is used which constitutes a major change in production.

When a standard article has been modified by development of an experimental non-standard process or procedure, it takes the designation M1E1, M1E2, *etc.* If the item thus modified is adopted as standard by the Ordnance Department, it takes a designation in the proper sequence of the M1A *series; e.g.*, an item designed as M1E6 may become M1A4 if it is the fourth item adopted as standard in that type of material.

Assignment of CHEMICAL WARFARE SERVICE "M" numbers on bombs, clusters, and fuses is made by the Ordnance Department. Assignment of "M" numbers to other CHEMICAL WARFARE SERVICE items is made within the service itself. There is an established procedure for assignment of nomenclature to experimental and developmental items. However, for all practical purposes, CWS nomenclature follows the Ordnance Department system.

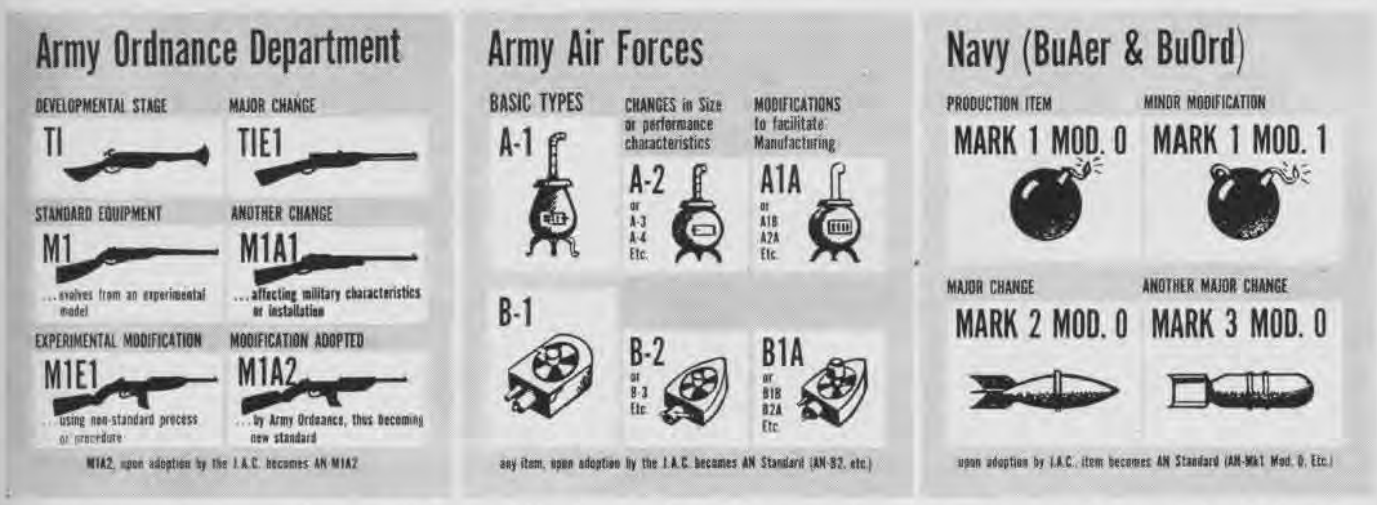
ARMY AIR FORCES employs a system considerably different from that used by either the Ordnance Department and CWS or the Navy Department. That system operates as follows: At the time a project engineer conceives an idea for a new basic article, the type designation A-1 is assigned. As an example, the first heater used in aircraft would be designated A-1. When a new heater is developed, the "A" type designation changes to a "B" designation if the basic characteristics are different. However, if the basic characteristics remain the same, but there is a change in performance characteristics or dimensions affecting interchangeability, the item will take the designation A-2 rather than a "B" designation. If basic characteristics remain the same, and performance characteristics do also, interchangeability is not affected, but modification is incorporated only to facilitate manufacturing practices and production, the item will take the designation A-1A. Further modifications of this nature will be designated A-1B, A-1C, *etc.*

