

NAVAL AVIATION

NEWS



Basic Training
NATS Hospital
Ferry Command

August 1946

RESTRICTED

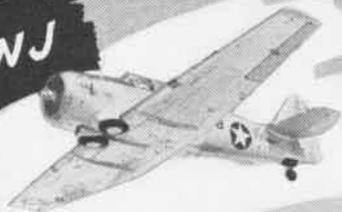


N2S



71½ HOURS FLYING TIME

SNJ



52¾ HOURS FLYING TIME

VB 2



24 HOURS FLYING TIME

VP



27 HOURS FLYING TIME

CV

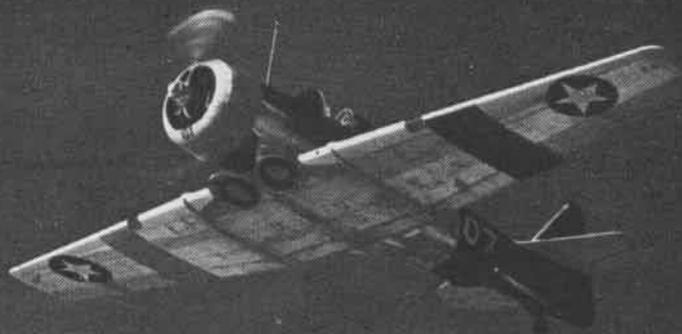


67 HOURS FLYING TIME

CQ



1 HOURS FLYING TIME



BASIC AIR TRAINING

NAVAL AVIATION NEWS
AUGUST 1946 No. 261

NAVAL Air Training has undergone some changes. So many, in fact, that a complete metamorphosis rather than merely a face-lifting seems to be the order of the day—and the hour.

The program is longer, more diversified, and—if possible—more inviting, but it's no easier to complete. Number of students enrolled, range of curriculum, length of course do not affect the quality of instruction and the superlative demands of student ability which have marked Naval Aviation as a distinctive qualification since 1911.

War-time publicity releases stated that the Navy sought 30,000 pilots a year. Actually, the peak was 21,067 reached in 1944, but peace time anticipation is to produce less than 10% of that maximum figure.

Only 1500 new Naval Aviators and 350 Marine pilots will reach the fleet each year. These figures are five percent short of the number to be designated, for a one-twentieth attrition rate is expected in post-graduate training.

One of the remedial steps the Navy has taken to retard the throttle of pilot output is the administrative fusion of the primary and intermediate training stages. The setup now calls for a single Commander, Naval Air Basic Training with headquarters at Corpus Christi, Texas. Present CNABT is R. Adm. J. J. Clark of TF 58.1 fame.

The actual 26-week basic syllabus is conducted not only in the South Texas region but at Pensacola also. Commander, Naval Air Training, at the present time Vice Adm. R. F. Wagner, has his headquarters at NAS PENSACOLA. He has cognizance over the Pre-flight school, Advanced, and Technical training commands as well as Basic.

Another and important physical change in the training program is the return to the pre-war policy of giving students a thorough check-out in all types of Naval aircraft while still in the new Basic syllabus.

Single-engine land, twin-engine land, multi-engine sea, and carrier qualification are all mandatory courses.

At Corpus Christi a student is given

but two airplanes to fly . . . first, the *Texan*, a 250-hp. model, and the *SNJ*, a 650-hp. all metal plane known as the *Texan*.

Facilities at Pensacola, however, give the student a chance to fly the *PBY Catalina* and the *SNB Navigator* as well as the *SNJ*. The twin-engined Beechcraft is used in the VB-2 syllabus and the Consolidated sea-plane is flown in the amphibious training. The *SNJ* is flown again in the CV and Carrier Qualification syllabi.

Instructors at Corpus Christi devote their energies to the primary, formation and single-engine instrument parts of the students' course. Instructors at Pensacola fret with students over multi-engined and carrier problems.

Already worried with the addition of courses provoked by the combination of the former specialized Intermediate stages, heads of ground school training are pressed with a second worry of acquiring and training new teachers. All ground officers are being released and jobs of teaching are being relegated to aviators, the majority of whom are unprepared for the task.

GROUND school subjects are the same as during war-time. A little less emphasis, of course, is on the danger elements which war-time oceanic flying provided, but there is more on the fundamentals of safety in respect to engines, weather, and flight characteristics of aircraft.

There used to be a good deal more ground school for the students in multi-engined training than those in the carrier syllabus encountered, but the curriculum is all the same now. Athletics, long the scourge of potential aces, will retain its war-time invoked place in

the training. Quarterly tests will augment the program to check the physical fitness of each cadet. A happy note for future fliers, however, is that the obstacle course is a thing of the past. Apparently, fliers must now be healthy—but not, necessarily, supermen.

When the cadet checks into Corpus preflight, he is tagged with a metal name plate above his shirt-pocket. That plate, along with his anchor collar-device, distinguishes him. He is assigned to either Battalion Nine or Four of the cadet regiment at the main-side station before being 'farmed' out to an outlying field for continuance of training.

He will remain within the same regiment (there is one each at Corpus and Pensacola) until he leaves, but he will change Battalions twice. Cadet officers are named and receive special privileges such as sitting out penalty hours rather than marching them off as the average cadet does.

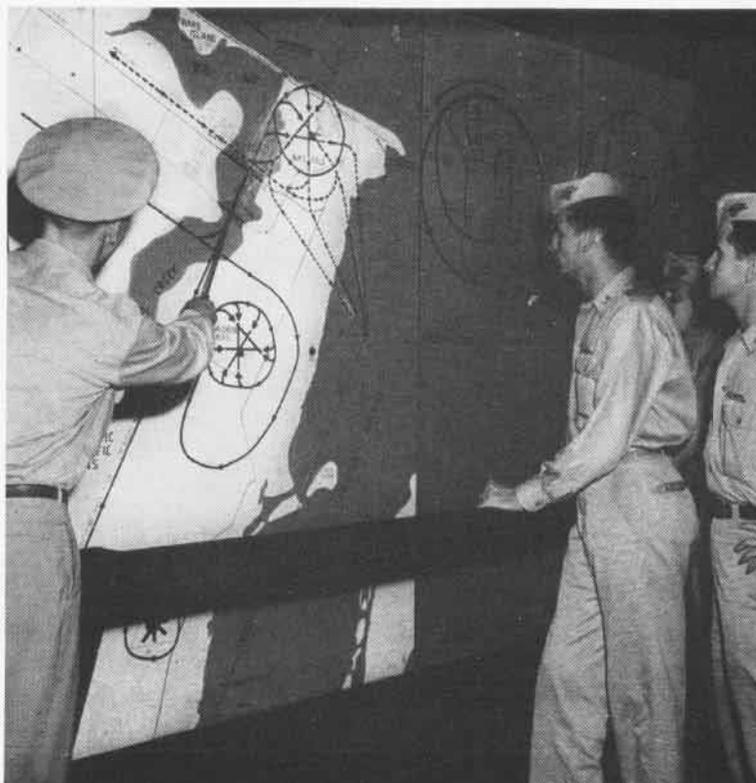
Liberty for the cadet at Corpus and Pensacola is from Saturday noon until Monday morning. This allows a full week-end liberty—something which was as scarce for cadets in war-time as nylons for women.

