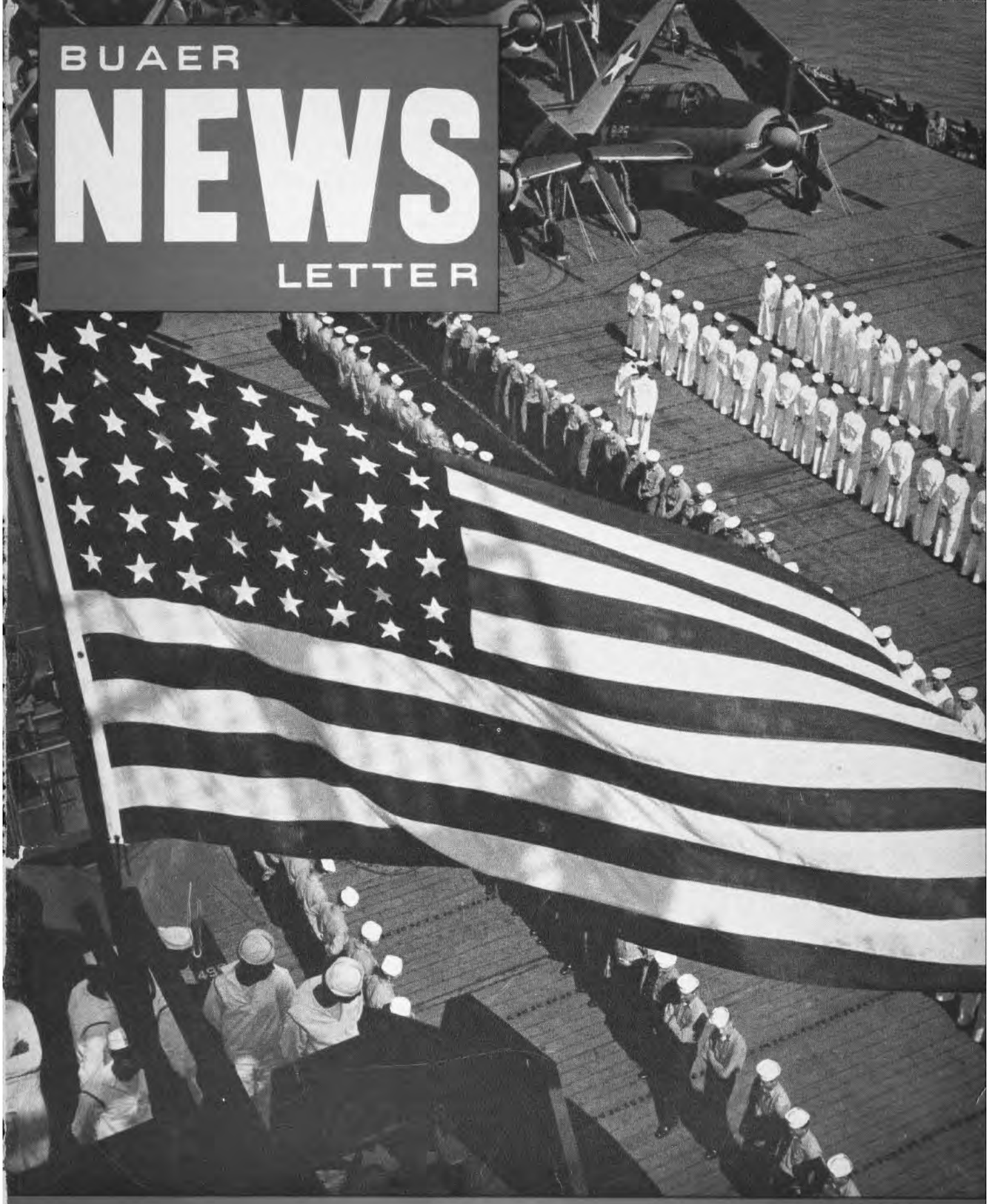
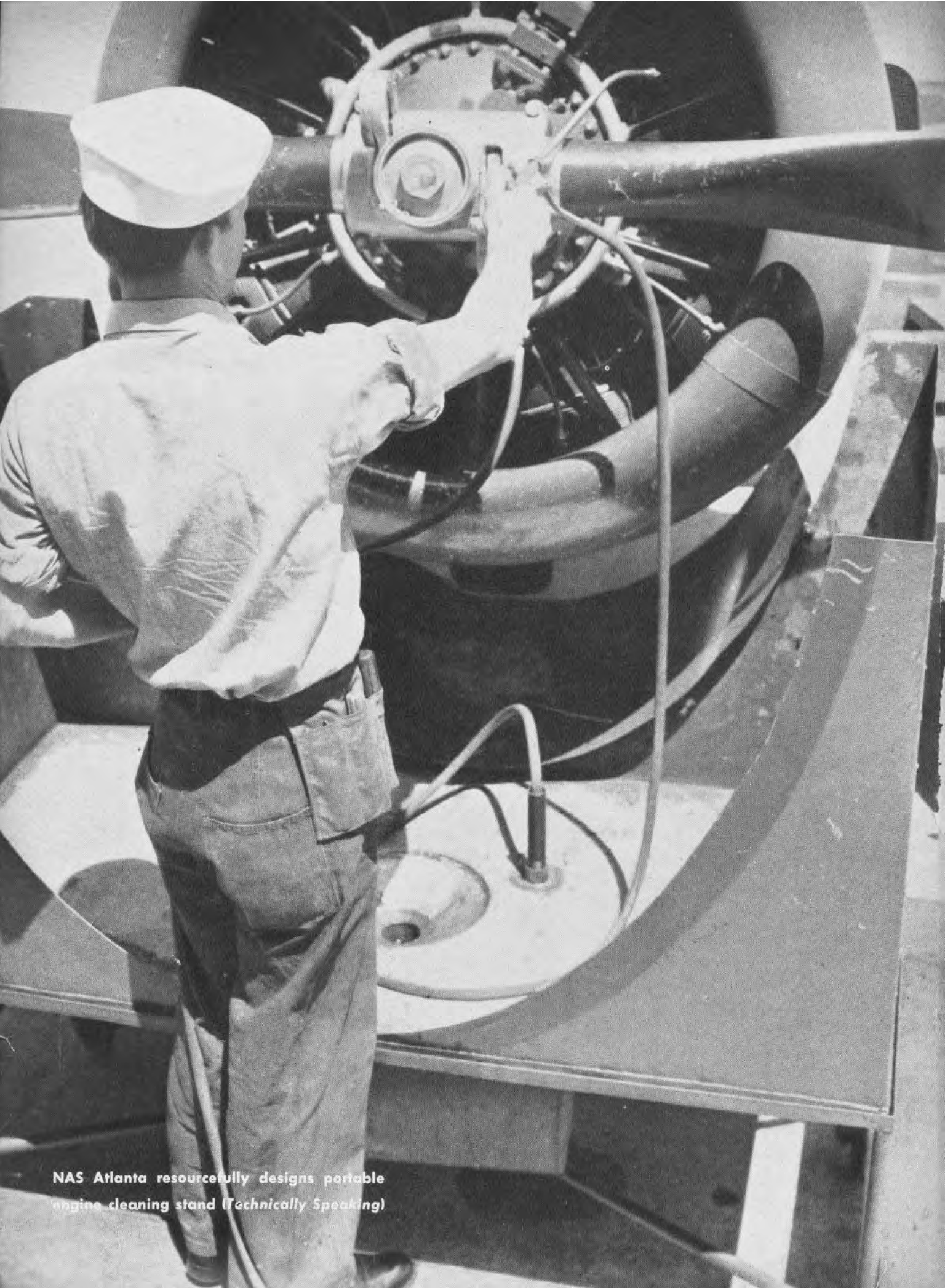
BUAER NEWS LETTER



Ship Recognition
Grampaw Pettibone
Navigation Problem

July 1, 1943

RESTRICTED



NAS Atlanta resourcefully designs portable engine cleaning stand (*Technically Speaking*)

A FLIGHT OF SBD'S KEEPS CLEAR OF THE OMINOUS FLAT-TOPPED ANVIL OF A THUNDERHEAD, REARING UP OVER A GREAT MASS OF CUMULUS CLOUDS

Thunderstorms

Leading Edge of the "Anvil" on Top of the Thundercloud Indicates Direction the Storm Takes

A FULLY developed thunderstorm is accompanied by heavy rain, lightning, and usually hail. The most conspicuous characteristic of these storms is the distinctive, heavy swelling cumulus cloud with a cauliflower appearance along the sides. Close observation of the cloud will reveal the violent boiling air motion taking place inside the cloud.

Usually the thunderstorm cloud is crowned by a flat spreading top. This is known as the "Anvil." In almost every case the leading edge of the "Anvil" is carried ahead of the main body of the thunderstorm, by the action of the upper winds, and gives a good indication of the direction in which the storm may be expected to move. At the leading edge of the base of an approaching thunderstorm, a revolving cloud with the appearance of dirty cotton may often be seen. This so-called "Roll Cloud," gives warning of an area of great turbulence. Within the storm there will be found a region which is almost black in its appearance. In this region, the heaviest rain is encountered.

This is necessarily a very general description of a typical thunderstorm. Each such storm encountered will be individual in its appearance and any one or all of the distinguishing features may be missing or masked by other clouds or topography.

Contents

BUREAU OF AERONAUTICS
NAVY DEPARTMENT—NO. 196

Effect upon Surface Winds

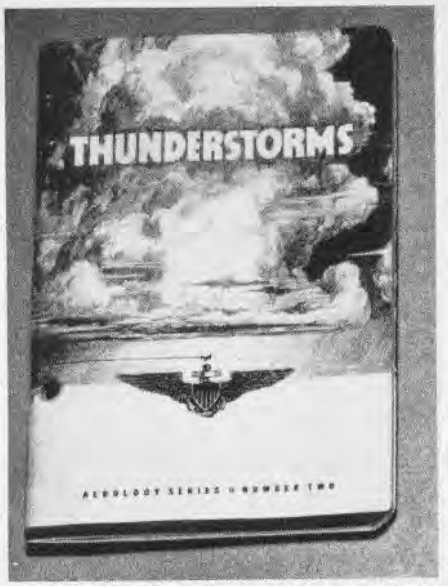
With the approach of the storm, the wind freshens and blows toward the storm. It should be noted that this breeze is opposite to the direction of the storm's approach. As the thundercloud arrives overhead, the wind

suddenly changes in direction and blows out from the storm in an outrushing squall wind. Between these two oppositely moving winds is an area of violent gust, first from one direction and then the other. This gustiness is of comparatively short duration and occurs in the vicinity of the "Roll Cloud."

Vertical Currents

The thunderstorm consists of "chimneys" of rapidly ascending air surrounded by downdrafts. The most violent updraft is encountered in the center or core of the storm. Between the rising and descending air are regions of violent turbulence. Maximum turbulence may be expected in the "Roll Cloud."

The rising currents are always the strongest and while no specific data can be given as to maximum velocities, it is estimated that they often reach a velocity of 10,000 feet per minute. Some idea of the vertical velocity can be obtained from the fact that a velocity of 116 miles per hour is necessary to support a hailstone 3 inches in diameter, a size that is by no means rare. In general, the most violent activity occurs in the lower two-thirds of the thunderstorm area.



WRITE BUAER TRAINING DIVISION FOR BOOKLET

Types of Thunderstorms

In general, there are three kinds of thunderstorms: Air mass, frontal, and orographic.

An air mass thunderstorm is one which develops as a result of interaction within a single air mass. This is the simplest type of thunderstorm and is due to diurnal heating in the lower levels of the atmosphere with an attendant instability near the ground. This instability near the ground is the "trigger" or "push" that is responsible for the later instability throughout the storm. Air mass thunderstorms vary considerably in area and in velocity. However, they usually travel at about 15 to 20 miles per hour and are 8 to 40 miles in diameter. A period of hazardous flying at any one station is relatively short; an hour is exceptional.

Frontal type thunderstorms are those which occur as a result of instability released by the vertical motions created by a front. Cold frontal thunderstorms occur when cold air moves in under warmer air forcing it to rise to a point where it becomes unstable. These storms are usually concentrated in a zone parallel to the leading edge of the cold air mass.

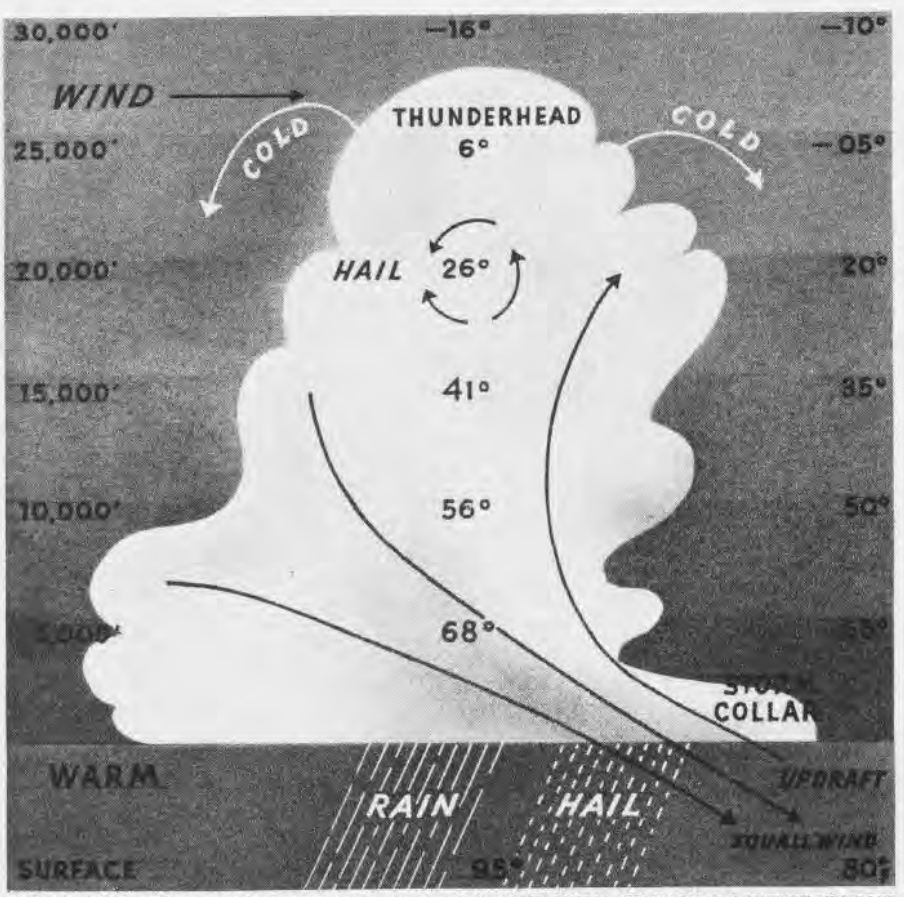
Warm air moving into a region occupied by cold air overruns the cold air, and a similar rising and instability results. Such warm front thunderstorms may be expected well in advance of the surface warm front.

Orographic thunderstorms occur when air is forced up a hill or mountain slope. These thunderstorms usually occur singly and are quite often more violent than air mass thunderstorms and generally extend to greater heights. In tropical regions development of thunderstorms over land is rapid and causes hazardous conditions over ranges in the later afternoon.

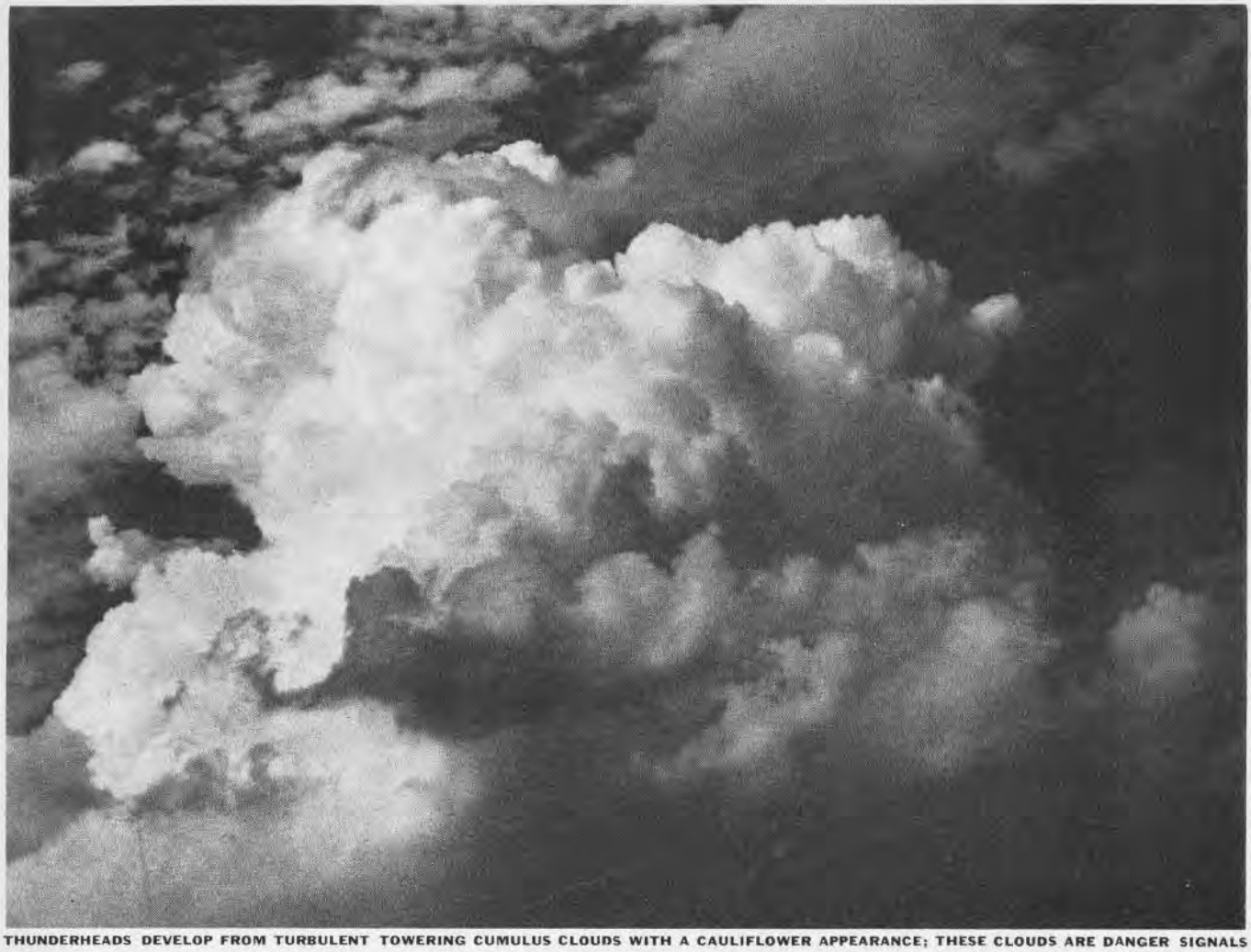
Rain and Hail

As the air ascends within the thunderstorm it expands and cools. At a definite level the moisture begins to condense, thus forming water droplets. These droplets remain suspended in the air until they grow to such a size that the upward air currents can no longer sustain them, at which point they fall out as rain. As noted above, the heaviest rainfall will be encountered beneath the center of the storm.