The following illustrates this procedure: The first heater for use on aircraft is designated A-1. Assuming that this heater is of the hot-air type, the next heater developed is an electric heater, it will take a B-1 designation, and C-1 designation will be given to the next heater developed that operates on a different basic principle. If the B-1 type electric heater is a gun heater for CAL .50 guns, and the next electric heater developed is for 20 MM guns, it will be designated B-2. A heater thereafter developed for CAL .50 guns differing from the B-1 heater insofar as dimensions, interchangeability, and performance characterics are concerned, will take the designation B-3. A change or modification in the B-1 heater not altering performance characteristics or dimensions or other factors that affect interchangeability, will be designated as B-1A, C-1B, *etc.*

In the Navy, BUAER and BUORD employ the same type designations in their nomenclatures. This consists of the word designation of the item followed by a mark composed of the word "MARK" and an Arabic numeral. The MARKS are assigned serially within the basic classification of the item. A new MARK within the series is assigned for a new design of the item. A minor modification or a variation of the same design will be assigned a "MOD." that is composed of the word MOD. and an Arabic numeral. For instance when a new basic item is developed it will take the designation MK 1 MOD 0. Modification to a design, such as changes in operation voltages, will be designated by new MODS., *i.e.*, MK 1 MOD. 1, MK 1 MOD 2, *etc.* The series of MARKS for aircraft bomb fuzes begins at 200.

In the present British system, the word designation of the item is followed by the word MARK and an Arabic numeral. A major change in design and/or change in operational characteristics advances the MARK. A major change in design includes an alteration of design that involves use of different components or sub-assemblies not interchangeable with those of the existing MARK. A variation of a basic design to suit a particular aircraft installation is indicated by an Arabic numeral with the prefix NO. before the MARK, *i.e.*, NO. 2 MARK 15. A minor modification would be indicated thus: NO. 2 MARK 15/1.

Upon adoption of an item as standard by the Joint Aircraft Committee, the prefix "AN-" is placed before the type designation, *i.e.*, the Control, Bomb Arming, B-2, becomes Control, Bomb Arming, AN-B2. Thereafter the services are obligated to use a standard item where it is applicable.