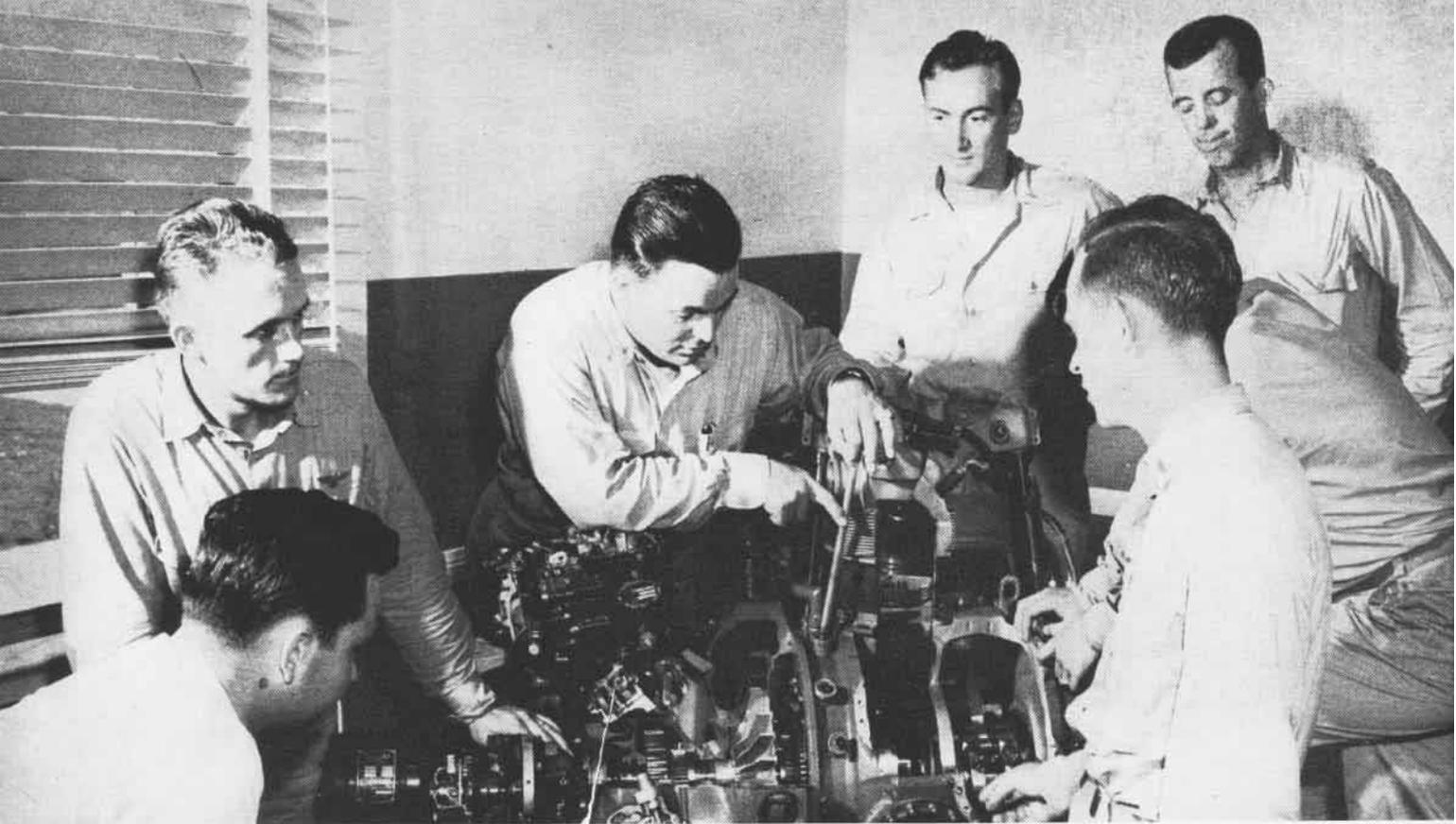
At Corpus Christi a special six-weeks school has been set up. The prospective officer instructors are assigned to this school for duty the same as any school. Here they undergo a course in psychology of teaching to prepare them

➤ **Traffic Patterns** at NAS CORPUS CHRISTI, are outlined to some new cadets by an instructor. Lecture comes before first flight

◀ **Echelon** of *SNJ*'s flying in "step-down" wing over the bay of Pensacola bearing the aviation cadets back to base on last hop

Restricted





A THOROUGH STUDY IN THE CONSTRUCTION, FUNCTIONS, AND CARE OF ENGINES USED IN EACH STAGE OF THE SYLLABUS IS CONDUCTED

Corpus Christi Locale is Scene of Wartime Syllabus of Primary, Basic, and Instrument Flight and Ground Courses

THE YELLOW Stearman biplane leaves the ground and the figure in the back-seat looks eagerly back and below at the ground. It is his first Navy flight, and he will not return for an hour and 15 minutes.

At the end of that time, he will have handled the controls of the trainer plane himself, rode the controls while the instructor in the front cockpit made a number of landings, and looked over the area in which he will fly for the next four months.

When he lands, the chances are he'll either swagger up to the board and mark his name off with a show of gusto or he will clap his hands and knees to the ground and feign great relief over the return to mother earth.

Occasionally, upon return from a somewhat "sickening" trip one of his contemporaries will do no more than grin sheepishly through pale lips and try vainly to talk himself out of having to give the "yellow-peril" a needed cleaning job.

INSTRUCTIONS on course rules, traffic pattern, availability and use of outlying practice fields are thoroughly discussed before the cadet takes to the air. A cutaway Stearman, sans fabric, is used to point out the basic construction of an aircraft and what parts are subjected to excessive strain from certain

maneuvers while the plane is flying.

In the air the cadet is taught how to move stick and rudder in coordination and thus bank and turn the plane in a smooth fashion. He learns to fly a square pattern around the field at 500 feet. He is taught how to make a power-off approach and landing—and, if he shows the proper qualities, he does it solo after just 10 and a half hours' dual instruction.

Following that one first flight by himself, he faces an arduous task of learning not just to fly, but the Navy way.

A Navy pilot must be able to land in a short area in the event of emergency and the sudden and specific reduction of altitude is a "must" for a safe landing. Practice of slips and "S-turns" to a circle provide the instinctive know-how for such emergencies.

Aerobatics, in all their confusing, altitude-losing ways, must be mastered. The Immelman, snap-roll, split-S, loop, wing-over, and falling-leaf are on the agenda.

There are two one-hour dual periods of night flying. Systematic checks are made at specific intervals in the N2S syllabus to keep track of student improvement and to continually weed out those unsuitable for combat aircraft.

The "washout" rate is about 20 percent in this stage of training. Crack-ups

are neither numerous nor very often fatal. Only one and three-quarters planes in 10,000 are struck due to crack-ups in N2S training.

Ground school for the cadets becomes a serious business compared to the laxity of pre-flight.

Now, in reference to such courses as power plants where cadets learn the importance of pre-heat to ward off carburetor icing and thus avoid the embarrassment of an engine cutting out, ground training is a life-saving necessity.

SWITCHING to the North American Texan from the Stearman primary trainer is quite a jump for the cadet. In the past, the SNV, a 450-hp. plane, was used as an interim measure.

When the cadet was in N2S's, he rode in the after cockpit due to the load factor of the plane, but now he sits up front. This vantage point is necessary to make the cross-overs and unders required in the section-tactics syllabus.