Hail forms in the "chimney" of thunderstorms at an altitude above the freezing level. As the raindrops are carried aloft by the ascending currents into freezing temperatures they quickly congeal and gather a coat of snow and frost. The hailstone thus formed, upon finding a weaker updraft, falls back through a region of liquid drops where it gathers a layer of water, a portion of which is at once frozen by the lower temperature of the hailstones. It may again be caught up by a strong updraft and be carried back to freezing levels. This



WHEN A COLD FRONT MEETS WARM AREA, CUMULO-NIMBUS FORMS, ENCLOSING A FIERCE UPDRAFT



THUNDERHEADS DEVELOP FROM TURBULENT TOWERING CUMULUS CLOUDS WITH A CAULIFLOWER APPEARANCE; THESE CLOUDS ARE DANGER SIGNALS

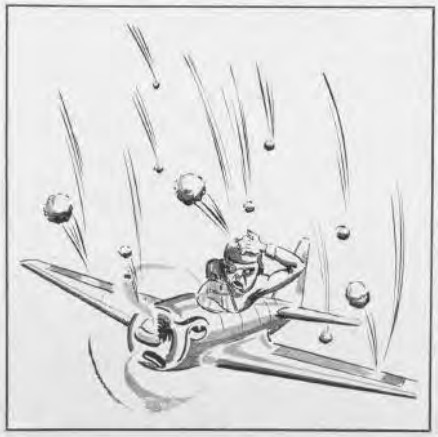
process may be repeated many times until the stone grows to large proportions. The size of the resulting hailstone will in general be proportional to the strength of the upward convective currents.

In the tropics, hail is never encountered at low altitudes but is frequently found above 10,000 feet.

Lightning and Thunder

The phenomena of lightning and thunder have been covered by Technical Note No. 27–35. In general, the electrical charges are caused by the splitting of rain drops with a consequent production of a positive charge in one part of the cloud and a negative charge in the other. These charges when strong enough may discharge within the cloud, from cloud to cloud, or from cloud to ground, in the form of lightning. Thunder is the sound that accompanies the discharge of the lightning. Some idea of the intensity of a thunderstorm may be obtained by observing the orientation of the lightning flashes; if only horizontal flashes are observed, the storm is mild and its base is well above the ground, if the flashes are more vertical than horizontal you are approaching the storm from the front where there is greater violence and conversely if more horizontal than vertical you are approaching from the rear.

The heights to which a thunderstorm will build naturally depend upon the locality and the topography.



In temperate latitudes the average height is from 15,000 to 20,000 feet; while in the tropics, the average height is considerably greater, 30,000 to 40,000 feet and in extreme cases to 60,000 feet. There is also some variation with season, maximum heights being reached in summer.

The fundamental requirements for the formation of a thunderstorm are:

(a) A warm moist convectively unstable air.

(b) A resulting appreciable cloud thickness between condensation level and icing level.

(c) An agent to set off the activity.

Air when lifted, as along a frontal zone; on the windward side of a mountain range, or by heating from below, causes a change in the atmospheric lapse rate and a redistribution of moisture. This change causes instability of the air and possible thunderstorms. The difference between an ordinary shower and a thunderstorm is one of intensity only. The fundamental requirements are readily fulfilled in the doldrum belts.

WHAT DO THE CLOUDS SAY? BEFORE TAKE-OFF TWO PILOTS EXAMINE SKY FOR STORM INDICATION

Daily Period: Over land the maximum frequency occurs during the afternoon between 1400 and 1600. Over ocean areas this maximum period falls between 0000–0400.

Yearly Period: Over land, thunderstorms occur most frequently during the hottest months of the year, while over the oceans maximum numbers are encountered during the winter months.

In tropical regions these storms will be found the year around.

Flight Precautions

1. The violent vertical air currents may result in loss of control or structural failure. Cases have been reported where large aircraft have been literally flipped over on their back, or forced aloft at a rate of 1,000 feet a minute.

2. Lightning is of little consequence in an all-metal, closed-cockpit plane. However, if the ship is open-cockpit or has a plywood or plastic fuselage, structural damage may result from lightning discharges. In either case, the pilot is advised to turn on the cockpit light and keep his eyes on some object in the cockpit to avoid being temporarily blinded by a lightning flash. On occasions lightning may aid you by lighting your way.

3. Large hailstones may cause a great deal of damage to all types of aircraft. In some cases hail may be encountered outside the cloud where it is literally spilling out of the cloud.

4. As in any instability cloud icing may be encountered in a thunderstorm above the freezing level. Icing is most common in temperatures of from 0° C. to −10° C.

5. Great turbulence may cause vertigo or temporary loss of control.

6. If at all possible, thunderstorms should be circumnavigated.

7. When at sea, or if contact conditions can be maintained, fly under the storm. However, it should be remembered that possible downdrafts and turbulence create a definite hazard. Flight under a thunderstorm is also dangerous in mountainous vicinities. In flying under, the higher the flight level the rougher the trip; if possible, fly about one-third of the distance from the ground to the base of the cloud.

8. If the above two procedures are impractical it may be possible to fly over the storm. Don't try this unless your plane has sufficient ceiling and is equipped with the necessary deicing and oxygen equipment.

9. Cold front thunderstorms generally stretch too far to fly around; the storm front is a series of individual storms backed by intervening clouds. If you have to go through, fly between the storm centers or over the saddlebacks.

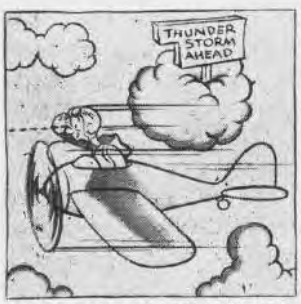
10. If all other methods of avoiding the storm are impossible, and you must go through, if possible, determine the direction the storm is taking and head in at a right angle. Once you have started in, don't turn around because of turbulence, rain, or hail, as you will have to fly through the same conditions twice and you might get lost.

11. If the front of the storm is entered there will be updrafts, so go in low; if the rear is entered there will be downdrafts, so go in high.

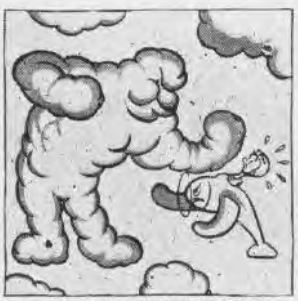
12. In flying through the storm the top third offers least vertical currents.

13. Never land at an airport when a thunderstorm is advancing toward a field, because of the shifting surface winds; wait until the storm has passed.

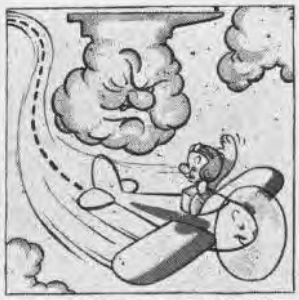
14. If you expect to try high-level flight, get altitude before approaching the storm, so that you are on top of the cloud shelf around the storm and you can detect the storm line before selecting your course.



STUDY YOUR STORM PROBLEM



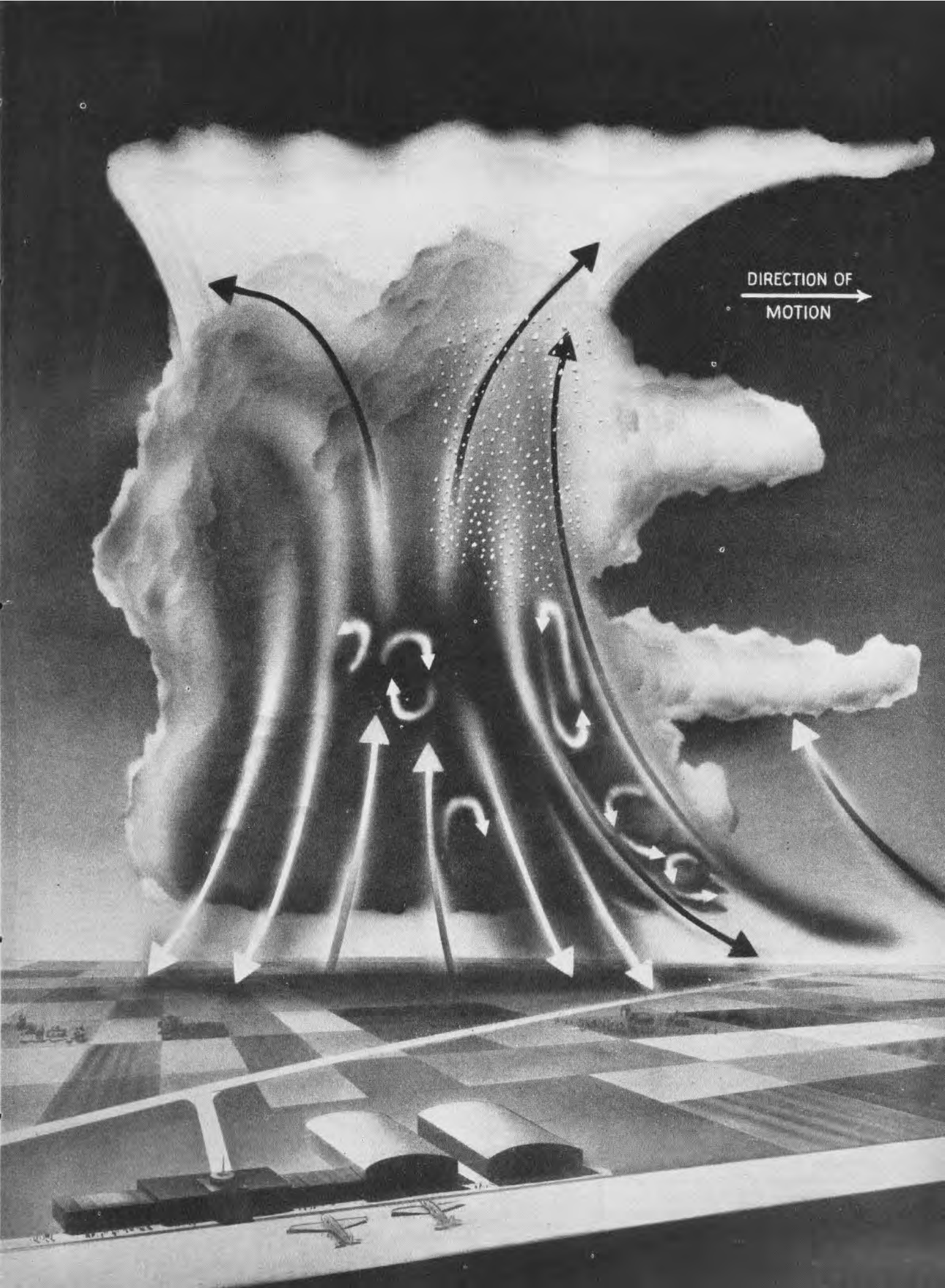
GO IN LOW, FLY UNDER BASE



FLY AROUND IT IF YOU CAN

THIS IS BUAER'S TECHNICAL NOTE NO. 34-43

Usually the thunderstorm cloud is crowned by a flat spreading top. This is the picturesque "Anvil."


DIRECTION OF
MOTION

GRAMPAW PETTIBONE

Ferry Accident

Two SBD–4 ferry pilots filed a contact flight plan at 1324, based on a 1230 weather report. Departure was not made until 1 hour later, however, during which time another weather report had been issued, showing weather along their route to be below contact requirements. Upon reaching this low-ceiling area, the pilots left the airways route and attempted to reach their destination via a mountain pass. The weather got progressively worse and both pilots crashed.

Grampaw Pettibone says

The initial flight clearance in this case was proper, but a closer and more solicitous supervision of flight operations at the air station concerned should have prevented this flight from taking off after the adverse weather report was received.

There are two distinct lessons for ferry pilots in this case: 1. the 1230 weather report, although satisfactory for contact clearance, showed a rather low ceiling; therefore, the latest weather report should have been checked prior to departure, and 2. upon reaching the low-ceiling area, the pilots should have turned back and landed at the nearest airport in accordance with regulations, instead of proceeding into a mountainous area. Even without such regulations, good judgment should have dictated this latter course.

Buaer Circular 14–33 contains the latest instructions on the ferrying of naval aircraft. In the interests of safety, ferry flights have been limited to daylight flights, under contact conditions only, and over established civil airways insofar as practicable. Civil Air Traffic Regulations are effective on all flights over civil airways routes and should be thoroughly understood by all pilots concerned.

Remember, the main objective of all ferry flights is safe delivery of the airplane!

Pilot to Blame for Stalls

NAS, Corpus Christi.—Tracing back the causes of fatal accidents in the SNV–1, investigation boards at Auxiliary Air Station, Rodd Field, have found that in most cases the fault is pilot error.

Considering that at least one of the sources of error must have been that the student had not been taught correct recovery methods during his training, 20 stalls are offered in a new syllabus for the Instructors' School.

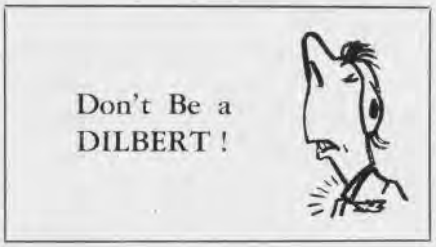
The stalls taught are normal cruising, climbing, climbing turns, normal turns and steep turns, each under four conditions: *1.* Flaps up, sufficient power (1,800–1,850 r. p. m.); *2.* flaps up, insufficient power (1,200–1,400 r. p. m.); *3.* flaps down 20°, sufficient power (1,800–1,850 r. p. m.), and *4.* flaps down 20°, insufficient power (1,200–1,400 r. p. m.). Practically all attitudes and positions of a stalled airplane are shown. The stalling speeds for each of the positions are stressed especially.

The roll-out method of recovery from inverted spins is taught rather than the old split **S** type. Consequently there is less altitude loss and lower airspeed upon recovery.

Included in the syllabus for student officers (instructors-to-be) is a series of lectures on naval customs and uniform regulations, course rules and dual syllabus in the SNV–1 aircraft, radio procedure and radio navigation on airways, safety in flight, constant speed and controllable pitch props, automatic mixtures and icing of aircraft, use of weather maps, student psychology and methods of instruction, three- and six-plane formations, military discipline and courtesies, pay allotments, orders and travel accounts, and standardization of student marks and write-ups.

The student officer is required to keep a notebook which he turns in upon completing the Instructors' School syllabus. The notebook contains psychological facts and hints as well as correct methods of instructing.

BUREAU COMMENT Stalls were involved in 18 percent of all training accidents during 1942. This syllabus should lead to a better recognition of spin characteristics and recovery methods among students.



Machine Guns Accidentally Discharged

NAS, Corpus Christi.—Two recent fatalities caused by accidental discharge of machine guns, recently reported by this Station, demonstrate the necessity of enforcing rigidly all safety precautions.

Case 1: A Machinist Mate attached to a squadron of the NAS, CC, was shot and killed while turning the prop of an OS2U–3 seaplane which had been rigged in the status of an alert plane. In securing his plane for the night, the plane captain was engaged in putting on the covers, which necessitated turning the prop into a horizontal position. In so doing, the .30 caliber fixed gun went off and shot him through the head. Subsequent investigation of the ejection-case revealed that there was one dummy cartridge and two links in the case, and empty cartridge in the barrel of the gun.

Leaving convoy duty ready-planes with ammunition in the fixed guns was believed to be a time-saving measure in case of emergency. Instructions were to have one dummy in the chamber and one dummy in the feedway. Investigation revealed that the gun had been loaded about one hour previous to

the shooting by an ordnanceman who testified that he had loaded the gun with only one dummy; however, he explained that he had left the dummy in the feedway, which would leave the gun in the same condition as if he had used two dummies. In order for the gun to shoot as it did (assuming the gun was loaded as described) the charging handle would have had to be pulled twice, the prop moved to a low cam position and the trigger pulled. As warning signs were in the cockpit of the plane and the deceased was seen in the plane prior to the fatal shooting, he should have known that the gun was loaded. It was not determined whether party or parties unknown had tampered with the gun in the one-hour interval when the plane was unattended, or whether the gun was loaded otherwise than as described.