LATEST BULLETINS ENGINE, AUXILIARY POWER PLANT, ACCESSORY, PROPELLER 19 June 1945

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
PRATT & WHITNEY				
R-985	186	4-26-45	*Bearing, Rocker-Arm—Installation and Removal from Rocker-Arm of*	Information on removal and installation of rocker-arm bearings to avoid distortion of plate-shield
	187	5-4-45	*Knuckle Pin Size Classification*	To include only applicable engines of current production. To reclassify standard and oversize knuckle pins
R-1340	208	4-26-45	*Bearing, Rocker-Arm—Installation and Removal from Rocker-Arm of*	Information on removal and installation of rocker-arm bearings to avoid distortion of the plate-shield
	209	5-4-45	*Knuckle Pin Size Classification*	To include only applicable engines of current production. To reclassify standard and oversize knuckle pins
R-1830	392	5-16-45	*Counterweight Bolts—Flash Tin Plating of*	To correct bulletin number
	403	5-4-45	*Supercharger Clutches—Periodic Shifting and Flushing of*	To insure proper clutch operations
	412	5-21-45	*End Clearance of the Front Cam and of the Front Main Bearing*	Method of obtaining desired end clearance of front cam and of front main bearing
	410	5-21-45	*Spacers—Impeller Shaft Front Ring Carrier*	Use of locally manufactured spacers to obtain proper impeller clearances
	415	5-4-45	*Knuckle Pin Size Classification*	To include only applicable engines of current production. To reclassify standard and oversize knuckle pins
R-2000	95	5-4-45	*Knuckle Pin Size Classification*	To include only applicable engines of current production. To reclassify standard and oversize knuckle pins
	96 Rev. 2	5-16-45	*Counterweight Bolts—Flash Tin Plating of*	To correct bulletin number
	101	5-4-45	*Supercharger Clutches—Periodic Shifting and Flushing of*	To insure proper clutch operations
	104	4-20-45	*Impeller Shaft Rear Oil Seal Ring Liner—Improved Oil Sealing at*	To improve oil sealing at the impeller shaft rear oil seal ring liner
	106	5-29-45	*Gasket Between Intermediate Rear and Rear Cases*	New gasket to be used between intermediate rear and rear cases
	103	6-1-45	*Engine Differences Between the R-2000-3, -7 and -11 Engines*	Installation parts and operational differences of the R-2000-3, -7 and -11 engines
	111	6-2-45	*Rear Crankcase*	Loss adjacent to breather hole between the No. 3 and No. 5 cylinder pads on rear crankcase of current applicable engines has been eliminated
	113	6-2-45	*Oil Pressure Relief Valve and Thermostat*	To standardize oil pressure relief valves and thermostats in applicable engines
R-2800	55 Supp. 1	5-8-45	*Double Threaded Crankshaft Bolts—Installation of*	To change crankshaft bolt stretch limits
	78 Supp. 1	6-6-45	*Piston Ring Arrangement*	To standardize end gap of all R-2800 engine piston rings. To cancel R-2800 engine bulletin No. 85 as having served its purpose
	105 Supp. 1	6-2-45	*Push Rod Cover Joint, Front Cylinder Deflector—Interference Between*	To eliminate possible interference between cylinder deflector and exhaust push rod cover coupling
	133 Rev. 2	5-19-45	*Oil Flow to the Main Impeller Shaft Thrust Plates*	To consolidate existing information and to delete Para. 2, Page 5 of Revision 1 as being unnecessary in determining incipient failures of impeller shaft thrust plates
	176 Rev. 2	5-16-45	*Counterweight Bolts—Flash Tin Plating of*	To correct bulletin number
	202	5-3-45	*R-2800 Leads, High Tension (8mm) Plastic Type for Tubular Ignition Harness—Installation of*	To furnish information for installing subject lead as a standard high tension for R-2800 engines with tubular ignition harness
	206	5-4-45	*Supercharger Clutches—Periodic Shifting and Flushing of*	To insure proper clutch operations
	207	5-8-45	*Crankshaft Bolts—Plating and Stretching of*	To include crankshaft bolts stretching instructions
	211	5-3-45	*Impeller Thrust Plates—Change in Design of to Prevent Improper Installation*	To prevent improper installation of impeller thrust plates, thereby prevent serious burning of surfaces through lack of lubrication
WRIGHT				
R-1820	384	6-7-45	*Water Injection Power Control Unit*	To correct Part No. under "Application" of original bulletin
	386	5-17-45	*Repacking of Engine Shipping Boxes—Proper Method to Eliminate Interference*	To prevent interference between engine shipping box and adjacent engine parts and carburetor
R-2600	165	5-5-45	*Altitude Valve Diaphragm Assembly for Holley Model 1685 HB Carburetors—Replacement of*	To describe Holley Part A-3503 replacement diaphragm assembly for Model 1685 HB carburetor altitude valve
	167	5-14-45	*Oil Seal Ring, Oil Strainer in Supercharger Rear Housing Cover—Provision for*	Instructions for reworking supercharger rear housing cover at oil strainer location, and for installation of neoprene oil seal ring in groove
General Engine Bulletins				
	6 Rev. 1	5-8-45	*Preparation of Stromberg Injection Type, Ceco Model No. 1900 CPB and Holley Carburetors for Storage*	To improve contents by necessary correction and addition of pertinent information
	33 Supp. 2	5-8-45	*Installation of Ball Bearings on Distributor Gear Shaft and Box Type Cam Lubricator in all Types (exclusive of DF18R U) American Bosch Magnetos*	To provide for periodic check of radial play of cam
	36 Rev. 1	5-23-45	*Spark Plugs, List of Acceptable Models for Naval Service Engines*	Current listing of acceptable models of spark plugs for Naval Service engines
	38 Rev. 1	5-4-45	*Preservation of Aircraft Engines*	Latest information available on preservation of engines and changes made necessary by difficulties experienced in application
	70	5-14-45	*Stromberg Injection Carburetors, Modification of Vapor Vent Floats*	To reduce possibility of vapor eliminator difficulties in Stromberg injection carburetors
Power Plant Accessory Bulletins				
	24-45	6-4-45	*Air System Accessories, e-7*	Change is to be incorporated if difficulty is encountered by valve spring binding against projections within valve body, not at next overhaul of subject part as stated in this bulletin
	34-45	6-5-45	*Fuel System Accessories, f-12*	Part numbers for correct seals to be installed in subject valves
	36-45	6-4-45	*Air System, e-9*	To eliminate "hunting" of valve at low engine speeds
	38-45	6-4-45	*General, a-3*	Lot system to indicate changes are being cancelled and a dash system put into effect to indicate these changes
	40-45	6-5-45	*Hydraulic Pump, h-16*	End clearance should be increased when using Spec. AN-VV-O-446
General Propeller				
	10 Supp. 1	5-17-45	*Gaskets; Distinction Between Governor Substituting Gaskets and Governor Mounting Gaskets*	Proper use and identification of subject gaskets