After checking out in the Texan and learning the area well, the student turns to single engine instrument work. First instruction points are made to get him acquainted with the instrument panel and 13 and a half hours go towards basic instrument work. Following this, the cadet gets six hours of radio range flying.

Supplementing the instrument flight is a thorough Link instrument trainer syllabus edged in between flight periods.

Training in the basic SNJ and N2S syllabus goes slow. The scheduled time



SCHEDULE BOARD IS CHECKED BEFORE EACH HOP FOR CHANGES



PRELUDE TO STANDING TOWER WATCH ARE CHECKOUT LECTURES

of 71 and a half hours in the biplane and 52 and three quarters in the monoplane is 10 weeks and 8 weeks, respectively, but records show that it is taking longer.

The reasons are easy to see. Shortage of enlisted man power keeps planes on the ground that should be flying.

Remedial action being taken represents the inclusion of a flight-line engineering training and work program into the syllabus, thus allowing the cadets to service their own planes and aid in the 30-hour checks necessary on all Navy craft. One rated mech supervises a group of five.

Washouts are less in the SNJ stage than in N2S—the main reason for this being that thorough weeding out of the weak students is done in the pri-

mary syllabus. The attrition rate is only three percent in the "J" syllabus.

THE INSTRUCTORS undergo a training program of their own. They are kept busy with Link work and with intra- and inter-squadron checks by other instructors. A standardization board checks each officer to test his teaching procedure and make sure that all procedures are the same.

Squadrons at Corpus Christi have not been formed long under the new program so they are able to give students only 4.7 hours per week rather than the desired 7.3 hours. A well-organized squadron generally will fly 8 to 15 percent more than effective flying weather conditions would allow them.

The majority of war-time instructors

at Corpus—particularly in the N2S work—were civilian trained pilots who came in as A-V(T) officers or A(5)'s. Now, however, the desired condition of having the majority Navy-trained fleet-experienced pilots exists.

Ground school just picks up in intensity rather than slacking off. Aerology courses at Corpus give the student an insight into how and why weather works and the importance good or bad weather has in flying.

Also he learns to read weather sequences and maps plus getting full info on how fog and thunderstorms form and the danger they provoke. For practical knowledge, the dope on how to fly cumulo-nimbus and when to stay on the ground are just two of the things he is taught for his own future safety.



DE-FABRICATED STEARMAN ACTS AS TOOL IN HANGAR CLASSROOM



ATHLETIC PROWESS OF FLIGHT STUDENT IS EXPLOITED, TESTED

Pensacola Now Involved with Integrating the Advanced Stages of War time Aviation Training of Officers, Cadets

OFF TO Pensacola. Our boy is no longer a novice. He is able to fly, to navigate, to interpret weather, to repair engines, in fact—do anything with an airplane that is required.

He won't, of course. That's why from here on in there will be a lot of repetition in ground school—a lot of rehash in the air.

There will be, of course, new instruction in flying for Navy. Water work, carrier sectional work, gunnery, etc. The cadets have earned their wings. Now they must tint them with the golden touch and apply the anchors.

The VB-2 squadron is at Corry Field—closest station to mainside. To this squadron the cadet is sent upon arrival at the Florida training site.

Twin engine checkout in the SNB is not long in coming. Despite the fact that loss of ground crews generally keeps 60% of the commissioned planes grounded, cadets usually whip through this syllabus on schedule time.

Besides the actual flying and navigating they do in the Beech's, cadets get four day and four night hops in R4D classrooms. The Douglas transports are rigged with 12 navigation tables and the cadets are checked out much the same as if they were with a transport squadron.

Washouts in ground school outnumber flight attrition after the primary stage. Heads of ground school point out that the largest number of failures occur in the ranks of officer-students who have entered flight training at Corpus rather than going through col-

lege and pre-flight training such as the cadets and potential Aviation Pilots do.

Instruction in Link continues at Pensacola. Introduction to the celestial Link is made and the cadet flies a good bit indoors while in twin-engine training.

A number of his duties at the squadron are important educational factors. Cadets are called on to stand tower watches, Assistant Squadron Duty watches, runway watches, and messenger duty for the Flight Office.

Instructors are able to give more personal attention to each student now. A good example of why this is so is evident in the report that a typical squadron has 151 instructors for 192 students. This gives each officer the responsibility of one and one-third students while in wartime the average was about one to five.

FOLLOWING four weeks and 24 hours of day and night takeoffs and landings, the student moves on to the Main Base for VP training in the watchdog of the fleet, the PBY.

Few of the PBY's are amphibious, so a cadet's first instruction is in the handling of beaching gear for the seaplanes. When he has become indoctrinated in how to handle the aircraft on the deck, the cadet goes aloft.

There is a lot more to learn about landing a mechanical bird on a splashing liquid surface than on the stable ground. Rough seas and smooth seas have different problems.

The cadet must never forget to chop that throttle for a full stall when chop-

py water is below—or to ease the throttle back when the sea is glossy.

Four night landings are included in the student's syllabus. When the big day comes for his solo, the ultimate in his control over the air will be reached.

That *Catalina* is a lot of airplane for a man to have under his thumb—and there it must remain if all goes well. Complete control of ALL aircraft at ALL times is Navy's main lecture to students.

In ground school, the cadet gets checked out in the acceleration unit, being put to a test for the number of "G's" he can stand. He also gets a checkout in the oxygen chamber to determine his metabolism rating. Physical aptitude tests are arranged so as to also provide instruction and to acquaint the student with use of oxygen and "G" suit, dangers of acceleration and altitude.

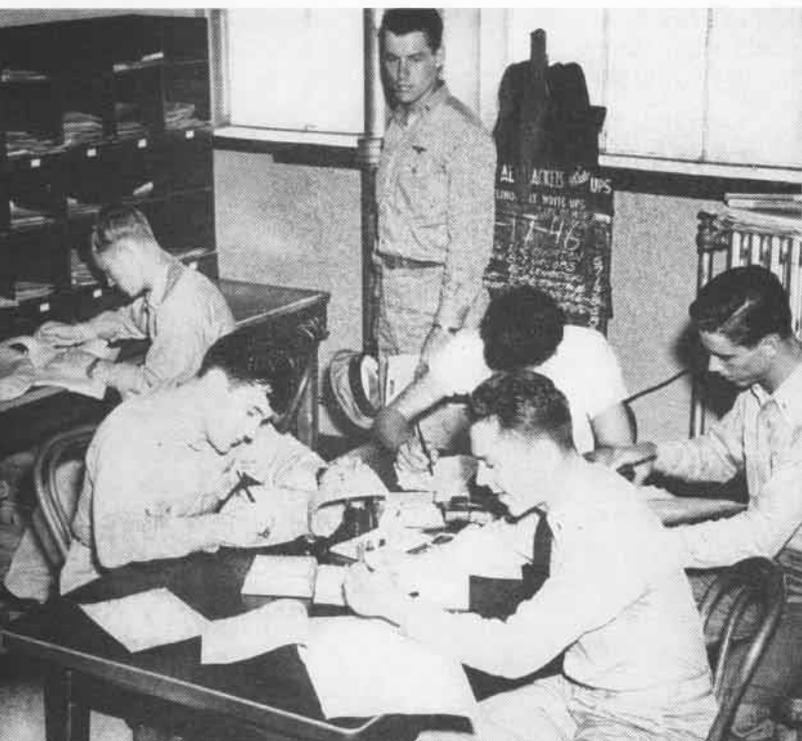
BACK to the SNJ goes the aviation student. This time, it's for carrier training. He learns the basic formations and weaving patterns of Navy Attack groups. He also learns—rather, primarily he learns—teamwork and coordination of the group.