BUREAU COMMENT **See report of a similar accident in *News Letter*, Dec. 1, 1942.**

Case 2: The second fatality occurred as a result of the accidental firing of an M2 .50 caliber Browning machine gun with a Mark II adapter, installed on a PBY–3 plane which had been ferried from another base and delivered to the Naval Air Station, Corpus Christi. The plane was left outside a NAS patrol plane hangar for two days after arrival. On the third day, it was brought into the hangar, and the .50 caliber free gun, which had been in a secured position with canvas cover on, was removed from the plane by two N. A. S. patrol squadron ordnancemen. They immediately thereafter set it up on a bench in the ordnance shack for the purpose of cleaning it. An ordnanceman then proceeded to remove the weather canvas cover. A strip of cloth or lashing, which held the cover secure, passed from the right side of the gun, over the trigger mechanism and around the back plate; and was secured in a grommet of the cover on the left side of the gun. The ordnanceman, in attempting to get some slack on this strip of cloth in order to untie the knot, exerted lateral pressure on the trigger mechanism, thus discharging the gun. A cadet who was standing inside the hangar was killed by a fragment of the bullet which had been deflected in passing through the wired glass bulkhead between him and the ordnance shack. The conclusion is that someone, contrary to regulations, had left a live cartridge in the bore of this gun. The plane ferry crew delivered the plane and installed gun in this condition without notifying the N. A. S., C. C. that the gun was still loaded. A subsequent board of investigation conducted at the N. A. T. C., C. C. revealed that the ferry crew did not know that the gun was loaded when they accepted it for fly-away, and that they did not go near the gun or examine it prior to delivery of plane at destination.

Mechanic Trouble

The pilot of an NE–1 taxied his plane to the line, cut the switch and left the aircraft. Just prior to his return, a mechanic pulled the propeller through to start the engine. The throttle was well advanced; there were no chocks under the wheels, and no one was in the aircraft. When the engine caught, the airplane at once started to take off. The mechanic seized the starboard wing but was unable to maintain his grip and the aircraft became airborne. It failed to clear the boundary fence at the end of the field and was completely washed out in the following crash.

The Trouble Board said: All plane captains on this station have been warned of the absolute necessity for having a qualified person in the cockpit of every plane from the time the engine is started until the ignition has been turned off. Sufficient chocks have been distributed to all outlying fields where it is necessary to park planes for even a short period of time.

Grampaw Pettibone says

This aircraft was lost as the direct result of carelessness and disobedience of orders. Article 13–133 Buaer Manual contains the regulations governing starting of aircraft engines. In this instance, the station concerned had also issued an order on the subject. Evidently a little more indoctrination and pressure is necessary in some cases.

Identify Before Approaching

Reports continue to indicate that frequently United States planes approach United States naval vessels before they have been properly identified. This has resulted in several unfortunate instances and the destruction of some of these planes. Aviators must thoroughly appreciate the fact that the burden of identifying themselves lies solely upon their own shoulders. It is unreasonable to expect the commanding officer of a surface ship to permit an unidentified plane to approach within firing range without giving the order "commence firing." Naval aviators must take every precaution to ascertain with certainty that their plane has been identified clearly before making a close approach upon our own vessels.

Goggles—Up Or Down

Query has been made as to the correctness of the recommendation to "push goggles up on the forehead" in a forced landing (p. 4 of May 1 NEWS LETTER). Although standard goggles are made of so-called shatter-proof glass, they will break and splinter when struck severely. Accident records indicate that numerous eye and head wounds have been caused by broken goggle lenses and even by fractured metal frames. Therefore, the Bureau adheres to its recommendation to push goggles back in a forced landing.

A large number of goggles have been issued having sponge-rubber frames and flexible plastic lenses. These goggles need not be pushed back.

More experience may indicate that the use of the shoulder harness will reduce head and face injuries to such an extent that it will no longer be necessary to push goggles back during forced landings.

Grampaw Pettibone says

That's another thing I'm mad about! I don't believe shoulder harnesses are always being worn. All I say is, talk to someone who has worn one in a crash. And you guys who have used them—proselyte!

Landing Crash Due to Fouled Engine

During his landing approach, the pilot of a PB4Y–1 came in high, but apparently decided he could execute a safe landing by losing altitude in a power-off glide. He completely throttled back the engines until the aircraft was over the edge of the field, at which time he realized that he was still dangerously overshooting. He then applied full throttle, but the engines had become fouled during the long power-off glide, and, upon application of the throttle, they failed to respond. A forced landing was made on the last half of the field, and the bomber was completely washed out when it ran off the runway.

BUREAU COMMENT **Unfortunately, this is not the only serious crash which has resulted from similar mistreatment of the engines by uninformed pilots. Numerous take-off crashes have been attributed to fouled engines caused by prolonged taxiing or idling at low r. p. m. Pilots should familiarize themselves with Article 14–217 of Bauer Manual, which is quoted in part as follows:**

"In a glide an engine must be kept warm; it will not be allowed to go below normal operating temperature and the throttle will be repeatedly opened to clear out the cylinders. When the engine is allowed to cool, contraction of the pistons allows too much oil to be 'pumped' into the combustion chambers and the plugs will be fouled. Prolonged idling of the engine on the ground will cause overheating as well as fouling of the spark plugs."

Hood Failure Plus Pilot Error

The pilot of an FM–1 accepted his plane for flight, knowing that the forward roller of the hood on the port side was out of its track. What happened on his flight is related in his own words: "I had the hood locked open about 2 inches (in the first notch) when I rolled over for an overhead gunnery run on the target sleeve. After diving approximately 2,000 feet and attaining about 300 knots, the enclosure gave way on the port side. I was struck on the right temple and momentarily lost consciousness. Upon regaining my senses, I attempted to release the hood, which was streaming from the starboard side. The release failed, and I then returned to the field and made a normal landing."

The Trouble Board said: Pilots should be cautioned to fully close and lock cockpit enclosures before going into high-speed dives.

Grampaw Pettibone says

Knowing that he was going to engage in violent maneuvers (gunnery runs), this pilot definitely should not have accepted this airplane until the hood operated properly. Common sense is as important to an aviator as flying technique, but unfortunately harder to teach.

Recent Ground Collisions

Case 1. During routine night flying the first student made his final landing, and while taxiing slowly to the end of

the runway was struck from the rear by a second student who had been signaled to land by the Night Flying Operations Officer. Before the damaged second plane could clear the area, another student was signaled to land. This third student landed slightly long, and while still in his landing run, collided with the second aircraft. In the opinion of the Trouble Board the Operations Officer was to blame for these two accidents in that he failed to determine a clear area before signaling additional airplanes to land.

Case 2. Three students were practicing formation flying. After landing at an outlying field, one of the students taxied his airplane through some mud and got stuck. The other two students parked their trainers close by, got out, and attempted to push their unhappy companion free. After much labor on the part of students and engine, the airplane suddenly came loose. In order to keep from miring down again, the pilot added throttle, and while taxiing at greater than normal speed ran into one of the parked planes.

Case 3. While approaching for a touch-and-go landing, a student saw another airplane moving down the runway and assumed that this plane was taking off. He proceeded with his landing and immediately upon contacting the runway applied throttle for a take-off. After lifting his tail, he saw the other aircraft directly ahead of him. An attempt to bounce over the other aircraft was unsuccessful and resulted in a disastrous collision.

Grampaw Pettibone says

Out of this mess of collisions, the Navy lost three primary trainers and had to replace major parts on four others. In the first two cases, the corrective measures are self-evident, but in the last case, which is a very common type of ground collision, there is a psychological factor involved which needs more attention—and that is this business of "assuming" things.

Aviators have no business to "assume" anything. Don't be a "wishful thinker"; don't take anything for granted—check, re-check and double-check. Anyone in aviation who does otherwise just proves the old adage that there are more of "them" than there are horses.

☆ ☆ ☆

I Wuz Robbed

When God passed out brains, I thought He said trains . . .
And I missed mine.
When God passed out looks, I thought He said books . . .
And I didn't want any.
When God passed out noses, I thought He said roses . . .
And I asked for a big red one.
When God passed out ears, I thought He said beers . . .
And I asked for two short ones.
When God passed out legs, I thought He said kegs . . .
And I asked for two fat ones.
When God passed out hips, I thought He said lips . . .
And I asked for two large ones.
Boy, Am I a Mess!

—*From NAS, San Pedro, Calif.*

Superior—The Navy's *Corsair,* one of the fastest fighters in the air today, has proved itself superior to all types of Japanese *Zeros* in actual combat, according to an announcement from Admiral Chester W. Nimitz, Commander in Chief, Pacific Fleet, based on battle records.

Navy and Marine pilots at Guadalcanal say the Navy's new gull-winged fighter plane has the Japanese *Zero* outclassed in interception, maneuverability, climb, speed, firepower, and armor. In recent aerial combats with Japanese fighters, *Corsairs* have rung up dazzling scores.

SHORE STATIONS

Boom Speeds Rescue

Foam Swivel Apparatus Is Operated From Truck of Cab

NAS, NEW ORLEANS—A foam swivel boom which will speed up the rescue of men caught in burning aircraft has been perfected by Gerald J. Shaw, AMM2/c, with the assistance of Frances J. Robinson, S1/c, at this station.

The boom, a pipe which extends 20 feet in front of the crash truck to which it is attached, is operated from the truck's cab by one man. A small wheel controls the boom's side-to-side movements while a crank handle with a locking mechanism raises and lowers the apparatus.

A ventura nozzle is slipped into the truckend of the boom and is detachable. A small tank affixed to the front of the truck holds the chemical which is sucked through a rubber hose into the ventura, where it is mixed with the water and pours out of the pipe as a blanket of foam which suffocates the flames it strikes.

Before the foam swivel boom was devised, it was necessary for three men to handle the foam fire-fighting equipment alone. Much time was lost in preparing the paraphernalia and it was often too difficult for the men to get close enough to the fire to be of service.

With the new device, the truck driver can start spraying the cockpit area of the burning plane before his vehicle has stopped moving. He can get closer to the fire since he is protected by his cab, and he can be far more effective because his boom can be aimed exactly at the spot where it is most necessary to put out the flames and protect the pilot.

The foam swivel boom is being used in weekly fire-fighting work. All members of the station's fire department and crash truck crews participate at one time or another in drills. An obsolete airplane fuselage is covered with old material and over this is poured waste oil and gasoline to simulate an airplane on fire. A 200-pound dummy is placed in the cockpit. Once the plane is ignited, men are sent into the flames in asbestos suits to see how fast they can rescue the dummy.

FOAM SWIVEL BOOM ATTACHED TO TRUCK SPEEDS RESCUE OF NAVAL AVIATORS CAUGHT IN WRECKAGE

BUREAU COMMENT **This is an excellent suggestion for use on the CO2 type of fire and rescue truck with the 150-gallon water tank.**

Want "Knots" Plainly Marked

NATTC, JACKSONVILLE—Due to the interchange of Army and Navy types of aircraft, it has been suggested that the calibration unit (whether knots or miles per hour) be marked distinctly on the face of all airspeed meters. By minute scrutiny this fact may be determined, but for the convenience of pilots, such as those in delivery units who shift rapidly from one type to another, the additional notation could be accomplished with a small amount of work on new instruments and with paint on the faces of installed instruments.

BUREAU COMMENT **The Bureau is taking action to have the word "knots" marked in white or natural aluminum finish on the dials of instruments under current Navy contracts. For instruments now in use or under overhaul, marking "knots" or "M. P. H.", as the case may be, in white paint on the center of the cover glass is recommended.**

Need for Horse Sense

NAS, PENSACOLA.—A young cadet, while at Ellyson Field, recently indicated that he must have studied the Bureau's pamphlet on *Parachute Sense*. After his plane collided headon with another, the embryo pilot bailed out and came to earth near a farmhouse off the beaten path. The farmer saddled a horse, and the cadet galloped some 4 miles to the nearest town, where he met the medical officer proceeding toward the crash. When the doctor asked how he felt, the cadet replied: "Well, sir, I'm going to be mighty sore tomorrow. This is only the second time I've been on a horse."

Forecasts at Corpus Complicated

Wind and Land and Sea Breezes Are Factors

NAS, CORPUS CHRISTI.—Weather forecasting at Corpus Christi is quite different from that with the fleet, since the semi-maritime exposure of this station makes local conditions one of the dominant factors in predicting the weather.

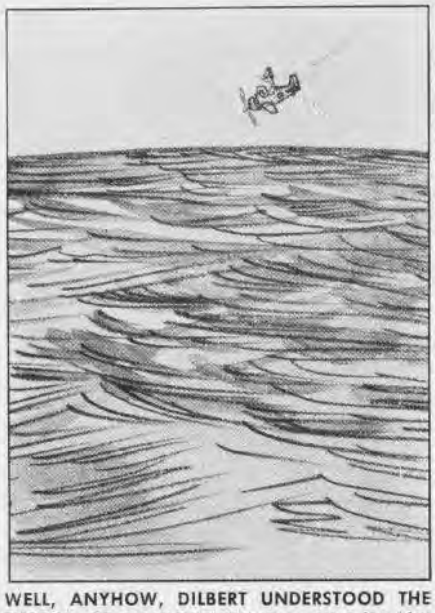
The wind, for instance, does not always shift in a clockwise manner with a cold front passage; it will just as frequently shift in a counterclockwise manner, or even shift from due South to due North in a few minutes. The land- and sea-breeze effect also complicates the picture, since at night the land breeze may carry fog out onto the water where it will not dissipate but will return over the land when the sea breeze starts. This land-sea-breeze effect also materially affects the strength and direction of the wind.

Another complicating factor is that cold fronts moving from the north frequently lose their impetus in this region, making computations of their movements very difficult. Often a cold front will stop a short distance south of Corpus Christi and then move northward as a warm front, making complex situations.

Even Experts Go Wrong

NAS, BERMUDA.—The ever-present Dilbert was recently featured in a cartoon in NEWS LETTER conducting himself in a manner that struck home with the navigation officer of a PBY squadron at this base. This officer was overdue, but it never occurred to anyone to worry about him. He had proved many times that he knew his navigation; he had lectured on the subject. Problems of navigation were always brought to him to solve.

But this time something went wrong. The first indication that all was not well came when he radioed for the radio range. From then on, it was quite clear that the navigation officer was in a quandary. It was a certainty when he finally said that he was sitting down because his gas was low, after having jettisoned most of his cargo.



WELL, ANYHOW, DILBERT UNDERSTOOD THE THEORY OF NAVIGATION! (*From NL 3/15/43*)

By checking his position report, he learned that he was well over a hundred miles from the island, and until his gas ran out, was moving farther away—nearer Europe—all the time.

He made an excellent landing, however, putting his plane down on a sea running heavy swells. It was approximately 2300 on a particularly dark night, but, aided by flares, he was able to sit down with no damage to his plane. It was not until late the next day that a ship refueled him. Witnesses claim that his take-off in a heavy sea, with a tricky wind blowing, was as pretty a one as they have ever seen.

Still, all the skill he showed in landing and taking off was not sufficient to counteract the laughs his outfit had when the cartoon of Dilbert appeared.

Don't Be a DILBERT !

CAN YOU ANSWER THIS PROBLEM IN NAVIGATION?

Geographic Square Search

A plane from VS 304 is returning to the ship after participating in action in the Sargasso Sea. The YE equipment has been rendered useless. The ceiling and visibility are lowering so that visibility is eight (8) miles due to slight precipitation.

At 0940 (which is estimated time of interception) the pilot does not see the ship so he commences a geographic square search at True Air Speed (TAS) 130 knots.

Flying at 800 feet he estimates the wind to be from 065°, force 18 knots. Variation is 9° W. Fly the search in clockwise direction.

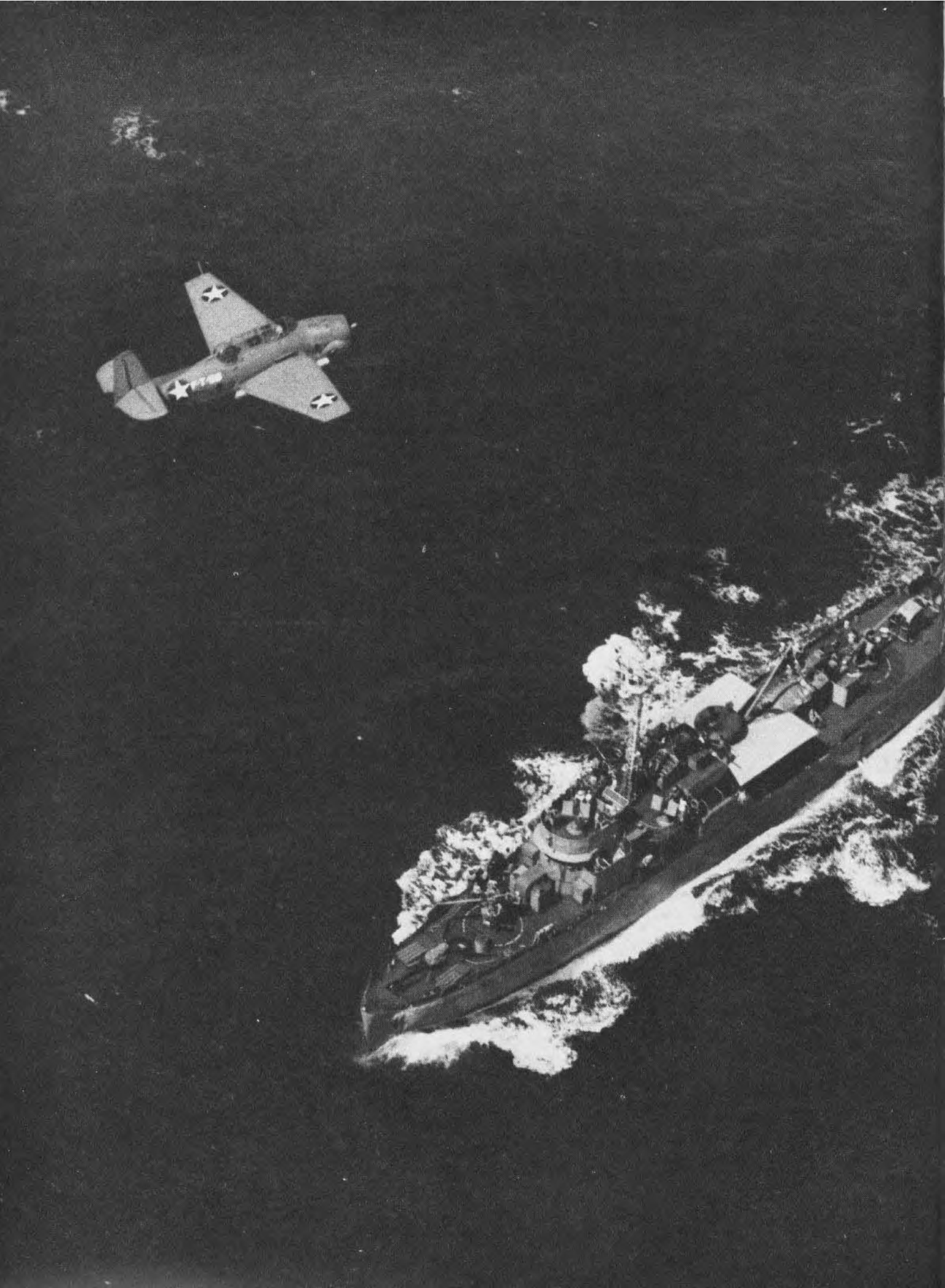
What are the magnetic headings, courses, and minutes on each leg?