(Continued on page 47)

VPB Develops Boresight Target

VPB-132 – This squadron's gunnery officer has developed an adjustable boresight target that has cut in half time required for boresighting PV-1's.

The target (template) moves vertically and horizontally. The PV-1 must be set 90° to the target and the wheels anywhere in a rectangle 20′ x 8′. From a given point set in relation to target, the plane can move 10 FT. forward and 10 FT. aft, 4 FT. to starboard and 4 FT. to port. The target moves on rollers with graphite bushings and is hand-operated by means of two worm gear wrenches. No ratchet is needed. Principle of this adjustable target can be used on any type plane and is especially beneficial for airplanes that are heavy and difficult to move.

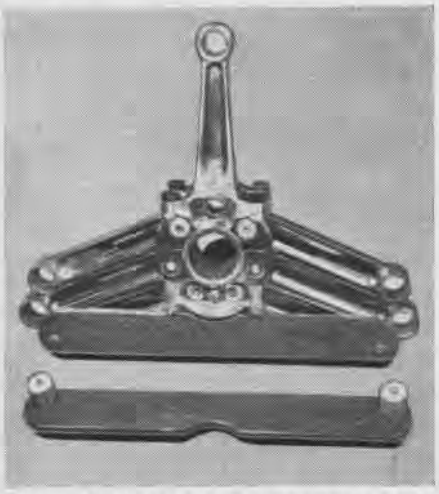
BORESIGHTING TARGET QUICKLY ADJUSTED

For boresighting, the PV-1 is in a three-point attitude with leveling lugs at 11°. The boresight bracket set at 11.9° by means of the boresight level, and guns are boresighted at 500 yards. Rocket rails are set at 11.9° parallel with MK 9 sight and guns.

The boresight brackets varied from plane to plane and a method had to be devised to insure proper setting. The leveling bar is secured through the peep holes on the brackets. Once the angle is set in, the bar easily is removed. One man sights through the peep holes and directs the target man as he cranks it into position. Once the boresight bracket point on the target corresponds with the peep holes in the bracket, plane is ready for boresighting.

[DESIGNED BY W. G. STEARNS, JR., LT. USNR]

***BuAer Comment*—This boresight target appears very well designed and of considerable value to stations operating PV-1 planes. Similar targets also could be designed for PV-2, PBJ-1 and other large, land-based aircraft equipped with fixed guns. The leveling bracket should be very satisfactory, but its manufacture is considered an unnecessary expenditure of time and effort. Use of a straight-edge or protractor, as described in *Model PV-1 Airplane Bulletin No. 47*, is sufficient.**



WOOD SHIELDS REDUCE HARMFUL BUMPS

Wood Block Protects Link Rod

NAS ALAMEDA—Two workers here developed a system of protecting the machine-finished surface of articulating link rods from nicks that come from frequent handling.