Mastering the ability to fly together, cadets are taught to fight together. Gunnery and bombing become the number one thought of the student's daily schedule. Range, deflection, wind-drift, mil-knot relationship, and bearing are discussed in the same manner as blondes and brunettes.

In navigation training, the cadets make use of the carrier or moving base relative search problems practiced in ground school so long. They fly over land as well as water in completing the navigation syllabus of basic training.

INSTRUCTORS MARK CADET'S PROGRESS IMMEDIATELY AFTER HOP

CADETS ALTERNATE ON NAVIGATING, FLYING IN VB-2 COURSE





"TAKE IT BY YOURSELF," HAPPIEST WORDS IN CADETS LIFE

CADET COMES ABOARD CV RANGER, "GEAR DOWN, HOOK DOWN"

Nothing besides the day after day practice of aerobatics in primary proves as tiring to the aviation students as the gunnery hops in CV training. High side, low side opposite, beam, and overhead runs that require sharp pull-outs leave the flyers physically as well as mentally fagged at day's end.

Some of the hops flown are merely to tow the sleeves for the other cadets to use as targets. There is no discrimination on this deal—they all do it. Sometimes, even, the officer-instructors will do the towing.

In ground school the carrier training students get a review of all the material they have covered in the stages previous to this. Check-outs in code are taken. Twelve words per minute sending and receiving is mandatory.

Flight planning problems in aerology emphasizing the actual things encountered in flight are given to the students.

A survival course combined with

water exercises receives the athletic emphasis in CV ground school. Check-out in the dunker, life-raft and Mae West life jacket is included.

WHEN the process of getting the cadet to fly the way carrier pilots are supposed to has been accomplished, he is given extensive training in how to land and take-off from one. He has added another 67 hours to his log in eight weeks.

The first step in the process is to assign him to the CQTU (Carrier Qualification Training Unit) for lectures on the theory of carrier operation.

His verbal indoctrination over, he goes out, climbs in the SNJ, takes off for the auxiliary practice strip and makes simulated landings on the field area which is marked off like the deck of the carrier.

Following out the procedure of "Don't fly more than 150 feet from the

deck nor faster than 65 knots through your entire pattern" is no little ticklish job. No easing back on the throttle to get an interval, for sure as he does, he'll spin in.

That air speed indicator shows only a few knots above stalling speed. By this time in his training, however, the student is able to fly that low and that slow and still be safe.

Two weeks of this and one morning the cadet takes his gear out of the locker and moves aboard the U.S.S. *Ranger* for a three- or four-day run. While he's out, he will make at least four landings aboard the old carrier now converted to training purposes for the Navy's air-cadet.

His time as a cadet is close to an end. A few days' wait for orders, and the day of days—graduation diem—dawns. Another Navy pilot dons his wings and shoves off for Jacksonville and a lengthy advanced training course.



TWO PBY STUDENTS OPERATE IN CELESTIAL LINK AT PENSACOLA



THIS CADET CAME ABOARD A LITTLE WETTER, A LITTLE WISER

GRAMPAW PETTIBONE

We Were Lost

Here's Grampaw's near accident of the month as told by the co-pilot of a PBM on a routine ferry flight from NAS ALAMEDA to NAS WHIDBY ISLAND.

"Shortly after take-off the Fluxgate compass began to fluctuate violently—all attempts to remedy the situation proved futile. Our initial mistake was now at hand. The weather was clear and visibility good so we elected to proceed to Whidby Island. We knew that conditions were not good farther along the route, but assumed we could make it through all right.

"For about three hours all was serene. Clouds were beginning to appear and the air was becoming a little turbulent, but we felt confident. After all, the gyro-compass wasn't precessing too rapidly, the radio compass was working fairly well and the magnetic compass appeared to be functioning properly. You may readily see that these were all assumptions and we made no effort to check our instruments. *Mistake number two.*

"By the time another half-hour had passed, visibility was zero; however, no one was very worried as we were riding a good clear radio beam. The radio compass was pointing out the way to our destination, the radar was showing coastlines, mountains, etc., and all seemed to be doing nicely. Of course we were bucking ever increasing headwinds that would delay our arrival until just before dark, providing that the winds didn't get any stronger. We thought they wouldn't. *Mistake number three.*

"Things really started to pop when the radar went out. This was followed by one of our biggest mistakes. We were near our alternate base, but decided to grope on to Whidby Island. After all, it only necessitated following the indicator of the radio compass home.

"The radio compass, however, had other ideas and became extremely uncooperative. It whirled madly about, evidently a victim of the same electrical short that had surveyed the radar.

"Rather than leave the beam we stayed with it by bracketing. Had we at this time attempted to wander about hunting our alternate base, I fear the results would have been disastrous.

"We at last reached Whidby, only to discover a wind of 50 knots was whipping the water into a frenzy. To add to the confusion, darkness was slowly engulfing us. Three landings were attempted but the thrashing water hurled us skyward at all sorts of precarious angles. *Mistake number four.* We circled for over an hour, hoping that the wind would abate. This was to no avail as it increased in intensity



and the circling only resulted in the loss of precious gasoline.

"Abandoning the circling idea, we started for NAS SAND POINT. Everett radio was coming in clearly, but in spite of this we drifted away from the beam. We hunted in vain through the rain-swept skies for our lost guide. As we turned this way and that, listening intently for some

sound other than the clear dit dah, we detected the reason for losing the beam. The terrific impact of our attempted landings had rendered the gyro-compass inoperative. The air was by far the roughest I have ever been unfortunate enough to experience. It goes without saying that under these conditions the magnetic compass was completely useless.

"The unpleasant knowledge that we were lost now confronted us. I feel that we made a wise move by immediately notifying CAA of our plight. They in turn took the necessary steps in alerting the air/sea rescue network.

"The lights of a town were faintly visible and we set our course in their direction. We had absolutely no inkling as to our position. We were sure of just one thing; as long as we circled the city, we wouldn't rub noses with any mountains. Nothing milder than a tornado could have torn us from those lights.

"Radio bearings were taken on us by several stations and we were confronted with startling news. The city we were circling was Victoria, British Columbia.

"Ships of the Royal Canadian Navy, based at Victoria, were quick to grasp our desperate situation. They stationed themselves at strategic points around the harbor, playing their searchlights on the landing area, rocks, high obstructions, and other hazards to a safe landing. Due to their excellent preparations a landing was effected and all hands aboard breathed easily for the first time in five hours. Those of us aboard the plane that night owe the Canadian Navy a debt of gratitude for the speedy and efficient manner in which they handled the entire situation."



Grampaw Pettibone says:

Thanks for this hair-raising story and for the honest account of the mistakes made on this flight. I hope that your nerve-racking experience will serve as a warning to other pilots who are tempted to push on in the face of bad weather. Almost every week I receive reports of fatal accidents which occur because pilots don't turn back or land at alternate fields when they encounter instrument weather on CFR flights or bad terminal weather on instruments flights. Unfortunately these accounts are mostly guess-work as there are no survivors to tell us what really happened—just a heap of tangled wreckage against the side of a mountain.