	1st	2d	3d	4th	5th	6th
Magnetic Headings (MH)						
Courses						
Minutes on Leg						

(Answers on page 29)

Sorry, No Prints

From time to time requests are received for cuts or prints of photographs appearing in various numbers of NEWS LETTER. *Unfortunately, it is not practicable to provide either. Cuts are locked up in forms from which the magazine is printed. Photographs reach* NEWS LETTER *from a great many sources, and there apparently is no arrangement by which a system of getting prints can be conveniently worked out.*



SHIP RECOGNITION

Attack From Above Demands an Instinct for Quick, Accurate Recognition of Surface Craft of All Types

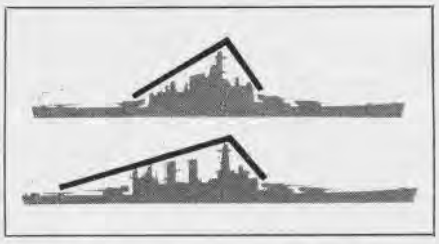
Quonset's Air Combat Information School Spurs Interest in Fleets of Axis and United Nations

THE persistency with which accounts appear in the daily papers of the bombing or shelling of enemy ships by other enemy planes and ships, together with the sobering conjecture that some of our own ships may be victims of the same mistaken judgment has resulted in ever-increasing attention being paid to the subject of recognition.

The formation of air spotters' outposts and the flood of airplane silhouette manuals have had much to do with making the nation air-conscious. Of equal importance, though far less publicized, is the need for rapid and accurate identification of surface craft.

This phase of the recognition problem, it is true, is at last beginning to get the attention it deserves; but as yet a general familiarity with ships lags behind our knowledge of planes. In an attempt to stimulate greater interest in the fleets of the Axis and United Nations, this article demonstrates how the problem is handled at the Air Combat Information Officers' School, NAS, Quonset Point.

The method of instruction used in training Air Combat Information Officers to identify friendly and enemy warships stresses, during the early stages, close-up views of the ships to be studied. In the first presentation of a new class of ship, attention is called only to the minimum essentials which an observer must know in order to make the correct identification. The student officers are directed not to take notes (necessary information is supplied to them on printed sheets), but to concentrate upon pictures, flashed on the screen, of the ship under consideration. It is pointed out to the student officers, for instance, that United States battleships of the *South Dakota* class have flush decks, two three-gun turrets forward and one aft, and a single, wide stack, faired into a high, smooth-sided and tapering tower-bridge structure. Particular emphasis is placed on the fact that the superstructure on battleships of this class is bunched closely together, forming a sharply pointed pyramidal mass amidship, as contrasted with the less regular, flatter, and more open pyramidal lines, set further aft, on battleships of the *North Carolina* class.



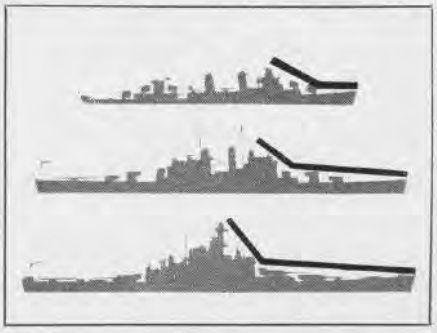
Structural Masses Notes

The use of large photographs and silhouettes, affording detailed views of a ship, is only a primary step. Student officers at the Air Combat Information School are never permitted to forget the importance of recognizing ships as quickly as possible, and from distances at which few details can be clearly discernible. From the opening day of the course, emphasis is reserved primarily for the larger groupings of superstructural masses, composed of bridge-structure, stacks and masts, and for the type, degree of rake, and comparative heights of masts, stacks, and bridge-structures. The secondary features of a ship (from the standpoint of long-distance recognition), such as the number and position of turrets and catapults, and whether or not the decks are flush or broken, are noted, not so much as facts in themselves, but for the effect which these features will have in determining the ship's characteristic silhouette as a whole.

Such details, for example, as the fact that on the Japanese battleships *Fuso* and *Yamashiro* the stack comes between the number three and number four turrets is of secondary importance to the resulting larger grouping of masses which such an arrangement necessitates, giving these ships two equal, relatively uncluttered areas, between the masts, forward and aft of the stack. In like manner, it is chiefly of importance to note that the catapults on the British light cruiser *Kenya* are placed between the stacks, whereas on the British heavy cruiser *London* the catapults are located between the second stack and mainmast, because this difference in catapult position affords one of the few definite means of distinguishing between two quite similar-appearing ships. Since the *London's* catapults are not located between the stacks, the stacks are naturally closer together than are the *Kenya's;* and the space between the *Kenya's* second stack and mainmast is correspondingly less than on the *London*. Thus the comparative relationship of high, prominent masses to those spaces where the profile-line drops down nearly to the deck level definitely determines which ship is which, even at great distances.

Superstructure has a Profile

If it is possible to secure a good beam view of a warship, at long range, the classification of that vessel may often be determined by observing the sharpness with which the forward superstructure profile-line ascends from the bow to the top of the bridge-structure, or the increasing angle which this line makes with the horizontal. Because of the relatively little amount of deck space forward of a destroyer's gun houses, the superstructure profile-line on vessels of this type, when far distant, seems to ascend in a pronounced, even slope. On



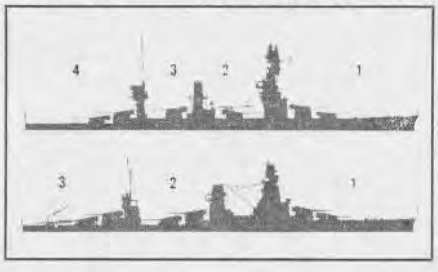
MODELS OF SHIPS AND PLANES ARE USED AT CORPUS CHRISTI AND AT OTHER AIR STATIONS TO INSTRUCT TRAINEES IN SCIENCE OF RECOGNITION

cruisers, because of their greater deck space forward of the turrets, the line of ascent will be much more gradual, to a point just forward of the bridge, where the profile-line rises abruptly, and at a much sharper angle than on a destroyer. On battleships, the foredeck profile-line is similar to that of a cruiser, except that the line of gradual ascent will be longer and less clearly marked, and the abrupt ascent will rise at a sharper angle.

Angle of Vision a Factor

Care should always be taken, when selecting distinguishing details of a ship for emphasis, that those details be chosen which can be recognized from as many different angles and positions as possible. A full broadside view of the British light cruiser *Kenya* shows her hangar-bridge structure extending beyond the after edge of her number one stack, whereas on the British heavy cruiser *London* the hangar-bridge structure does not extend quite so far aft, permitting a clean, unobstructed silhouette of the after edge of her number one stack. Although this difference would be sufficient to permit distinguishing between the two vessels when the observer is afforded a full, broadside view, only a slight change in the position of either ship would make this one point of differentiation inadequate. Of greater serviceability is the point that, because of the difference in catapult positions on these two ships, the *Kenya's* stacks are further apart than the *London's*, while the space between the number two stack and mainmast is of greater width on the *London* than the space between the stacks. It is nearly always this comparative differentiation between high masses and relatively clear, low spaces which determines a ship's characteristic profile and makes identification possible, when the ship is at great distances from the observer.

TURRETS ON JAP SHIPS DESCRIBED ON PAGE 15



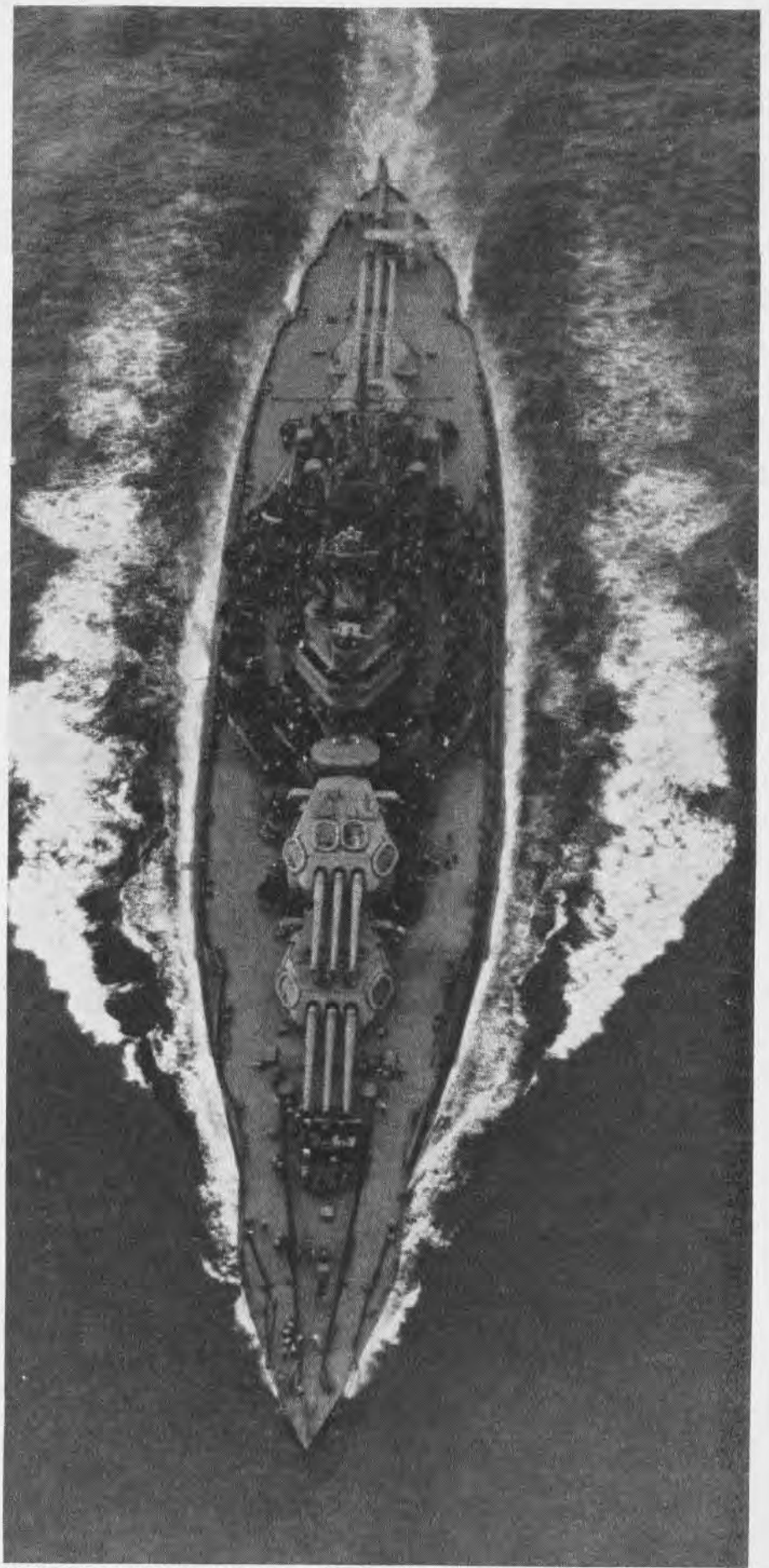
When first learning to distinguish between the individual units which go to make up a type of combat vessel, it has been found that the task becomes considerably easier if some pertinent aids to memory can be established. The one-stack Japanese battleships, for example, lend themselves readily to such an approach, and a grasp of at least one of their characteristic and identifying features will be facilitated by making this simple application: turrets on battleships of the *Fuso* class (a *four* letter word) are arranged in *four* different positions—a group of two being placed forward of the bridge, one turret between the bridge and stack, another between the stack and mainmast, and a fourth group, of two turrets, abaft the mainmast. On ships of the *Ise* class (a *three* letter word) the turrets are found in groups of *three*—two forward of the bridge, two more between the stack and mainmast, and two others aft. The remaining one-stack Japanese battleships are of the *Nagato* class, and have no turrets amidships—as the name *Nagato* may (or may not!) suggest, "No-got-any", or simply a denial. The only other type of Japanese battleship about which anything definite is known is the two-stack *Kongo* class, not readily confusable with any of the one-stackers. The problem of learning to differentiate between Japanese battleships is not, therefore, especially difficult.

Aids in Individualizing Ships

In like manner, when commencing a study of German warships, it helps to individualize the various ships in the fleet, above the classification of destroyers, if the following points are kept in mind:

1. Ships with *two* turrets forward and *two* turrets aft have *twin*-gun turrets; turrets arranged in any other order (i. e., one forward and two aft, two forward and one aft, etc.) have three guns. Thus, if one sees a quarter-bow view of a German capital ship showing two three-gun turrets forward, one can eliminate at once the battleship *Tirpitz* and the heavy cruisers *Eugen, Seydlitz,* and *Hipper,* for all these ships have *two* turrets forward and aft, and therefore their turrets are *twin*-gunned. The heavy cruisers *Lutzow* and *Scheer,* and all the light cruisers, have only one turret

(*Continued on p. 18*)



TO THE EYE TRAINED IN RECOGNITION THERE CAN BE LITTLE DOUBT THAT THIS SHIP IS FRIENDLY

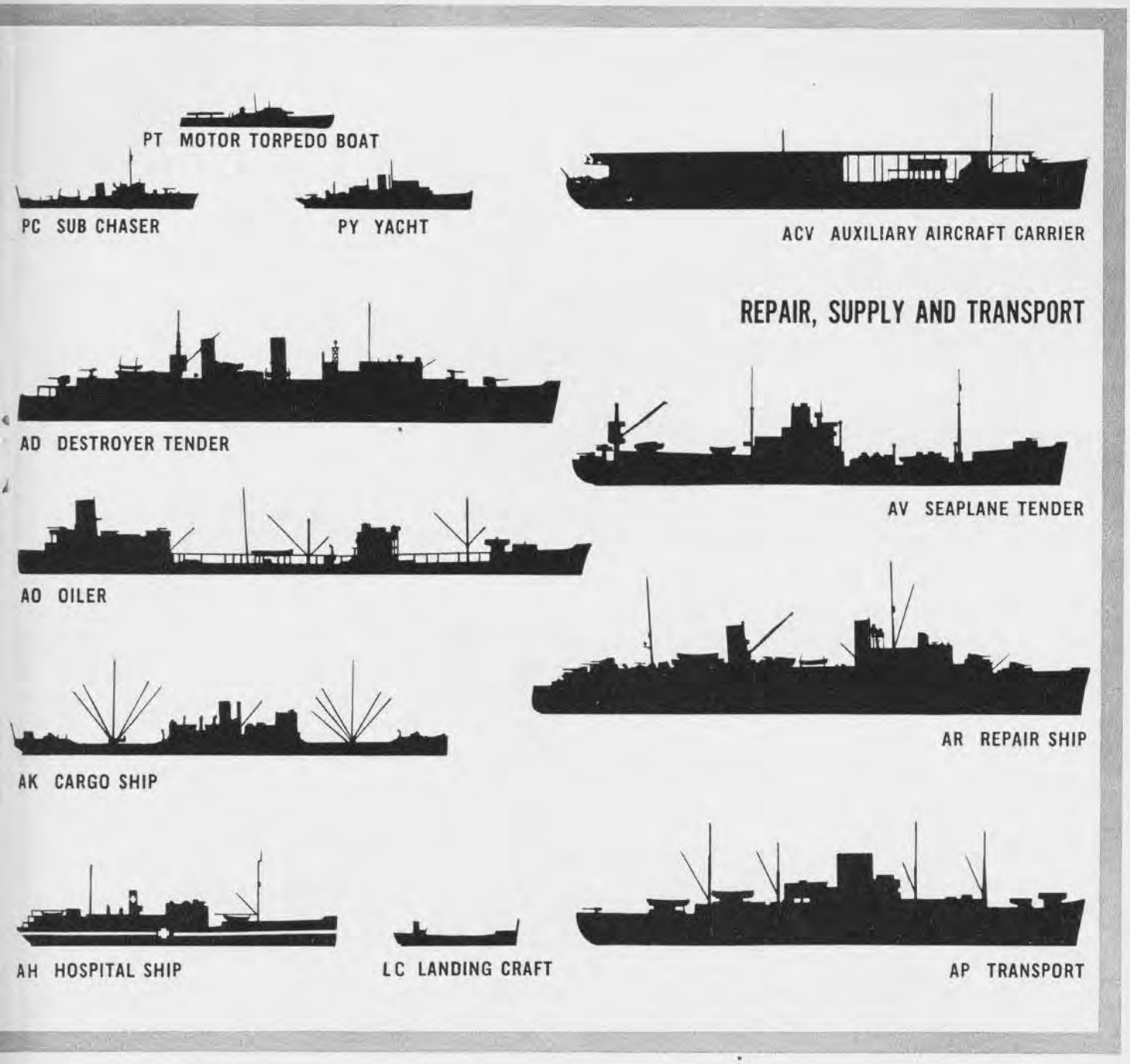
Ships of The Fleet

For Every Ship That Fights, a Dozen Perform Vital, Prosaic Tasks of Maintenance, Supply, Repair

THE student of ship identification should first of all familiarize himself with the types of ship that make up a modern fleet. On these pages are shown the major combatant units that form the Battle Fleet or make up the task forces that have assumed such an important role in the Pacific area. Each of these ships has been designed to play an aggressive role in combat. Each has its place and function in the disposition of the fleet when at sea.