Consisting of two wooden shields that may be fastened to the outer bearing-surfaces of rods by means of screw bolts, this suggestion prevents harmful bumping of rods with the master link. Many hours of work have been eliminated, thereby effecting a substantial annual saving to the station. The idea was submitted under the Navy employees' suggestion program.

[DEVELOPED BY DONALD H. MCKINNEY, AMM2C, AND FREDERICK VOLKING]

PHOTOGRAPHY

Use 16 MM. for Flight Deck Operations

Recent tests have proved the Cine Kodak Special 16 MM. motion picture camera, operating at 64 frames per second, entirely satisfactory for photographing normal flight deck operations. All CV's and CVL's now using 35 MM. Mitchell motion picture cameras for this purpose are to requisition two Cine Specials (STOCK NO. 18-C-184-75) from nearest photographic supply point. One Cine Special has been authorized for each CVE.

When these cameras arrive, present 35 MM. Mitchell cameras should be turned in to stock as soon as the vessel is in vicinity of one of the photographic supply points.

A-8 Magazine for K-18 Aerial Camera

The new A-8 magazine (Standard Stock No. 18-M-469-100) that accommodates 390-foot rolls of aerial film for the K-18 aircraft camera now is in production. A limited number of units have been delivered and are ready for issue from supply points in the forward area. Fifty magazines are to be delivered each week until a total of 800 have been supplied.

Film for the magazines has been stocked in 390-foot rolls in two speed groups. Speed group 100 carries Standard Stock No. 18-F-31533, and speed group 200 carries Standard Stock No. 18-F-31585. The 205-foot rolls of 9½-inch aerial film supplied for use with the K-17 camera also may be used in the A-8 magazine.

Conservation of Photo Film and Paper

Increased use of photography in military operations has multiplied requirements for film and paper to the extent that production is not sufficient to meet all demands. Production capacity cannot be expanded in time to relieve the present critical shortage.

To insure that adequate supplies are available to the Fleet, it is necessary that activities take every possible step to conserve all types of film and paper. All photographic laboratories should revise operations and confer with requesting authorities to make certain supplies are not being used unnecessarily. Wherever possible, other means of reproduction should be substituted for photography.

(*Continued from page 46*)

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
Curtiss Electric Propeller				
	18	5-14-45	*Propeller Model C543S—Installation of 101714-1 Dowel in 102302 Hub*	To prevent shearing of slinger ring attaching screws and the special slip ring attaching screws due to stresses imposed by installation of cooling fans
Hamilton Standard Propeller				
	32	5-18-45	*Hamilton Standard Service Bulletin—Approval of*	To approve Hamilton Standard Service Bulletin No. 96 for use in connection with repair and maintenance of propellers on naval aircraft

LETTERS

SIRS:

Believing you to be an excellent source of information for tough questions, I hereby admit one to you that I can find answers both pro and con but nothing official either way.

A few years ago it was a practiced custom to enter in a Pilot's Log all of his instrument time in red ink. At the present time this practice is followed by only a few and most instrument time is logged the same way as any other flight in black or blue ink with the exception of night flying and combat missions.

No information can be found as to the authority for ever starting to log instrument time this way, nor can I find by what authority it was stopped.

RICHARD K. MUSTAIN, MT/SGT., USMCR
VMF-914

¶ Practice of logging instrument time in red ink always was an unofficial, although handy way to facilitate the addition of such flight time. The 1945 edition of *BuAer Manual* (Art. 6-124, Aviator's Flight Log) makes no mention of any color of ink to be used for entries.