No doubt some of you other pilots have "True Experiences" which need to be told so that somebody else won't make the same mistake. If you've had a close call lately and lived to tell about it, I'd like to hear from you. Maybe you can save a life by writing the details to Grampaw Pettibone, Room 1801, Navy Department, Washington, D.C.

GRAMPAW'S SAFETY QUIZ



1. What does a flashing amber light on the control tower indicate?
2. If the phenomenon known as "compressibility" is encountered in a high speed dive, should the power setting be reduced to assist in the pull-out?
3. When planning a long distance flight in the Northern Hemisphere an area of extremely low pressure is predicted to lie directly across your intended track. Should you alter your flight plan to the right or to the left to avoid it?
4. When weather conditions below basic contact flight minimums are encountered on a CFR flight plan what action should the pilot take?
5. In reference to airport traffic patterns, what is the correct definition of "base leg"?

Answers on Page 40

Dilbert Shows Off For The Home Town Folks!

The owner of a small civilian airport was surprised one afternoon to see a number of cars pull up beside his field, despite the fact that light plane flying had been secured because of high surface winds.

He was informed by one of the spectators that a Navy pilot was going to land an F6F at his airport in a few minutes. The spectators consisted of the pilot's wife, other members of his family, and several friends.

Shortly afterwards the *Hellcat* appeared over the airport and made an approach to a downwind landing. The pilot overshot the 2200-foot grass strip and decided to go around again. On his second approach he made contact with the ground, but took another wave-off because of excessive speed. On his third downwind attempt he landed half-way down the field at an estimated speed of 120 m.p.h. Unable to stop the aircraft within the boundaries of the field, he crossed the highway, tore down an electric pole, and came to a stop in a plowed field. The aircraft was a complete wreck, but the pilot was uninjured because he had his shoulder straps locked.

Investigation disclosed that this daring young airman was an inactive reserve aviator on a local familiarization flight from a Navy field some 40 miles away. *He was not authorized to leave the local area or to land at any other airport except in an emergency.*

 *Grampaw Pettibone says:*

There is no cure for congenital idiocy! Downwind landings are hazardous in light airs, but with high surface winds any downwind landing spells "CRACK-UP." Wind socks, flags, smoke, wind streaks on the water, and even washing on the line have always served aviators by indicating the direction and force of the wind. Even though you are living in the "Atomic Age" you need to know where the wind is before you land. In this case Dilbert was probably worrying so much about his unauthorized landing, that he forgot to observe which way the sock was blowing.

The board of investigation held that this accident was the result of the pilot's own misconduct and recommended that he be disenrolled from the Naval Reserve.

Last Minute Tug Pays Off

After catching the number two wire in a carrier landing, the entire tail hook assembly of an F6F-5 pulled out after approximately 35 feet of wire ran out. As a result the plane went over the port side of the ship and crashed into the sea. The pilot says:

"On the way over the side I gave my

shoulder straps an extra good pull, then I pulled back on the stick to avoid hitting the water at an extreme nose-down angle. This is the last I remember until I came to under water. The cockpit was full of water and I was going down very fast. This was no place for me! I loosened my safety belt, grabbed the windscreen and gave myself a jerk, really getting out fast. I had my parachute on and one side of my life jacket inflated and I came to the surface with great speed."

This pilot was picked up by a destroyer a few minutes later, in good shape except for a few bruises. He concludes his statement: "IT IS THANKS AGAIN TO THOSE SHOULDER STRAPS for saving a life or a marred face."

It Can't Happen To Me

The pilot had 2200 hours and was flight officer of a training squadron. Word comes to *Grampaw* that his students and junior instructors sometimes thought him a mighty "hard-hearted" man. Here's what happened to him one day when he didn't heed his own advice.

On a 400-mile cross-country flight in an SNJ with headwinds prevailing over most of the route, the pilot requested clearance by radio for the last 165 miles of his trip. He did not land and refuel. The weather was good so

the pilot didn't bother to do much navigating. When he thought that he was near and slightly East of his destination, he started flying West looking for the field. Somehow it wasn't there. With 15 minutes of gasoline left he turned on his radio and determined that he was in an "A" quadrant. Still believing himself to be East of the field, he continued to fly in a westerly direction. Unfortunately he was in the western "A" quadrant, and the beam soon began to fade out. He realized his mistake, but by now his fuel was exhausted, and he was forced to land in a corn field. Checking his navigation with a farmer, he found that he was *seventy* miles due west of destination.

The plane was undamaged, but the farmer filed a claim for \$100 for damage to his property, and the Navy had to send a truck and working party nearly 250 miles to disassemble the plane and return it to base.

 *Grampaw Pettibone says:*

It can happen to you! This pilot showed very poor judgment in not planning his flight to allow for a safe margin of fuel upon arrival at his destination. Had he paid closer attention to his navigation during the last leg of his flight, moreover, and kept a log of easily discernible check points, he would have realized his off-course position long before he became lost and was up against it.



F4U Take-Off Accident

The plane pictured above stalled immediately after leaving the catapult—probably due to a short, quick pull on the stick. Improper tab setting is another possible cause.

COMMENT:

Before any take off—CHECK YOUR TAB SETTINGS. Immediately after take off follow these precautions:

DON'T MAKE A STEEP CLIMB

DON'T MAKE A STEEP TURN

Remember that spins and stalls are the leading cause of fatal accidents in the F4U. In the last nine months there were twenty-six such accidents. Pay particular attention to avoiding stalls when close to the water or ground. Once you stall at low altitude there isn't much that you can do about the situa-



First Navy fighter plane to be powered exclusively by jet engines, the Phantom XFD-1 is propelled by Westinghouse gas turbines. Designed for carrier operation, the XFD-1 does better than 500 mph and may herald faster Navy jet propelled planes of future.

NEW ENGINES, HIGH SPEEDS CHALLENGE DESIGNERS

TURBINE propelled naval aircraft may soon surpass the speed of sound—flashing from carriers to targets and back again in less time than “old” type combat planes would use for a one-way trip.

This doesn't put present combat planes in the steam-roller category, but it does mean some rough competition for the reciprocating engine. The XFD-1 Phantom is reported to have attained speeds in excess of 500 mph, using turbine jet engines.

The British Gloster Meteor, powered by gas turbines, now holds the world's speed record of 606 mph. Designers warn, however, that higher speeds will mean many changes in present designs.

Speeds surpassing the velocity of sound, approximately 760 mph, present new problems. Compressibility and other problems related to supersonic speed must be mastered by fundamental research. Swept back wings or other radical design changes must be adapted as new types of power plants develop.

Naval planes of the future may utilize both the jet and propeller combinations. Even if the compound engine goes by the board, many scientists feel that radically designed propellers can fly at speeds in the supersonic range.

All of the engines listed here are those which are now propelling aircraft or missiles and those which may someday be adapted. Curiously enough,

all of these are internal combustion types where fuel is burned within the engine to raise the temperature of entrapped air under high pressure.

This power is applied to propulsion either through a propeller or through a backwardly directed small area jet of high velocity exhaust gases. Essentially, these two methods of propulsion are identical in principle.

The propeller acts upon a large mass of air, increasing its velocity by a small amount to produce thrust. The jet employs a very small mass of gas and imparts a high velocity to it.

Piston Engines, by adapting turbines and jet exhausts, will put up a good fight before retiring from the picture. Use of jet exhausts has already served to speed up our combat planes by 10 to 15 mph.