Not all ships are intended solely for operation with others. A cruiser or lighter vessel may execute an independent combat mission, preying upon commerce or clearing the sea of raiders and other enemy naval units.

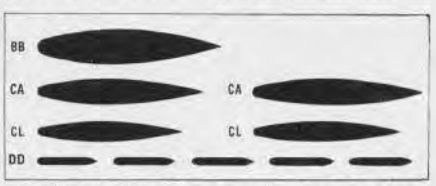
Generally speaking, the number of ships of each type in a well-balanced navy will vary inversely with size. Thus, for every battleship, approximately two heavy cruisers, two light cruisers, and five destroyers will be built. The relative proportion of our existing carriers or of carriers building or contemplated cannot be expressed in similar terms and is therefore omitted. It will suffice to say that the proportion of ships of this type in our



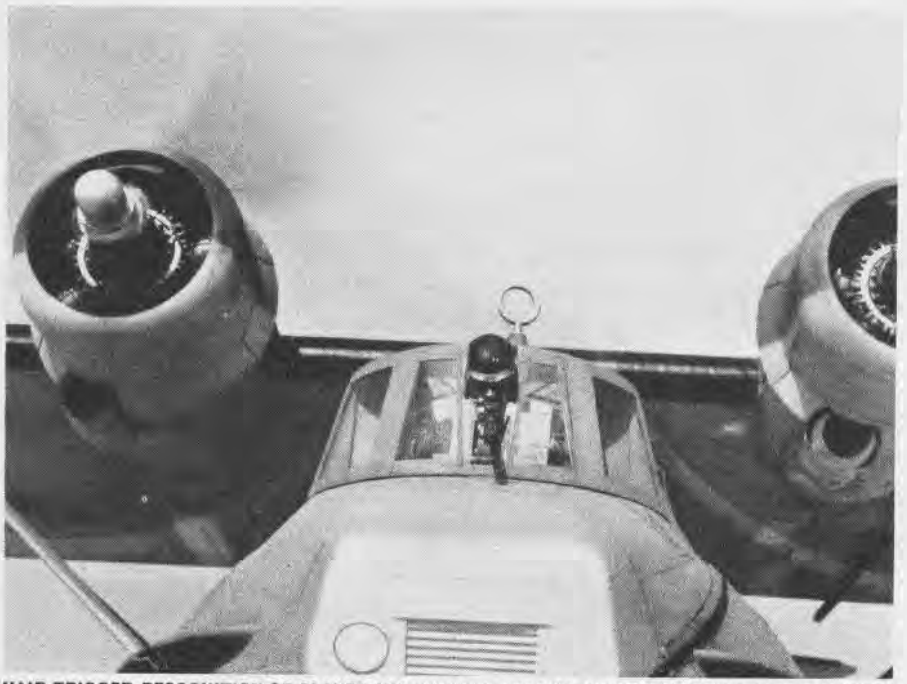
Navy will be greatly increased over the pre-war level.

For every ship that is built to meet an opponent in battle, a dozen are built to perform prosaic but necessary jobs for maintenance, supply, and protection of the fleet and its shore establishments. Many types of repair, supply, and transport vessels are constantly engaged in supplying and maintaining our two-ocean fleet. Extended naval operations would often be impossible without these ships. In waters where adequate docking, repair, and fuel facilities do not exist, the crippling of an enemy repair ship or oiler may require modification or abandonment of an important operation. The destruction of an enemy's auxiliaries must, therefore, be regarded as an objective of major importance.

Identification of these units is important. An observer must be able to distinguish enemy ships of these types from corresponding vessels of his own navy and of his allies. Accurate reporting of minor enemy ship types present in an operating area is an important factor in anticipating an opponent's plans and in forming strategic as well as tactical decisions. It is not enough, therefore, simply to know your own and the enemy's major combatant ships. Fliers *especially* should become familiar with minor vessels in order to report accurately the types of the many ships that will be observed in theaters of war.



RELATIVE PROPORTION OF COMBAT SHIP TYPES



HAIR-TRIGGER RECOGNITION OF PLANES AND SHIPS IS IMPORTANT ATTRIBUTE OF GOOD GUNNERS

(*Continued from p. 15*)

forward. So, by the process of elimination, the ship in question must be one of the two remaining capital ships—either the battleship *Scharnhorst* or the *Gneisenau*.

2. If the picture of this same ship, with two three-gun turrets forward, permitted more of a beam view, a further distinction could be made by recalling that the *Scharnhorst* (containing the letter "*H*" in her name) has a *h*angar structure between the stack and mainmast, whereas her sister ship, the *Gneisenau* (whose name does not contain the letter "*H*") has no *h*angar structure, and therefore presents a more open appearance amidships.

3. The only one-stack German capital ships to have catapults between the bridge and stack are the heavy cruiser *Lutzow* and the light cruiser *Leipzig*—the only two big German ships whose names begin with the letter "L".

Discernment is Essential

Obviously, mechanical aids, similar to the ones just suggested, can be carried to the point of absurdity, and care must be taken to keep this type of approach within reasonable bounds. When it is possible, however, to devise some means of associating the name of a ship with some peculiarity of that ship's appearance, the effort of sheer memorization is definitely lightened.

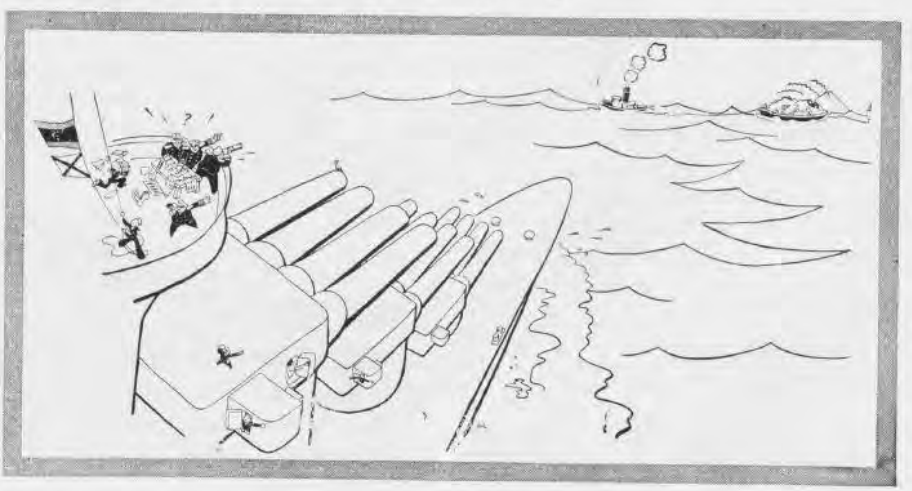
The Air Combat Information School officers at Quonset are required to learn all the various groups of ships within a type-classification. It is not considered satisfactory merely to be able to recognize a ship as a German destroyer or a British battleship. Though in most cases it might be sufficient to recognize a strange vessel as an enemy cruiser, the ability to form such a judgment, with certainty and rapidity, can be gained only from a well-founded, practiced knowledge of all the various units which go to make up a type or class. Experience has shown that if one is able to discriminate consistently between the various classes of Japanese cruisers, he has a much more positive and reliable knowledge of what *the* Japanese cruiser looks like, and is not so liable to become confused by minor alterations and disguises.

General Distinguishing Features

From time to time it is helpful to review national characteristics or the general distinguishing features of classes of ships as a whole. At the Air Combat Information School parts of certain periods are regularly set aside for reemphasizing such details as the differences in construction and long-range appearance between the inordinately high, top-heavy, cluttered appearance of the tower-bridge structures on Japanese battleships—frequently twice the height of the stack—as contrasted with the massive, untapered, smooth-sided appearance of the bridge structures on British battleships, or the more slender, tapering, "lighthouse" type of smooth-sided tower-bridge on some of our more recent ships of the same classification.

Or again, it may be a comparison between Japanese and United States types of tripod masts and bows that are brought up for discussion. Such points of consideration are always dealt with upon a comparative basis and illustrated, insofar as possible, with pictures of ships appearing so small or so indistinct against the horizon that the untrained eye would be able to gather little or no evidence from them.

But the Air Combat Information School Officers are used to dealing with material of this description. The rapidity and accuracy with which they are able to make their identifications, in addition to the general overall picture of fleets, which they acquire, would seem to indicate that in the past not enough emphasis had been placed upon this instructuve and important phase of recognition training.



Vital to Combat Efficiency is Rapid and Accurate Identification of Surface Craft— Now Trailing Our Knowledge of Planes

DID YOU KNOW?

Hotel Barber Becomes Jap Colonel

Hong Kong Experience Gives Cadet New Ambition

CADET SELECTION BOARD, CHICAGO.—A determined 17-year-old boy from Waupaca, Wis., turned up at the Board a few days ago with about as good a reason for enlisting in the Navy air force as any youngster.

Young Raymond Larson is the son of an oil company representative and for 16 of his 17 years has resided in Hong Kong, China. In December of 1941, then only 16, Ray watched the Japanese push the defenders of Hong Kong back, back, until only the island fortress held. Then came the incessant air raids and finally the inevitable capitulation to vastly superior forces.

Ray, his brother and his mother and father were interned along with other civilians at the Hong Kong prison. Ironically, the Japanese who had been the meek hotel barber turned up in a colonel's uniform after the invasion and was placed in charge of the interment camp.

Weary months of waiting followed in their one-room prison. A diet of a handful of rice and vegetables daily took 65 pounds off Ray's father and 40 pounds off his mother. The internees kept up faith with hopeful rumors of release. Then the big day— the internees were herded on a Jap ship and hauled to a meeting place with the international exchange ship *Gripsholm*. And finally, back home. Ray's big ambition after completing high school is to get in a Navy plane back over Japan, and repay his former captors with a few choicely placed bombs for the treatment they gave him during his internment in Hong Kong.

Modern French Design

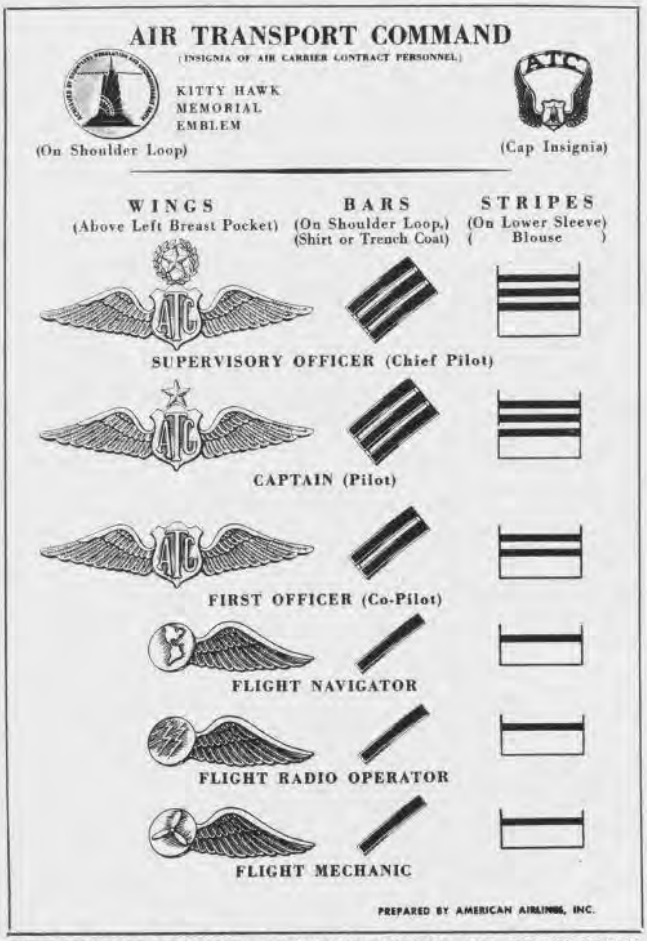
Recent developments in civil and military types indicate new French fighters will be equipped with counter-rotating propellers and attain speeds up to 435 m. p. h., according to *Technical Data Digest*. The Bloch 157 Fighter, a low-wing all-metal single-seat monoplane has been developed from the Bloch 155 and Bloch 151. Powered with a Gnome-Rhone 14R it has two retractable undercarriage and camber-changing flaps. The 14-cyl. twin-row air-cooled radial engine produces 1590 hp. for take off and drives a Ratier three-blade c. p. propeller.

Wing area: 206.7 square feet (compared with 187.3 sq. ft. in Bloch 151). Gross weight less armament: 6835 lb. Wing loading without armament: 32 lb./sq. ft. Power loading: 4.30 lb./hp. Maximum speed: 435 m. p. h. at 28,000 ft. Rate of climb: 28,000 ft. in eleven minutes. Range: 620 miles at 90 per cent of maximum performance, or three hours cruising at 254–280 m. p. h. Armament is reported to be two 20-mm. cannons and four 0.3 (7.5 mm.) rifle calibre machine guns.

Tandem 1500-hp. Hispano Suiza 12Z engines equipped with counter-rotating propellers are featured in the new VG 50. Engines are mounted one in front of, and one to the rear and below the pilot's cockpit. Extension shaft of rear engine and pressure oil lines for operating c. p. propeller pass between the legs of pilot. Gross wt.: 16,500 lb. Wing area: 365 to 387 sq. ft. Wing loading: 41 lb./sq. ft. Both the conventional and tricycle undercarriage types are under construction.

Mention is made of an experimental high- altitude low-wing monoplane still under development. Two Hispano Souiza 12Z liquid-cooled 12-cylinder engines, housed side-by-side in fuselage nose and driving counter-rotating propellers, are enclosed in a N. A. C. A. cowling which also accommodates the coolant radiators. The fuselage, which accommodates a crew of five, is completely streamlined with a transparent dome for pilot's head slightly projecting. It is equipped with pressure cabin for flights up to 49,000 ft. Undercarriage retracts into thick wing.

Brief descriptions are given of the Dewoitine D–520 single-seat fighter, the Loire-Nieuport LN40 (the only French-built dive-bomber), and the Bloch 162, a four-engine bomber with maximum speed of 323 m. p. h., a range of 1500 miles and carrying a useful bomb load of 7800 lb., as well as several types of civil aircraft.



AIR TRANSPORT COMMAND AUTHORIZES INSIGNIA FOR ITS PERSONNEL

Aerial Gunner's Mark

Soon Available at Small Stores

The Aerial Gunner's distinguishing mark now is being manufactured at the Naval Clothing Depot in Brooklyn and soon will be available to supply officers of small stores who make demand for them there. The sleeve marking will be made in two colors, white on blue and blue on white.

The air gunner's badge is authorized for wear by enlisted men who have successfully completed the prescribed course in air gunnery or who have been qualified in accordance with approved standards [NL 4/15/43].

Dim Light Aids Vision

NATG, PENSACOLA—During lectures and between night flights, pilots at Ellyson Field occupy a ready room lighted only with a dim red light. This particular lighting facilities night vision to a high degree.

Paper Stock

Several recommendations have come in that NEWS LETTER *be printed on very light stock. The question of paper stock was thoroughly investigated by* NEWS LETTER *when its format was changed (issue of April 15, 1943). At that time the conclusion was reached that, all factors being considered, printing on a stock lighter than the present light grade (45-pound text, 60-pound cover) would give poor reproduction in illustrations. The saving in weight to be gained did not compensate for this disadvantage.*

ADU's Doing Fine Job

Set Record Despite Handicaps

Aircraft Delivery Units, whose job it is to give last-minute check-ups to Navy planes bound for the war fronts, have more than doubled their work output in 4 months, according to a statement by the Chief of the Bureau of Aeronautics commending them.

Sea Water Safe to Drink

A practical method of making sea water safe to drink has been perfected by a junior grade lieutenant in the Navy's Medical Research Institute.

Using four small plastic bags and two chemical compounds compressed into soap-cake size, a man in a lifeboat can produce a quart of drinkable water without assistance. Ten packets of the chemical, carried on an aircraft rubber raft, would be enough to provide a 20-day supply of water for one man. This is how the process works:

Sea water is put into one of the plastic bags with one of the chemical compounds. The compound precipitates the sodium salts out of the solution, and the water is poured into another of the sacks, equipped with a filter. This removes the salt, but the water is still too alkaline to be drunk safely. It is then poured into a third sack and the process is repeated with another themical compound making the water palatable.

Disney Runs Cartoon Contest for News Letter

Dick Shaw Wins War Bond

The bony claw of rationing has touched most of life's necessities but, as far as NEWS LETTER is concerned, there'll be no shortage of cartoons. A 2-foot pile of freshly drawn samples, using all techniques and gags that range from the ridiculous to the sublime, has arrived in the NEWS LETTER office from the Walt Disney Studios on the Pacific coast.