SIRS:

In your issue of May 15 there was an article on page 13 entitled, "BUPERS approves New Insignia." In this article, it was stated that some WAVES were receiving their wings. Is it possible for WAVES to attend the Navigator's School? If so, what are the necessary qualifications?

JACKSONVILLE — SK(V)3c

¶ NANEWS stated that among 618 officers, 6 WAVES who previously had graduated from naval air navigation schools became eligible to wear the new wings of Naval Aviation Observer (Navigation). No enlisted WAVES are eligible to enrollment in the Clinton, Okla., Naval Air Navigation School. There is no present quota for officer WAVES to enroll, but the possibility exists they may be admitted later.

SIRS:

I have, what is considered by many of us here, an important question. Please reply. We have flown for SCAT (South Pacific Combat Air Transport) from 10 to 24 months. Some of it over unsecured waters, landing on unsecured rocks. Do we rate Aircrewman wings? Please don't refer us to a T.O., but give us the straight dope.

CPL. BOB L. JAUERT, USMC
FPO SAN FRANCISCO

¶ According to latest regulations, Cpl. Jauert is not entitled to wings. To wear them one must be a regularly-assigned member of the aircrew of a combatant aircraft. *Combatant Aircraft* are considered to be all operating aircraft of Marine Corps aviation designed primarily for combat, and except utility aircraft which are neither designed nor fitted for offensive or defensive operations.

SIRS:

In the 1 March issue of NAVAL AVIATION NEWS, we noticed that your Letters column on the back page carried a letter claiming a record for single-engine aircraft performance, in that Fighting Squadron 80, with 68 F6F-5 airplanes, had flown a total of 1440 hours in three days. We beg to differ slightly.

During the first six days on Iwo Jima, flying night and day continuous patrol under extremely adverse operating and servicing conditions, only 18 TBM-3s of Marine Torpedo Bombing Squadron 242 flew 1080 hours. Each torpedo bomber averaged 10 hours in the air every day.

Though patrols were later slightly reduced, the forward echelon's monthly record for 8 March to 8 April showed a total of 3000 hours—nearly six hours per plane per day for 30 days. Is that a record for single-engine naval aircraft performance?

Fighting Squadron 80's record is only 7 hours per plane per day for only *three* days.

Marine Torpedo Bombing Squadron 242's record is now 10 hours per plane per day for *six* days.

CHESTER D. PALMER, JR., T/SGT.
Marine Corps Combat Corresp.

¶ VMTB-242's feat is laudable. In passing, Correspondent Palmer should note that VF-80's claim appeared in the 1 March issue, and that it was being made-ready for press the day VMTB-242 commenced its noteworthy record on Iwo Jima (19 February).

CONTENTS

ANSWERS TO QUIZZES

● BEST ANSWERS *(p. 35)*

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

● NAVIGATION PROBLEM *(p. 20)*

1. Lat. 29° 21'N
   Long. 87° 25'W
2. Lat. 29° 13'N
   Long. 87° 15'W
3. 0836
4. Lat. 29° 03'N
   Long. 87° 41'W

(Tolerances: 7 minutes on positions, 3 minutes on time)

● GRAMPAW'S QUIZ *(p. 10)*

1. To the left and long enough to observe other traffic. Ref: CAR 60.3301.
2. Climb to safe altitude (at least 5,000 ft.) and test out controls, particularly with plane in landing condition. See T.O. 48-40 for detailed procedure.
3. On all seaplane flights from take-off to completion of landing and during landplane flights beyond gliding distance of land. Ref: New BuAer Manual; Art. 6-113.
4. Yes. Ref: New BuAer Manual; Art. 26-205.
5. He should get below 10,000 feet as quickly as possible, using emergency oxygen. He should remove his mask and not again ascend until certain that his oxygen equipment is working properly. Ref: F.S.B. 34-44.