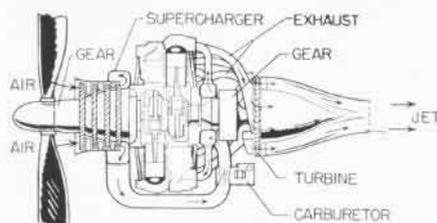
Even greater powers are possible when energy normally wasted in the

supercharger and assists in driving the propeller since the supercharger does not require all the energy left in the exhaust.

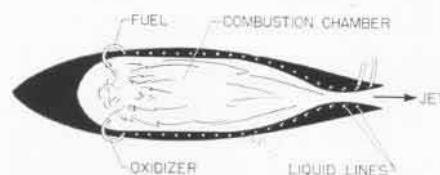
Any residual power can be used in the form of jet exhaust. The power recovered affects the performance of the engine throughout its operating range. Such recovery is not dependent on the speed of the airplane, power is increased for high speed operations, and specific fuel consumption is reduced in cruising operations.

A new turbo-supercharger for the R-2800 engine is now being evaluated on the FG-3. It enables this engine to develop sea level military power at 40,000 feet, an extension of the plane's critical altitude of over 10,000 feet.

The Rocket, simplest of all power plants, is the only type so far developed which supplies propulsive effort outside the earth's atmosphere. It will probably someday be used for inter-planetary



exhaust is used to drive an exhaust gas turbine. This turbine is coupled to the propeller shaft. Thus it drives the



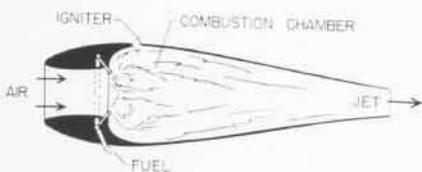
and fast, high altitude thin-air travel. The power generation system is a simple combustion chamber where the fuel and oxidizer are injected and

burned. The propulsive system is a simple jet. This engine can use liquid fuel along with an oxidizing medium or a solid fuel which contains oxidizer mixed with it.

Endurance at present is a matter of minutes since the oxidizer weighs approximately seven to eight times the fuel required. The German v-2, with a 200-mile range, is the ultimate in present day rockets. At present, our uses are confined to assisted take-off and to rocket-propelled pilotless missiles.

Ram Jets use atmospheric air for oxidizer. Air enters at the nose of the unit and is diffused, causing a ram pressure. Fuel is injected and ignited and a high velocity exhaust gas jet produces a forward propelling force.

This engine produces no thrust under



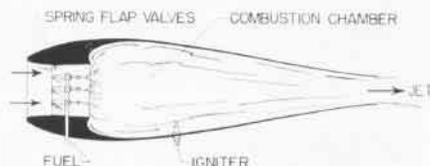
static conditions and very little at moderate speeds. At supersonic speeds, however, high pressure ratios can be developed.

Designers say the engine can be adapted to aircraft designed to fly from two to four times the speed of sound. Any aircraft using this type of propulsion must be launched at very high speeds by auxiliary means.

Aeropulse Engines powered the German "Buzz" or v-1 bombs. In this type power plant, ram pressure fills the combustion chamber with air which flows past spring flap valves. Then fuel is injected and ignited. The explosion closes the valves and forces the burning gases rearward.

As the pressure drops, the valves open and the cycle is repeated. Thus

combustion takes place as a series of explosions causing an intermittent pulsing jet instead of a steady stream of



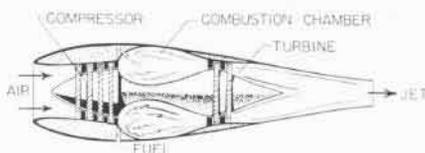
high-velocity gases pouring out back.

The explosions pose a vibrational problem as well as causing a loud disagreeable noise resembling the sound of a one-lung gasoline engine. This type of engine produces small static thrust and much better thrust at low speed than the ram jet.

Turbine jet-propelled Gloster Meteors were able to catch and destroy many of the bombs using this type of propulsion.

Gas Turbines with jet propulsion are now being used where high speed and rate of climb are more important than efficiency and long range. This turbine compresses air to a much greater extent than is possible with a ram jet or pulse engine.

The gas turbine is used to drive axial flow or centrifugal compressors mounted on the same shaft. This provides a steady supply of compressed air for continuous combustion. The turbine absorbs only a part of the jet energy and the resultant is an open cycle gas turbine combined with a reaction motor.



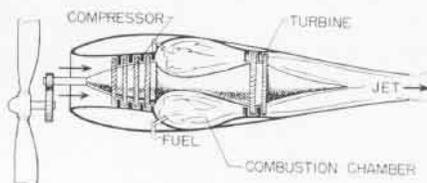
Due to well-defined limiting temperatures within, this engine will probably not be applied to aircraft travel-

ing much over one and one-half to two times the speed of sound until some method of turbine cooling is provided.

Higher permissible compression ratios make the economy of this power plant much better than that of the ram jet and the pulse engines. The turbo-jet has low static thrust and poor specific fuel consumption at low speeds. At very high speeds this engine has extremely high power coupled with moderate fuel consumption.

Turbo-propeller units are essentially the same as the turbo-jets. The only change has been in the means of propulsion. Gears have been added which drive a normal propeller.

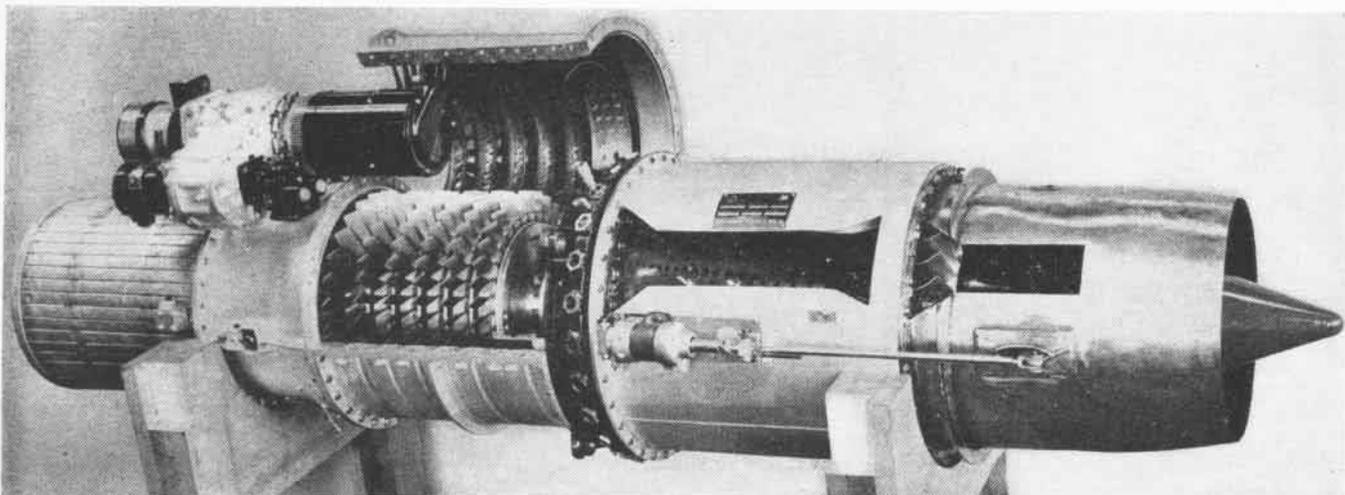
Energy left over in the exhaust stream after extracting the energy required by the propeller is used to form



a jet of high velocity gases out the rear. The energy generator portion can be made more efficient than that of the turbo-jet since higher compression ratios can be tolerated.