These samples of drawn humor represent entrees in a contest conducted among Disney artists especially for NEWS LETTER—a brilliant scheme originated by Disney's Carl Nater and a naval lieutenant working on training literature at Disney's.

The artists who submitted cartoons are familiar with every aspect of the general subject of humor, but their progress on this assignment was peppered by the knowledge that in NEWS LETTER the cartoons would ultimately reach naval aviation personnel at every fighting front.

Winner of the contest was Dick Shaw whose ribboned contribution, "They always start off with such a hell of a jerk," appears in this issue (*page 25*). In later issues there will be more cartoons from the Disney artists. NEWS LETTER welcomes ideas for gags.

WALT DISNEY CONGRATULATES DICK SHAW, WINNER OF CARTOON CONTEST PUT ON FOR NEWS LETTER

THIS CHIEF aviation machinist's mate is installing a dehydrating bag of chemicals in a new Wright *Cyclone* 14-cylinder airplane engine to keep the moisture content of the air in its internal parts as low as possible to prevent rust. Skill and patience are by-words in advance maintenance. It is upon these men that Navy depends to teach recruits how to repair today's machines.

AIRPLANE DOCTORS

Experts at Aviation Maintenence School Diagnose Plane Engine Ills

THE all-important "man behind the guns" of the Navy's *Corsairs* and *Wildcats*, is the aviation machinist's mate—"airplane doctors"—who can diagnose an engine cough and tell in a split second whether to operate or change the liquid diet.

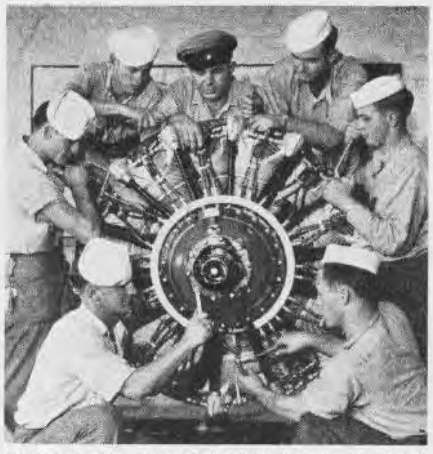
In Chicago stands the Nation's largest advanced aviation maintenance school, in which 3,500 rated men take post-graduate work and specialize in one of 10 highly skilled aircraft maintenance courses.

Many of the students and instructors have just recently returned from Pearl Harbor, Midway, Coral Sea where their jobs ashore, or on the *Lexington*, *Wasp*, or *Hornet* were "temporarily suspended." Knowing what war means and what machines mean, to modern warfare, these men are really studying with a vengeance.

SYNCHRONIZED TIMING of an airplane engine's two magnetos is necessary if its cylinders are to fire correctly. Using a timing light device in the synchronization process greatly simplifies the delicate operation for this aviation machinist's mate.

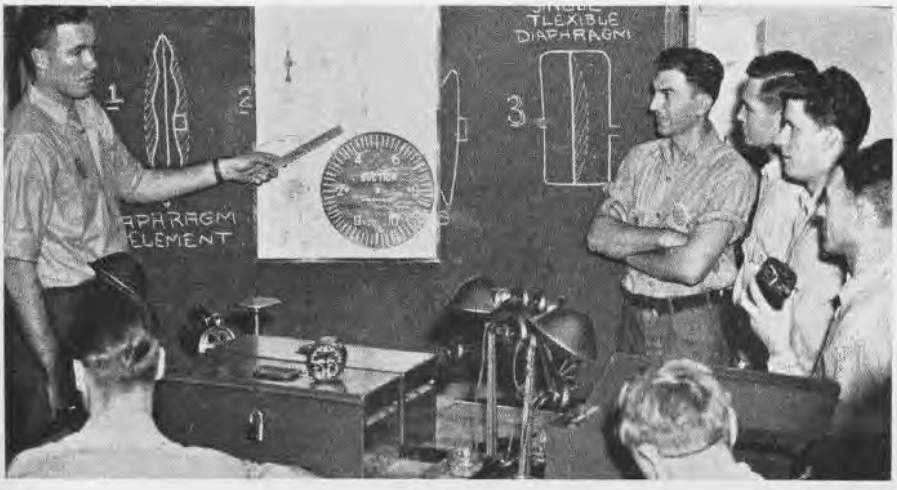
AN AVIATION ordnanceman installing a .50 caliber machine gun in a power-operated deck turret on one of the Navy's fighting planes. Without its guns operating in tiptop shape the plane can be expected to do very little more than run.

CHECKING the magneto on a test bench to see if its speed, output, and sparking gap are adjusted for maximum power output required by an airplane's engine.



AVIATION MACHINIST'S MATES learning the intricacies of sparkplug leads and the ignition manifolds on a standard 14-cylinder Wright *Cyclone* airplane engine.

EVEN FORMER WATCHMAKERS, like this one, find a place for their talents polishing up electrode tips on sparkplugs, using jeweler's lathe as well as magnifier.



VISUAL AIDS prove effective in the teaching of complicated aviation instruments to student machinists. The maintenance problem is a full-time job for several men and specialists are the order of the day—metalsmiths, machinists, experts in carburetion, instruments, electrical appliances, hydraulics and propellers, in addition to general overhaul and ordnance. This class is studying several types of instruments which are found on a plane dashboard, including a suction gage which lets the aviator know when other of his instruments operating by suction will function properly. Students are given plenty of actual aerial instruments to study along with such blackboard sketches and drawings. An aviator's dependence on his instruments is too well known to require any comment.

TRAINING

Excels in Recognition

DEL MONTE PRE-FLIGHT—One mistake in more than 1,000 recognition tests of airplanes and ships was the record hung up at this school by L. W. Moffit, pre-flight student. Moffit's lone recognition error came when he identified a slide of a BD–1 as a B–26. School authorities credited his record to an amazing visual memory and to his complete relaxation at the time he took the tests.

Notes on Training Films

History of Naval Aviation Among Subjects

Birth and growth of the Navy's air arm are realistically portrayed in a new film, *The History of Naval Aviation*, produced for the Bureau by the March of Time. The picture tells the story of naval aviation from the time a Navy observer viewed the first Wright plane in flight. The Navy's early air heroes are revived in old pictures of test flights and carrier landings.

The film has been designated for syllabus use in preflight schools and is being distributed to the following activities for general interest and indoctrination:

ComAirPac, ComAirSoPac, ComAirSoWestPac, ComFairWings; NAC Pensacola, Corpus Christi, Jacksonville, Seattle, San Diego; NAS Norfolk, Alameda, Pearl Harbor, Sunnyvale, Lakehurst, Quonset, Noumea, Espirito, Terminal Island, Willow Grove, Bermuda, Trinidad, San Juan, Guantanamo, Antigua, Kodiak, Sitka; Spt. Annapolis, A-V(S) schools, Pre-Flight, NACSB, 1st, 2d, 3d, 5th Marine Aircraft Wings, CV, and ACV. Film desig: MN–1253.

¶The Aircraft Maintenance Series isn't just a series of slide films for A & R shops. It does include valuable films for these shops, but they are only part of more than 1,000 individual slide films which have been produced on 15 operating plane types under the technical supervision of Naval Air Technical Training Comm.

¶Directors of Training, Flight, Maintenance, and Material have assigned training film reviewing committees. All available naval aviation training films are being reviewed by officers on these committees. Films approved will be listed in the Training Film Bulletins.

¶To expedite delivery of films, all activities, including Marine Corps and Coast Guard, should direct an official request to: The Chief of the Bureau of Aeronautics. Units of the Functional Training Commands should route requests via the Training Command. Operating units should route requests via Air Force Administrative Commands, and other aviation activities should write direct to the Chief of the Bureau.

Officers Studying Supply

A class of officers is attending the new Aviation Supply Officers' School at NAS, Jacksonville. All graduates of the Navy Supply Corps School, the officers are receiving an intensive 1-month course in special aviation supply problems. After instruction they will be assigned to duty at Naval Aviation Stations.

Gunners Trained on Ground

NE–1 Is "Target"

MCAS, EL TORO, CALIF.—Turret gunners are being trained on the ground here by the use of an NE–1 as the "target." Regular TBF and Martin power turrets are mounted on trucks or trailers and provided with power from the truck engine.

The Cubs come in very close to the turret, and the gunners have a target which requires approximately the same speed in aiming that a faster plane would require at the normal distance likely to be encountered in combat.

Don't Be a DILBERT!

Longs to Be Navy Pilot

Under-Age Boy Offers to Help Navy Department

A fine example of the high regard that the younger generation has for Naval Aviation is this letter from a 14-year-old California youth:

DEAR SIRS: I am a 14-year-old boy who lives in Garvey, Calif. All my life I have wanted to be a Navy Pilot and fly one of those super SBD dive bombers. I have been wondering about my future as a Navy pilot, but my parents tell me to forget about it but I can't, because I love flying.

Now what I want you to do for me is to send me all the things that I would need to get past a Navy test so that I may prepare for what I will need to study over during my high school years, and also if it isn't too much trouble, a complete test or form that I will have to fill out when I graduate from high school and join the Navy Air Corps.

Sincerely yours,

WALTER SCOTT.

P. S. If there is anything I can do to help the Navy Dept. please let me know.

35 Mil. Gunnery Sight Recommended

Excels as Reticule in SNJ's

It has come to the attention of the Gunnery Training Section that many operating and training units are still using the N2A and N3A illuminated sight in SNJ airplanes with the old Army Air Force reticule (sometimes called the "Christmas Tree Sight").

The Bureau has long been committed to the policy of using only 50 and 100 mil. fixed gunnery sights for training and operating aircraft wherever possible. However, the SNJ optical installation is such that a 50 mil. ring will not be visible on the reflector because of its distance from the projector. Consequently, a 35 mil. reticule has been developed (Aviation Ordnance Stock No. 2–4–605) which should be used.

BuOrd circular letter V28–42 contains all the necessary information on the 35 mil. sight and it is urgently recommended that units procure and install this reticule. The reticules may

be obtained through the usual supply channels.

BuOrd has requested that all units having SNJ airplanes equipped with illuminated sights, whose planes are used mainly for general utility and transport and not for gunnery training, be turned into Supply for distribution among the units which urgently need this sight. Cooperation of all squadron and unit commanders is urgently requested.

Training in Gasoline Systems

Courses for Officers and Enlisted Personnel

With the object of familiarizing operators with the complicated gasoline systems now being installed in CV's and ACV's, initial arrangements have been completed for training both officer and enlisted personnel in this branch of technical learning.

The schools will be located on the East Coast at NOB, Norfolk, and on the West Coast at NYD, Puget Sound. First classes are expected to begin in about two months, and working models of the gasoline systems are being constructed at the present time.

Drills Pay Dividends

Dunked Pilot Acclaims Value

NAS, Banana River, Fla.—Those pre-breakfast calisthenics, drills, and daily exercises at training stations may not always be appealing, but they pay off big dividends. Take the case of a young naval pilot whose plane crashed into the Atlantic shortly after a take-off. The pilot was dunked in the icy water in heavy flight gear. Later he wrote a letter to the athletic officers at NAS, Banana River.

"Thanks for getting me in pretty good shape, for I doubt very seriously if I'd come out of the crash if I had not been in fair condition. Swimming about 15 to 20 minutes in icy water with heavy flight boots and jacket on is no easy task, I found out." The pilot is back in his flying togs again.

* * *

A German is credited with the development of United States Navy blimps which are now sinking German submarines. Count Zeppelin conceived the idea while an observer in a balloon here in the United States.

USS "Sable" Active

Trainer Carrier Once Steamer

The Navy's second inland training aircraft carrier, the USS *Sable*, commissioned early in May, is "somewhere on the Great Lakes" training Navy fliers.

The *Sable* was converted from the luxurious lake steamer *Greater Buffalo* and similar to the USS *Wolverine*, a former steamer converted last August and in use on Lake Michigan. Although the *Sable* has a 500-foot flight deck and an island superstructure exactly like that of a combat carrier, she has no hangar deck since the planes used for training will be based ashore.

The Kid from Yavapai

Tearful Verse Describes Plight

While on duty at Prescott, Ariz., an aviation cadet recently fell victim to German measles and was confined to the Yavapai (rhymes with "have a pie") Hospital. At that time, the contagious cases were confined in the maternity ward, which circumstance had a devastating effect on the cadet's dignity. His comment follows:

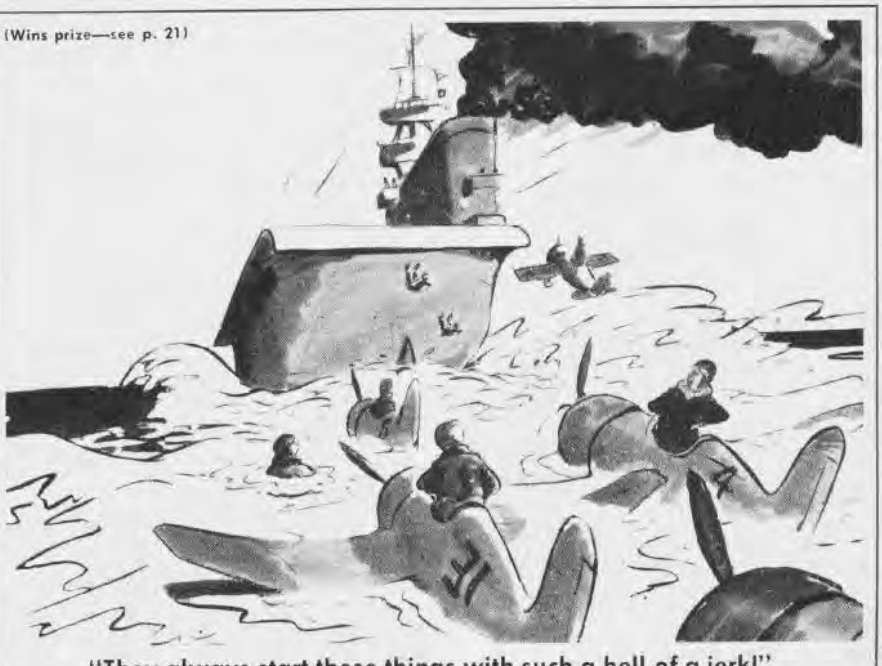
A SAILOR'S SACRIFICE

Oh, grasp thy linen kerchief,
For a tear will fill your eye
As you listen to the story
Of the kid from Yavapai.

Alas, our fearless birdman
Has folded in his wings,
And from his solemn bedside
We hear the song he sings.
No more hangar jargon,
Just a doctor's persiflage
And a million tiny red things
Upon my fuselage.
They snatched away my goggles,
Stripped me of my sword,
And then they had to put me
In the damn maternity ward.
So here's your toughened sailor,
With fruit juice for a drink,
All wrapped up nice and comfy
In a baby blanket pink.
Here I lie in bed, a dreaming—
Shooting Japs into the sea,
But my trigger finger's scratching
Those itching spots on me.
Gosh, when this war is over
And my children ask in awe
To hear about the battles
And adventures that I saw,
How can I bear to tell 'em
That the only wounds I patched
Resulted from the measles
And the places where I scratched.
Please feel sorry for this eagle
Who joined with Uncle Sam;
I started with a parachute
And finished with a bedpan.
Now heave a sigh of sorrow
And dab your tearful eye,
For you've heard the woeful story
Of the kid from Yavapai.

—James McAllister.

(Wins prize—see p. 21)



"They always start these things with such a hell of a jerk!"

BEST ANSWERS

Can You Name Them?

I—Physical Effects of Flying

Pick the best choice to complete the statements below, then check your answer on page 32.

1. When a pilot is suffering from severe cold, flying involving frequent shifts in altitude

- ☐ *a* is beneficial for the pilot's health
- ☐ *b* decreases tendency to black-out or fainting
- ☐ *c* should be avoided for a few days
- ☐ *d* has no effect on general health
- ☐ *e* is likely to be fatal

2. Effect of prolonged exposure to extreme cold (–40° C. or colder) is to

- ☐ *a* stimulate the pilot by making him uncomfortable and heightening awareness to his environment
- ☐ *b* stimulate the cardio-vascular and respiratory systems so that oxygen deficiency is partly overcome
- ☐ *c* not important if the pilot wears an electrically heated suit, despite the temperature of the air breathed
- ☐ *d* slow breathing and circulation, thus increasing the effects of oxygen lack
- ☐ *e* reduce the effects of oxygen lack because cold oxygen is denser, with the result that we get more of it when we breathe

3. Sensation which arises when rotary movements are stopped is

- ☐ *a* increased weight of the body
- ☐ *b* rotation about the same axis is the same direction
- ☐ *c* rotation about the same axis in the opposite direction
- ☐ *d* rotation about different axis
- ☐ *e* linear acceleration

4. In flying the most important and reliable of the senses is

- ☐ *a* auditory
- ☐ *b* visual
- ☐ *c* tactile
- ☐ *d* kinaesthetic
- ☐ *e* gustatory

5. A pilot's inner ear informs him of

- ☐ *a* continued uniform linear motion
- ☐ *b* continued uniform rotary motion
- ☐ *c* linear accelerations only
- ☐ *d* rotary accelerations only
- ☐ *e* both linear and rotary accelerations

Cadet Syllabus Expands

Corpus Curriculum Emphasizes Ground Training

NAS, Corpus Christi—Cadets in advanced VPB squadrons at this station soon will be receiving a more complete syllabus of training than heretofore.

Basing revisions on recommendations of graduates who have gone to operating squadrons, as well as of returning fleet pilots, cadets, and officers from other stations, instructors have formulated a new syllabus placing as much emphasis on ground training as on flight training.

The new course includes lectures in organization and operation, engineering and maintenance, aerology, gunnery and bombing, synthetic training devices, navigation, communications, self-preservation, and talks by pilots who have seen action on various fronts.