NAVAL AVIATION NEWS

Published twice monthly by Chief of Naval Operations and Bureau of Aeronautics to disseminate safety, survival and technical information to the aeronautical organization. CONTRIBUTIONS INVITED. Air mail should be used where practicable to insure speediest delivery of material submitted for publication, addressed as follows: Chief of Naval Operations, Naval Aviation News, Navy Department, Washington 25, D. C.

Can you face her?

■ She's Dilling's wife.

You remember Dilling—one of your aircrewmen. Wounded by AA fire from a PT.

You remember the PT too—one of ours. You didn't recognize it, didn't radio-contact it, ignored its signals. Treated it like a Jap—dived on it.

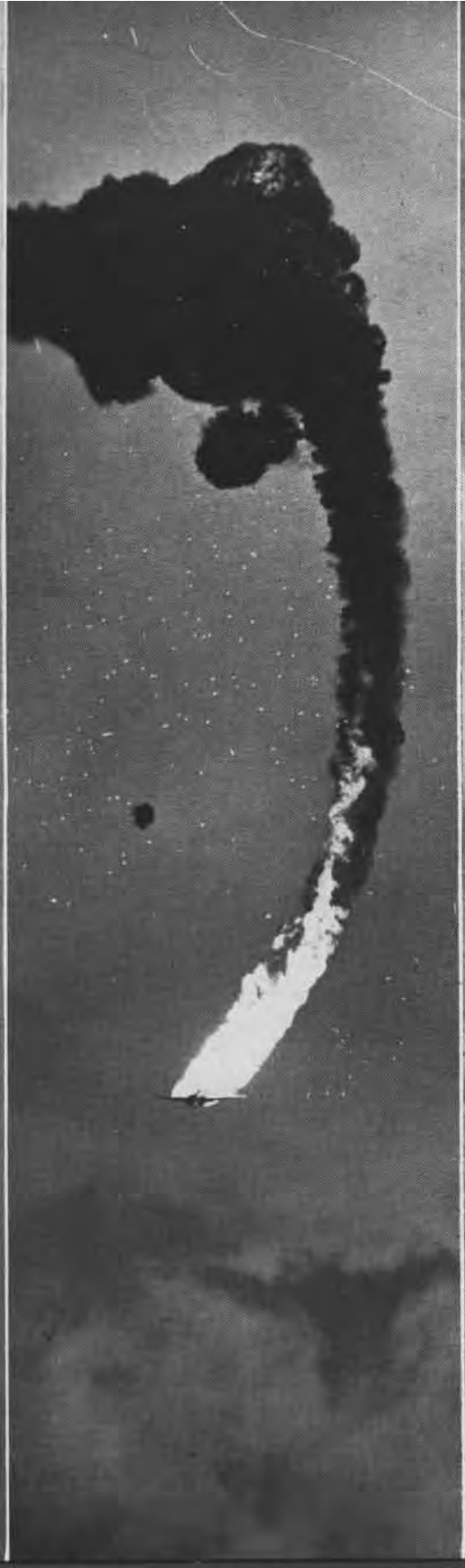
You got by all right, but three of your aircrewmen were wounded by the PT's firing. They all recovered—all, that is, except Dilling.

Dilling's wife, like a host of other brave American housewives, is prepared to take her share of the rap, if it has to come by enemy action.

But can you face her, listen to her muffled sob, knowing it came as the result of *your* carelessness?

Kill only the enemy: IDENTIFY WHEN APPROACHING FRIENDLY SHIPS

JUDY BURSTS INTO FLAMES AFTER BEING HIT BY AA; TRACERS BLANKET THE JAP PLANE



FIERY SMOKE PLUME MARKS DEATH FALL AS DOOMED PLANE HEADS FOR U. S. SHIPPING

DEATH PLUNGE FANS OUT LAST FLAMES AS THE AIRPLANE MEETS USUAL FATE OF JAPS

Jap Bomber

A JAPANESE *Judy* divebomber bursts into flame after being hit by antiaircraft following a futile dive on Fleet units off the Ryukyus. Scores of Kamikaze pilots have met death in this way