Efficiency of this engine at full power is better than that of the present piston engine. Specific fuel consumption is close to 70% of the compound engine's consumption when operating at full power with water injection.

The very low weight and low resistance of this unit when installed in an airplane in a measure compensate for poor specific fuel consumption at cruising. Turbine blade cooling and heat regeneration will ultimately produce more economical turbine engines for powering long-range naval combat planes.



CUTAWAY OF 'PHANTOM'S' WESTINGHOUSE 19B SHOWS AXIAL COMPRESSOR AT LEFT NEAR UNIT'S NOSE, SMALLER TURBINE NEAR THE JET

DID YOU KNOW?

USN Officers Return to College Maximum of Five Terms to Be Allowed

College training for a maximum of five semesters is planned for officers who transfer to the Regular Navy. Officers selected for retention who have not had more than two years of college will be assigned to one of 52 NROTC institutions for further study.

Back to school this fall will go 650 naval aviators who meanwhile will maintain their flying skills. From two to five semesters will be assigned on a sliding scale, according to the amount of previous college training. Major features of the Navy's plan for peacetime education are based on recommendations of the Holloway Plan.

While the semesters allowed will not enable an officer to obtain an academic degree, he will be assured of getting basic essentials. He will study mathematics through solid geometry and trigonometry, become proficient in written and oral English and complete a one-year course in college physics.

He will also complete general educational courses elected by himself and approved by college authorities and the Commanding Officer of the local NROTC unit.

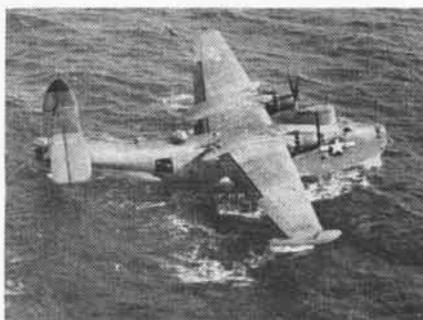
Officers will be assigned to NROTC colleges according to their availability and not by request. They may be returned to their original colleges, but crowded universities will not permit the return of all eligible officers to school this year.

This schooling will give officers the academic background to enter the Navy's line courses and to continue their professional careers. The General Line School has been established at Newport, R. I., to broaden the professional knowledge of transferred reserve officers and Naval Academy graduates.

Jax PBM Rescues Sick Mariner Wrecks Stabilizer on Its Mercy Task

NAS JACKSONVILLE—A PBM operating from VP-208 here landed on rough seas off the Florida coast and flew to a land hospital a seriously-ill sailor on the merchant ship *SS Cape Meridith*. The plane damaged its horizontal stabilizer so that it required complete replacement.

The Navy and Coast Guard at Miami, Mayport and Jacksonville all cooperated in rescuing the man, whose acute appendicitis was growing worse and re-



PBY PICTURES PBM LANDING FOR RESCUE

quired shore-based medical assistance.

Miami Coast Guard first received the emergency call for help via CW radio on 8280 kcs. The call was relayed to the air/sea rescue unit at Mayport, which dispatched the Coast Guard *Dumbo*, PBY-5A, for the ship, 178 miles out. TWX communications were used between shore stations, on an emergency circuit network.

Jax operations office controlled the operation, sending out the PBM, which rendezvoused with the ship and the PBY-5A. Due to rough water, the *Cata-*

lina pilot decided against trying to land. The *Mariner* landed in the ship's wake, took the sick man from a ship's boat and successfully took off with JATO.

The man was taken to the Naval Hospital at Jax and his life was saved. Although control of the operation centered on shore, the pilots of the two planes were given the final authority to decide whether they safely could bring their planes down to effect the rescue.

Carriers Receive Unit Citations Presidential Award Goes to Eight Ships

Hard hitting carriers and air groups of Task Forces 38 and 58 were cited recently when 13 ships were named to receive individual unit citations and commendations.

The Presidential Unit Citation will be awarded to eight of the 13 carriers. These ships include the *Essex*, *Hornet*, *Lexington*, *Bunker Hill*, *Yorktown*, *San Jacinto*, *Cabot* and *Belleau Wood*.

Navy Unit Commendations will go to the *Enterprise*, *Hancock*, *Wasp*, *Cowpens* and *Langley*. The *Enterprise* previously received the Presidential Citation for her record in the early days of the war.

Listed below are the ships receiving the awards and the dates of operations for which these awards will be made: Air Groups attached on these dates also receive citations:

ESSEX—August 31, 1943, October 5-6, 1943; November 11 to December 5, 1943, January 29 to February 23, 1944, May 19 to 23, June 11 to August 8 and September 6 to November 14, December 14 to 16, 1944; January 3 to 22, February 16 to March 1, March 18 to May 24, July 10 to August 15, 1945.

HORNET—March 29 to May 1, June 11 to August 5, September 6 to 24, October 10 to November 22, December 14 to 16, 1944; January 3 to 22, February 16 to June 10, 1945.

LEXINGTON—September 18, October 5-6, November 19 to December 5, 1943; March 18 to April 30, June 11 to July 5, July 18 to August 5, September 6 to November 6, December 14-16, 1944; January 3 to 22, February 16 to March 1, June 20 and July 10 to August 15, 1945.

BUNKER HILL—November 11, 1943 to February 23, 1944, March 29 to April 30, June 11 to August 5, September 6 to October 21, November 11 to 25, 1944; Feb. 16 to May 11, 1945.

YORKTOWN—August 31, October 5-6, November 19 to December 5, 1943; January 29 to February 23, March 29 to April 30, June 11 to July 28, November 11 to 19, December 14 to 16, 1944; January 3 to 22, February 16 to 25, March 18 to June 9, July 10 to August 15, 1945.

SAN JACINTO—May 19-23, June 11 to August 5, August 31 to September 18, October 10 to November 22, December 14-16, 1944; January 3 to 22, February 16 to April 27, May 12 to June 10, July 10 to August 15, 1945.

CABOT—January 29 to February 16, March 29 to April 30, June 11 to August 5, September 6 to 24, October 10 to November 25, December

SHOW ME THE WAY TO GO HOME

RADIUS OF ACTION

Depart NAS TRINIDAD at 1200 local time, to fly a geographic section search.

Given:

1. Search geographic sector 045° to 135° for distance of 600 miles.

2. Make good 180k GS on track 045° True.

3. Sunset NAS TRINIDAD 1940 local time.

At 1430 you receive orders to maintain track 045° True until such time as necessary to turn and proceed to NAS ESSEQUIBO RIVER arriving 15 minutes before sunset.

Given:

1. NAS ESSEQUIBO RIVER, bearing 146° True, 303 miles from NAS TRINIDAD.

2. Wind 20k from 045° True.

3. You make good 200k., TAS.

What is time of turn?

(Answer on Page 40)

14 to 16, 1944; January 3 to 22, February 16 to 25, March 18 to April 8, 1945.

BELLEAU WOOD—September 18, October 5-6, November 19 to December 5, 1943; January 29 to February 23, March 29 to May 1, June 11 to 24, September 8 to 18, October 10 to 25, 1944; February 16 to June 10, July 10 to August 15, 1945.