SBD Tows Targets

Has Advantages Over SNJ's

Use of a model SBD–3P plane to tow antiaircraft targets is outlined in a letter from Utility Squadron Seven Commander to the Commander of Fleet Air, West Coast.

The letter describes the installation and reports test data on a tow installation designed to accommodate either a Navy Mark 5 or an Army Type C–5 Tow Reel.

The Mark 5 reel will carry 10,000 feet of $^{3}/_{32}$-inch cable and the Army Type C–5 will carry 7,000 feet of $^{1}/_{8}$-inch or 10,000 feet of $^{3}/_{32}$-inch cable. Both reels have been adapted to use the Vickers MF2–713–30–BCF or MF2–713–25–BCF rewind motor in connection with the Pesco No. 203 pump which is standard equipment on this airplane.

With such an installation Model SBD planes have the following advantages over Model SNJ planes for antiaircraft target towing: *1.* Approximately 25 percent more flight endurance. *2.* 15 to 20 knots greater speed. *3.* Capability to tow the Mark 14 target sleeve which is required for high altitude antiaircraft firing by surface craft. *4.* Better diving qualities. *5.* Higher service ceiling. *6.* Carries sufficient length of tow cable to perform any type of antiaircraft towing.

Activities desiring detailed information on installation may requisition complete set of blueprint drawings from the Commanding Officer, NAS, San Diego. Inquiries concerning operational experience should be directed to the Commander, Utility Squadron Seven, c/o Fleet Post Office, San Francisco.

Oxygen School for A-V(S)'s

Aviation Physiology a Course

NAS, Jacksonville, Fla.—A recent noteworthy development is the oxygen school for A–V(S) officers at this station. The first class was graduated in May and another class started immediately.

The original Bureau plan was to train 12 A–V(S) officers every 6 weeks until 108 had been graduated. This number will be increased, it is believed. It is planned ultimately to station an oxygen officer with every squadron and on every carrier in the fleet.

Student officers receive training not only in the mechanics of oxygen equipment—construction, maintenance, repair, and testing—but also in aviation physiology, which includes physiology of respiration, blood vascular system, acceleration, equilibration and balance. The class attends lectures each day, works with the equipment and gets instruction in the operation of the pressure chamber.

It is believed that the presence of these officers with the squadrons and on carriers will eliminate many of the accidents due to careless or inexpert use of oxygen.

American Youth a Threat

St. Mary's Pre-flight, Moraga—Hitler Jugend who follow the sea will meet more than their match when today's classes of Naval Aviation Cadets swing into action against them. Preflight figures show that cadets undergo no meagre physical transformation in a short time.

At St. Mary's, for example, when starting upon his 3 months preflight training, the average cadet is 5 feet $9^{1}/_{2}$ inches tall, weighs $154^{1}/_{2}$ pounds, measures $36^{1}/_{4}$ inches around the chest and has a waist line of $29^{1}/_{4}$ inches.

When he graduates and moves on to flight training, his height has increased a quarter of an inch, his weight $5^{1}/_{2}$ pounds, and his chest $1^{1}/_{2}$ inches. The only decrease is shown in the waist, which drops a half inch.

FLEET AIRCRAFT

Advice: Water Landings

Valuable Tips Gleaned From Pilots' Experiences

Torpedo bomber pilots who have made crash landings in water pass on to other fliers the following advice, learned by them through hard experience:

It is imperative that pilots in putting down their flaps for crash water landings be certain that their wheels are not let down. If the wheels are down it is probable that the plane will turn on its back when it hits the water. The pilots reporting state that the TBF–1 sinks in about 90 seconds, and prompt action for escape must be taken.

It is suggested that prior to landing on the water, all loose gear be thrown out that might impede escape of the occupants. The pilot's cockpit-cover should be opened and locked open. The turret hatch escape should be ready for immediate opening upon the first contact with the water.

It seems advisable for the tunnel gunner to escape from the second seat hatch, since if he opens the side hatch the plane sinks faster. The tail hook should be lowered as the plane nears the water, since when dragging through the water it can be used as a gage to determine when the motor should be cut.

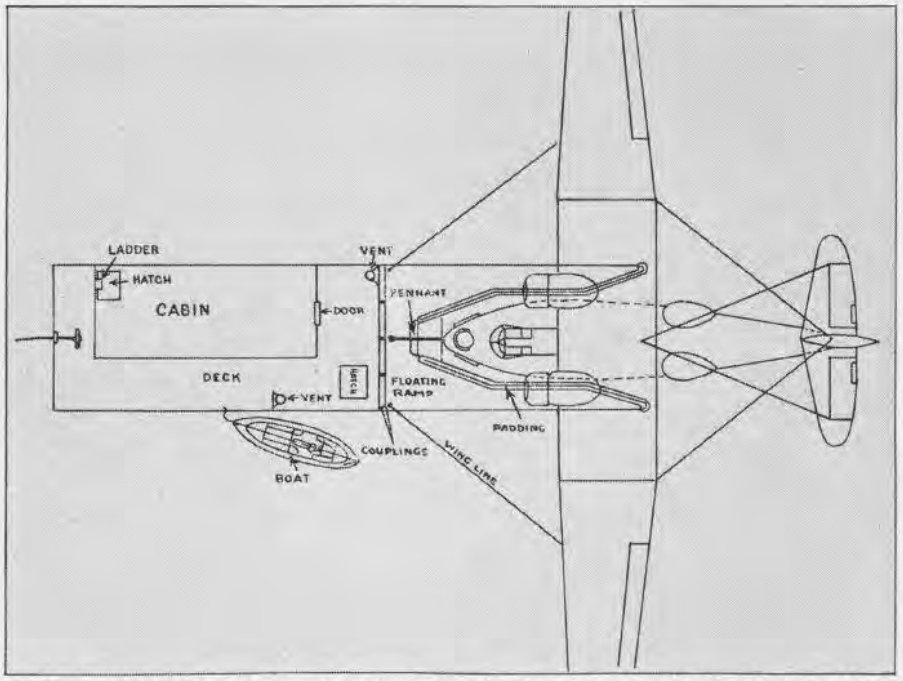
Lost pilots should not wait until they run out of gas as it is important to land with power and with a planned procedure. An additional combat report from a fighter squadron contains the following pertinent note:

"I didn't get out my rubber boat because it seemed to be close to land, but was sorry afterward. It was actually further than it appeared to be, and the waves were large, almost drowning me at times."

Don't Be a DILBERT!

Seaplane Haven Asked

PATROL SQUADRON 42, PACIFIC.—On frequent occasions patrol planes have been unable to return to their bases because of weather or other conditions. For a long time it has been the practice to have buoys and fuel caches at outlying bays and lakes, but nothing has been done for provisioning and quartering personnel, for making minor repairs, or for adequate servicing. As a remedy to this situation, Patrol Squadron 42 has submitted sketches for a seaplane haven. This haven is essentially a quonset hut on a barge with a plane slip which could be towed to the selected spots by tugs. The suggested havens would provide housing, bedding, food, gasoline, and spare parts for standard crews. They would be comparatively cheap to build, requiring no large quantities of essential materials. No maintenance crew would be necessary. One or two combination caretaker-weather observers would be handy, but not mandatory.



SEAPLANE HAVEN DESIGNED BY PACIFIC SQUADRON TO HELP PATROL PLANES FORCED DOWN AT SEA

BUREAU COMMENT The "Seaplane Haven" idea has been proposed several times in the past in various forms.

The decision was made to provide dispersed facilities instead of concentrating them in a barge-type piece of equipment, since only one plane at a time could be serviced by a barge or "Seaplane Haven" and the barge is limited in the quantity of fuel, ammunition, etc., carried aboard, thus necessitating the use of supply boats to service the barge. Therefore, 100-ton ammunition lighters with crane, 24′ Personnel Utility Boats, 33′ Rearming Scows, 25′ Pneumatic Barges, and collapsible 500-gallon refueling cells with 35-gallon-per-minute pumps for use in the rearming barge or scow outlined above were developed and are now being delivered to the field.

In addition a collapsible, portable, lightweight, all-weather shelter equipped with all creature comforts is under consideration and design which would house personnel ashore under more favorable conditions than aboard a barge and when associated with the special boat facilities, will provide utility values in excess of that provided by a "Seaplane Haven."

In order to develop the Haven idea, there was started in Seattle, about two years ago, an experiment on this idea. There are now six of these catamarans

under construction at NAS Seattle which will house 12 men, and will carry 30,000 gallons of fuel, fuel oil, and various types of bombs and torpedoes for about six planes. These catamarans are to be service-tested under operating conditions before any quantity is placed under order.

This is a typical "inventor's dream." Huts, equipment, moorings *are* scarce, and if Fleet Air Wing commanders want them, they have not said so.

Shoulder Holsters Recommended

Pilots in combat in the South Pacific recommend use of shoulder holsters for pistols, stating that in about 50 percent of forced landings at sea or parachute jumps, a web belt comes unfastened and the pistol is lost.

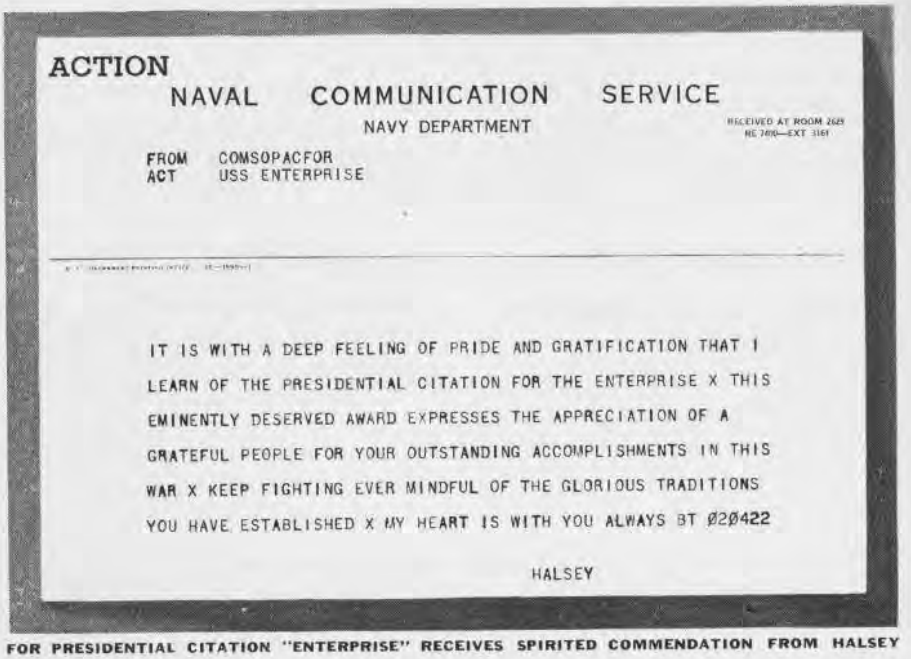
They also recommend that every pilot be furnished with a machete-type knife, having at least a 10-inch blade heavy enough to be used as an ax to crack cocoanuts. One pilot was forced down and had with him a medical kit made up by his squadron. He found that quinine, sulfanilamide, and chocolate aided him considerably when he reached land.

He did not have a canteen of water with him, however, or any sunburn lotion. Both would have been useful. The Army-type shoulder harness with knife, holster, and medical supplies, is considered good [NL 5/15/43].

BUREAU COMMENT BuOrd is at present furnishing each pilot with a shoulder-type pistol holster and a hunting knife. The parachute back-pad kit is being revised to make a more compact and complete kit, and future procurement will be made of the modified kit. Contents of the kit will be as follows:

Waterproof flashlight, malted milk tablets, lemon candy, compass with matches and heat tabs, machete, salt tablets, reflector, mosquito headnet, cotton line, water, fishing kit, first aid kit, poncho, magnifying lens, sunburn ointment,[1] Very's projector and shells, safety pins and adhesive tape, canvas gloves, kleenex, hammock, whistle, and instruction book. Further details and pictures will be published in the NEWS LETTER when available.

[1] See NL p. 10, 5/15/43, on improvised sunburn lotion; also p. 33, same issue, on parachute back-pad kits.



ACTION

NAVAL COMMUNICATION SERVICE

NAVY DEPARTMENT

RECEIVED AT ROOM 2625 RE 7490—EXT 3161

FROM COMSOPACFOR
ACT USS ENTERPRISE

IT IS WITH A DEEP FEELING OF PRIDE AND GRATIFICATION THAT I LEARN OF THE PRESIDENTIAL CITATION FOR THE ENTERPRISE X THIS EMINENTLY DESERVED AWARD EXPRESSES THE APPRECIATION OF A GRATEFUL PEOPLE FOR YOUR OUTSTANDING ACCOMPLISHMENTS IN THIS WAR X KEEP FIGHTING EVER MINDFUL OF THE GLORIOUS TRADITIONS YOU HAVE ESTABLISHED X MY HEART IS WITH YOU ALWAYS BT Ø2Ø422

HALSEY

FOR PRESIDENTIAL CITATION "ENTERPRISE" RECEIVES SPIRITED COMMENDATION FROM HALSEY

Cartoons: Local Style

Be they ever so humble, cartoons can always be counted on to say something. Undoubtedly that is why cartoons attract more readers per square inch than all other forms of reading.

Cartoons don't mince words. As to being polite—well, some are, some ain't. If they express a point, general sentiment is, they're O. K. Though taken lightly, cartoons often surge into utterance from the hidden recesses of the soul. That explains why the feelings expressed in cartoons run the whole gamut of human emotions from joy, sorrow, disgust, pleasure, pain.

The cartoons here come from a squadron in the Caribbean area. NEWS LETTER publishes them as typical of hundreds of others like them drawn, or being drawn, by gifted hands in fleet aircraft and at stations wherever there are aeronautical activities.

TECHNICALLY SPEAKING

Preservation of Engine Parts

Occasionally it becomes necessary, as a result of an unpredictable overloading of facilities or difficulties in supplying parts, to delay the completion of engine overhauls. When such occurs, there is a possibility that the disassembled parts will corrode.

This technical note is issued to insure that activities concerned are alert to such a condition and will take preventive measures as prescribed below whenever it is deemed that sufficient time will elapse to allow damage to parts removed from engines undergoing overhaul.

a. After cleaning and inspection, cover all steel parts with a light coat of one part of aircraft engine corrosion preventive compound, Specification AN–VV–C–576, to three parts of aircraft engine lubricating oil, Grade 1065.

b. Before assembling the engine or subassemblies, clean parts coated, as mentioned above, of all traces of the mixtures and accumulated foreign matter, and while assembling the engine or subassemblies, heavily coat these parts with a mixture of one part of the above Specification, AN–VV–C–576, to three parts of aircraft engine lubricating oil, Grade 1120. Use this mixture, during assembly, on all internal parts on which corrosion may occur, which includes all bearing surfaces, cylinder bores, and piston rings.

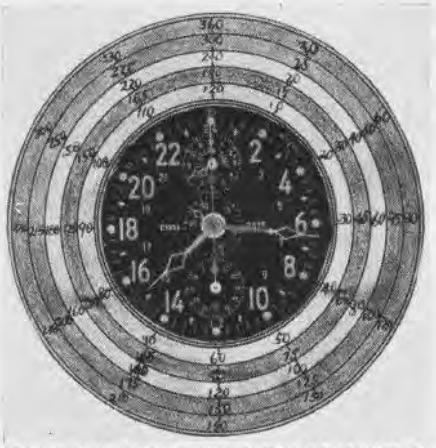
(Technical Note No. 35–43)

New Navigational Aid Developed

Determines Air Distances Without Calculation

The Operations Department at NAS, Norfolk, has suggested a device which, when affixed to the standard clock dial, permits the navigator to determine, without calculation, air distance traveled in any given period of time for different cruising speeds.

The device consists of several dials cut out in the center and so mounted that they are concentric with the face of the clock. Each dial is calibrated for a particular cruising speed and appropriate distances are marked on the dials at intervals of 5 minutes. When corrected air speed is applied, air distance along any leg of a flight may be read off the appropriate dial when elapsed time is read in minutes.



CLOCK DIAL SHOWS AIR DISTANCE TRAVELED

The scales shown on the accompanying figure run from 120 knots up to 360 knots. However, only such ranges as are applicable to the airplane concerned would be required.

Many suggestions concerning devices to aid navigation are submitted to the Bureau by the service. It is recognized that each pilot and each navigator has his own methods for simplifying routine navigation, but the Bureau hesitates to recommend any of these methods unconditionally and has confined itself to the standardization of the navigational equipment employed.

However, some of the ideas deserve circulation throughout the service so that those who are interested may adopt them for their own use.

Fire Hose Reel Developed

NAS, BERMUDA.—A new type of fire-hose reel, recently developed by one of the enlisted personnel, is in use here. Of unusually simple construction, the hose assembly can be made of easily obtainable materials.

Its chief advantage is the speed with which the hose can be brought into play. It will unwind semiautomatically by using the pressure of the water as it flows into the hose. This is because of the unbalanced drum upon which the hose is wound. It is also possible to rewind the hose quickly by making use of the removable crank which is part of the assembly. The rewind process is further speeded because of the unusual way the hose is folded on the drum—it is divided at the center, folded back, making it half its extended length, and then wound as a single hose would be.

Heretofore, if the fire were a shorter distance from the water outlet than the length of the hose, the entire hose had to be extended before the pressure of water could be permitted to pass through it. With this new development, the hose will automatically continue to unwind after the stream of water has been directed. The hosing does not deteriorate as fast with this new type of reel.

If there are stations interested in manufacturing similar apparatus, the blueprint shop here is prepared to make up plans for distribution.

BUREAU COMMENT It is believed that the idea is sound, and perhaps other stations may be interested in the hose reel. It is suggested that photograph and drawing of this hose reel be sent to the Bureau.

ANSWERS TO GEOGRAPHIC SQUARE SEARCH

(See page 11)

	1st	2d	3d	4th	5th	6th
Magnetic Headings (MH)	074	156	254	352	074	156
Courses	065	155	245	335	065	155
Minutes on Leg	9	7	13	15	26	22

BUREAU REVEALS CORRECT METHOD OF DONNING QUICK ATTACHABLE BACK PARACHUTE FOR FLIERS

QAB PARACHUTE FORMS BACK CUSHION OF SEAT; RISERS AND BELT READY FOR EASY ATTACHMENT

Quick Attachable Back Parachute

The proper method of attaching and using the QAB (quick attachable back) parachute is described in this technical note prepared by the Bureau for flying personnel, ground crews and service activities. The parachute is used with certain models of naval aircraft, such as the GB, GH, JRB, and JRF.

The standard QAC (quick attachable chest) harness is used with the QAB parachute. The harness should be donned and properly adjusted to the wearer before boarding the aircraft.

1. To don harness: Sling the harness over the shoulders and fasten the leg straps first. Make sure that the sling fits snugly under the buttocks. Next secure the chest strap.

2. To adjust harness: All adjustments can be made by hand—no tools are required. It will be noted that the webbing is secured to one outer bar of the adapter. To adjust, work the webbing through the adapter to form a small loop over the center bar, set the free end of the adapter to the desired position, and pull the webbing taut in the adapter. Shortening is accomplished by sliding the webbing into the adapter; lengthening, by sliding the webbing out of the adapter. The following procedure should be followed in adjusting the harness to the wearer:

Don the harness and secure it as directed above. To fit properly, the **D** ring should be located approximately midway between the shoulders and hips, the sling should be snug under the buttocks, the back strap should give support to the small of the back, and the leg straps should be just snug enough to slide the fingers between the strap and the leg.

If adjustments are necessary, remove the harness and move the body strap adapters to the desired position. Secondly, adjust the back strap adapters. Finally, after the body adjustments are satisfactory, don the harness and adjust the leg straps to the desired length.

The QAB parachute is designed as part of the seat of the plane, forming the back cushion of the seat. It is of standard size, 24-foot diameter canopy. The ripcord is enclosed in a housing which comes over the left

shoulder, the ripcord handle fitting in a pocket on the left riser. A waist belt is provided to secure the pack to the back of the wearer during descent.

1. To attach the parachute: Board the aircraft wearing the completely adjusted harness. Fold back the waist belt and safety belt clear of the seat. In the sitting position, bring the left and right risers over the shoulders and attach to the corresponding **D** rings on the harness. Secure the waist belt around the waist and then secure the safety belt.

2. Operation for emergency jump: Release the safety belt. Lean forward to free the back cushion and parachute from the seat. It should be noted the retainer is designed with a bungee cord around the forward edge which will stretch when the wearer leans forward, thereby permitting the back cushion to slide free from under the retainer. Do not release the waist belt.

All personnel are cautioned to see that the waist belt is never made fast around the back of the seat. This dangerous condition has existed in the past and serious mishap will result should the parachute user fail to secure the waist belt around his waist in the proper manner. Users are cautioned to bring the risers over the shoulders before attaching to corresponding **D** rings.

(Technical Note No. 12–43)

Note on Bomb Racks

Scotch Tape Suggested as Remedy Against Spray

There have been a few isolated reports received from PBY–5 squadrons that icing of bomb racks—caused by spray, etc., through bomb-rack access doors and other openings in upper and

SCOTCH TAPE SOLVES BOMB-RACK PROBLEM

lower surfaces of the wing near bomb racks—may have been the cause of bombs hanging up when release was attempted.

Sealing all these openings with watertight doors is not practicable and is virtually impossible where bomb lugs hook on to bomb-rack suspension hooks. However, application of scotch acetate tape over all these openings is a quick and fairly easy means of avoiding this possibility. Care should be taken to apply tape so that it will not foul bomb-rack suspension hooks and bomb lugs, thus causing interference with bomb-rack release action.

Portable Engine Cleaning Stand Serves Need

Conserves Cleaning Solvent, Prevents Soiling

NAS, Atlanta.—A portable engine cleaning stand, which has proved very satisfactory, has been designed by the

MECHANICS DESIGN ENGINE CLEANING STAND

Engineering Department of this station.

The stand mounted on casters consists of a sheet metal bin, the dimensions of which are 4 feet x 4 feet x 6 feet. The sides of the bin are cut away in a **U** shape to allow the bin to be wheeled under the radial engine. A **U**-shaped sheet metal lip was added on one side of the bin to catch the cleaning solvent that drips from the rear of the engine.

A funnel-shaped drain was cut in the bottom of the bin to allow the drippings to drain back into the solvent supply tank, which is located directly under the bin. The drippings are strained through a screen over the drain.

The cleaning solvent is drawn from a 10-gallon supply tank through a standpipe that extends from the tank up through a hole in the bottom of the bin. A rubber hose connected to a spray gun extends from the gun down through the standpipe into the tank. The cleaning solvent is sprayed under a pressure of 80 pounds per square inch. Nearly 75 percent of the solvent used is recovered from the drippings. The same solvent can be used several times before it becomes grimy.

Engines can be cleaned safely and efficiently at any place in the hangar without the mess that this job usually entails, the Station reports.

BUREAU COMMENT This engine-cleaning stand is an excellent idea with a practical design. It is recommended that other activities use similar devices to conserve cleaning solvent and prevent soiling of hangar decks and runway aprons *(see inside front cover)*.

Don't Be a DILBERT!

"Dope" Reduces Breakage

NAS, Norman.—A solution to the problem of constant breakage of Powers cellulose air navigation plotters was reached by the Ground Training Department. Experiments revealed that the plotters lose their brittle quality and adopt some degree of flexibility when sprayed with "dope" used on aircraft wings. Breakage has been reduced to a minimum.

Gun-Camera Film

Gun-camera film furnished by the Bureau of Ordnance is of a Weston daylight exposure index of 32. However, Eastman Kodak gun-camera film, furnished under Contract NXs–8180 prior to May 1, 1943, has an exposure index of 10.

Containers of this film are marked "Eastman Kodak Company, Exposure Index 10, Emulsion 5206–16–01." When this film is used, the aperture of the gun-camera lens shall be increased by a factor of four—two stops, i. e., from "B" to "D" to prevent underexposure.

1. Oar.
2. Fish Spear.
3. Sail.
4. Topping-Off Pump.
5. Fishing Kit.
6. Navigation Charts.
7. Whistle.
8. Knife.
9. Smoke-Grenade Holding Clamp.
10. Cotton Line.
11. Repair Kit.
12. Reflector.
13. Compass.
14. Bullet-Hole-Leak Plugs.
15. Emergency Rations.
16. Emergency Water.
17. H–C Smoke Grenades.
18. Sea Marker.
19. First-Aid Kit.
20. Hand Pyrotechnic Projector (6 Red Very Shells not shown).

Essential Raft Equipment

Buaer Illustrates Items in Technical Note 6–43

The Bureau has made out a list of equipment for every life raft, based on the experiences of life raft survivors.

It is urged that all squadrons review the equipment installed in their planes and make every effort to insure that each airplane is provided with the requisite life raft emergency equipment as detailed in Technical Note 6–43, issued February 15, 1943. This note outlines the various types of life rafts for all types of naval aircraft, except VF-class airplanes. Rafts for VF-class airplanes are outlined in Technical Note 1–43, dated January 6, 1943. All equipment is available from supply points.

THANKS TO:

Life, drawing p. 2—ONI's Identification & Characteristics Section, silhouettes, pp. 16–17 & cartoon p. 18—Frank Beaven, cartoon p. 32

Tow Reel Installed

Station Reports Satisfactory Results with SNB's

MCAS, Cherry Point, N. C.—In an effort to relieve the hard-pressed towing equipment situation here, an aircraft engineering squadron has installed the C–5 type tow reel in two SNB's.

To date this installation has proven very satisfactory. No unusual flight characteristics have been reported. The new type equipment enables the squadron to give far greater service to antiaircraft units than ever before, since it is now possible to tow a sleeve with 5,000 feet of line up to an elevation of 10,000 feet.

Unfortunately there are only two SNB's available, and the Maintenance Department is putting in many night hours to keep them in operation.

BUREAU COMMENT **The shortage of satisfactory towing planes is recognized in the Bureau. It has been requested that MCAS, Cherry Point, send the Bureau additional details with sketches or photographs of the C-5 installation in the SNB for further study and possible dissemination to the Fleet.**

BEST ANSWERS
to Questions on page 26
1. c 2. d 3. c 4. d 5. e

Anti-Fogging Goggles

Comments Desired on Experimental Device

WEARER'S NOSE HELPS CLEAR OFF GOGGLE FOG

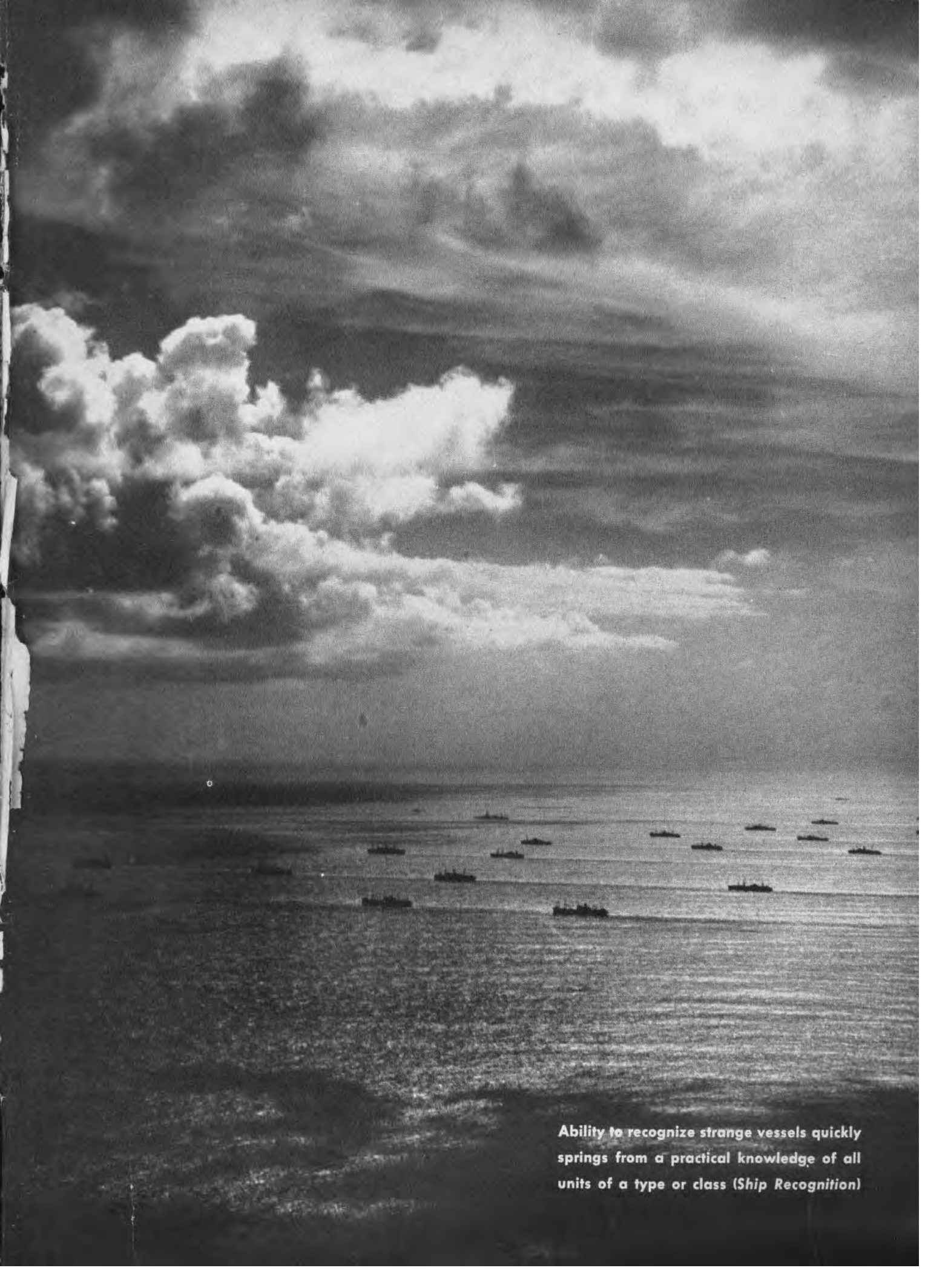
An experimental quantity of new anti-fogging goggles, known as the "X-Vent" type, is being sent to Naval Air Stations at San Diego, Pearl Harbor, and Norfolk. Five hundred goggles will go to NAS, San Diego, and 250 each to NAS, Pearl Harbor, and NAS, Norfolk.

These goggles are the result of further development of the single aperture, dark-adaptor type to provide increased ventilation and freedom from fogging of the lenses.

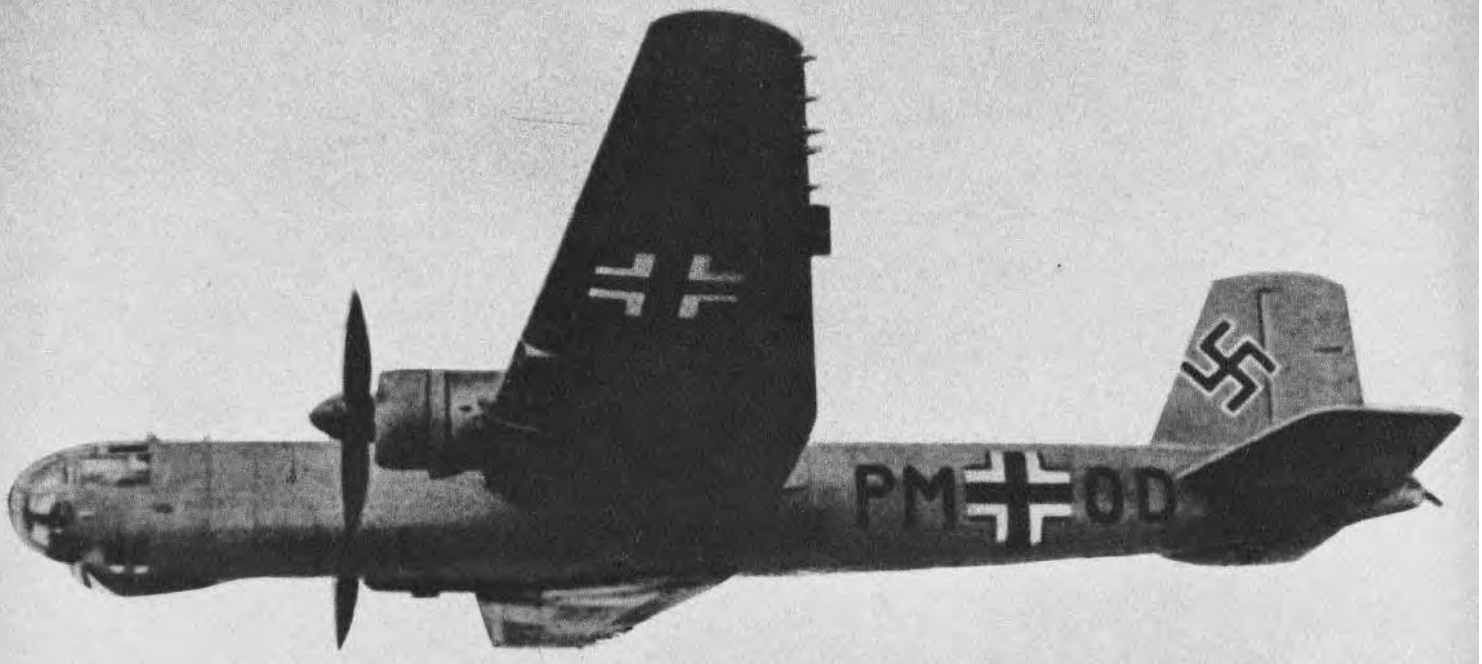
The nosepiece which has been added to the goggles contains two rubber valves so arranged that, as the wearer inhales, fresh air is drawn through ventilating holes (equipped with a cloth filter) in the upper rim of the goggles. This fresh air passes over the inside surface of the lens and then to the wearer through the nosepiece. On exhalation, the air passes directly to the outside through the valve in the bottom of the nosepiece. By this arrangement fresh ventilating air is drawn over the inside of the lens at frequent intervals to prevent fogging.

The Bureau will appreciate receiving comments on the effectiveness of this goggle design in eliminating fog, as well as on its general characteristics, such as vision and wearing comfort.

"Best propaganda I ever tasted."



Ability to recognize strange vessels quickly springs from a practical knowledge of all units of a type or class (*Ship Recognition*)



HEINKEL HE 177

GERMAN BOMBER

Span: 103 feet
Length: 65 feet

Service ceiling: 23,500 feet
Maximum speed: 300 m. p. h. at 18,000 feet (estimated)

DISTINGUISHING FEATURES — Mid - wing monoplane with two radial-type engine nacelles. Wings tapered on outer panels. Long fuselage with rounded nose projecting far beyond engine nacelles. Single fin and rudder, large and angular, as also is this German bomber's stabilizer and elevator.

INTEREST—This aircraft became operational late in 1941. Designed primarily as a long-range "anti-blockade" aircraft, the He 177 has been used also for short- and medium-range bombing, dive bombing, mine laying, torpedo dropping, and reconnaissance. A unique feature of this bomber is that each of its two engines is in itself really two engines geared to drive a single four-blade propeller. The landing gear under each nacelle consists of two wheels which apparently retract laterally and in opposite directions into the wings. Reports refer to a special high-altitude version of this aircraft with pressure cabin.