The following received the Navy Unit Commendation:

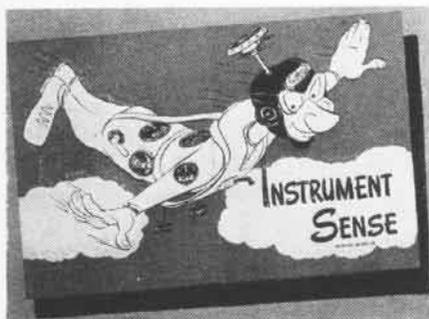
ENTERPRISE—November 19 to December 5, 1943; January 29 to February 20, March 29 to April 30, June 11 to July 5, August 31 to September 18, October to November 22, 1944; January 6 to 22, February 16 to March 19, April 7 to 13, May 7 to 14, 1945.

WASP—May 19 to 23, June 11 to July 27, September 6 to November 6, November 14 to 19, December 14 to 16, 1944; February 16 to March 1, March 18 to 21, July 18 to August 15, 1945.

HANCOCK—October 10 to November 25, December 14 to 16, 1944; January 3 to 22, February 16 to March 1, March 18 to April 16, June 20, July 10 to August 15, 1945.

LANGLEY—January 29 to February 23, March 29 to April 30, June 11 to August 8, September 6 to 24, October 10 to November 25, December 14 to 16, 1944; January 3 to 22, February 16 to 25, March 18 to May 11, 1945.

COWPENS—October 5-6, November 19 to December 5, 1943; January 29 to February 23, March 29 to May 1, June 11 to July 1, September 6 to November 19, December 14 to 16, 1944; January 3 to 22, February 16 to March 1, June 20, July 10 to August 15, 1945.



NANEWS ARTIST ILLUSTRATED SENSE BOOK

Instrument Sense Pamphlet Out

Sometimes It's Handy to Know Just How

Contrary to what that red-haired Texan says, instrument flying is here to stay and you don't have to be a four-headed pilot to use it.

This truth is pointed out in the Navy's newest training pamphlet—*Instrument Sense*—23d in the series of *Sense* pamphlets issued by DCNO (Air). It can be ordered through customary publications channels as NAVAER 00-800-28.

The profusely-illustrated pamphlet hammers on the Navy's flight doctrine: "The only way to fly instruments is without conscious mental effort." It points out that the "ostrich method" of flying weather—staying on the ground till the thing blows over—is not necessary to a pilot who knows his instrument flight and licks vertigo by training himself to maintain orientation by vision through instruments.

NAS TILLAMOOK—The ex-Navy blimp, L-11, was flown south to Moffett field recently and turned over to the Hughes Aircraft Corporation. It was used to advertise the Hughes production, "The Outlaw," featuring a well-rounded actress.

Restricted

EX-NATS PILOTS TO AID RESERVE

RESERVE aviators who live in remote areas may soon be able to participate in the Air Reserve Training Program. According to present plans, former NATS pilots will provide weekly service from universities and other large centers.

Transportation on week-ends from areas where there are no flying facilities will guarantee many good pilots for the Air Reserve. Utilizing B4D and other aircraft, multi-engine pilots will provide a needed service while maintaining flight proficiency.

Syllabus flying began last month as the Air Reserve officially swung into action. The 22 air stations in the Reserve Training Command held open house on 1 July to celebrate the beginning of the program. Visitors watched continuous movies, moved controls on Link trainers and gazed at naval combat planes.

Besides regular air group tactics, Reserve pilots will maintain proficiency in instrument flying. This time will be sufficient to maintain CAA ratings. Syllabus flying will keep groups on a 30-day fleet readiness basis.

● **NAS St. Louis**—Training films are now being used as a supplementary training measure by the CPO's in charge of the check crew and line maintenance. The radio crew is engaged in converting a section of hangar for a radio-radar shop.

Approximately 30% of the planes aboard for the Reserve program have been marked and painted according to recent instructions. Although no flagrant infractions have occurred, the tendency of the chosen few to flat-hat will be subdued by this new color marking system.

● **NAS GLENVIEW**—It seems the word is getting around.

Requests have been pouring in to Air Reserve Command headquarters for duty at the 22 air stations throughout the na-

tion. The latest request comes from Shanghai, China, from an SSMB3C. He wishes to know if the Organized Reserve will train him to work on new-type engines such as used in jet and rocket powered planes.

Although jet and rocket planes are still in the experimental stages, the Air Reserve will use the latest and most up-to-date equipment. When such planes of the future are available, they will be included in the Air Reserve Training Program.

● **NAB SAN DIEGO**—Although many pilots in the Phoenix-Tucson area are interested in the program, very few have reported in due to long-distance transportation difficulties. Records indicate as many reserve pilots in the Arizona cities as in the San Diego area. To maintain their interest, it has been recommended that this unit be assigned two B4D's for the use of Reserve NATS pilots. The ex-NATS and multi-engine pilots could maintain flight proficiency in type and at the same time provide more pilots for the program.

● **NAS DALLAS**—Piloted by Reserve aviators, TBM's and F6E's from this station were recently flown in an air show at Cushing, Okla. A near tragedy furnished an added thrill when an SNJ had complete engine failure on take-off. The plane narrowly missed spectators crowded around the field boundaries. There was no injury to personnel. A close supervision policy for check-outs has paid off as there has been no accident of any type involving Air Reserve Pilots.

● **NAS GROSSE ILE**—In an effort to stamp out dangerous flight conduct by pilots of the Reserve Training Program, the Operations Department is working closely with the Training department. In addition to hanging cartoon posters in conspicuous spots, a statement has been prepared advising pilots of the consequences of unsafe flying. These statements must be signed by each pilot before he is permitted to fly. A program is underway to encourage the general public to report any violations which they may witness.



FOUR MEMBERS OF ORGANIZED RESERVE AIR GROUP SHOWN CHECKING IN AT ANACOSTIA



CHARTS ARE AMENDED FROM HO REPORTS

Norfolk Chart Room Among Best

Continuous Changes Keep Charts Dated

NAS NORFOLK—Rated by the Air Navigation Division of the Hydrographic Office as one of the most efficient, is the Operations Chart Room of this air station.

The mission of this activity is to provide complete navigation and airport information for all aircraft operating from this station.

The chart room stocks a complete coverage of the United States, Canada, Alaska, the Caribbean area and the north and east coasts of South America.

Each station plane is outfitted with adequate charts, publications and instruments to insure its safe guidance. These charts and publications are corrected progressively with the latest HO Notices and Memoranda for Aviators.

The vast supply of material is kept in a minimum of space by means of "pigeon hole" cabinets and lockers. The more frequently used charts are folded to convenient sizes to enable a maximum of 100 charts per pigeon hole.

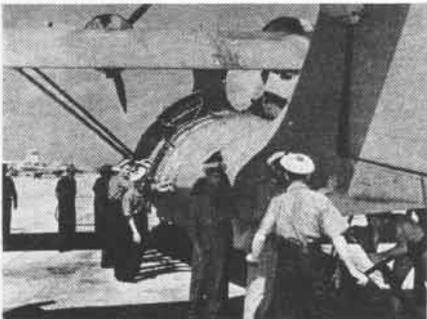
Charts of the United States are corrected through the Bi-Weekly CAA Airman's Guide. Approximately 2000 to 2500 charts are corrected every two weeks.

Changes in radio ranges, tower frequencies, voice calls and other aviation necessities are made daily.

French Students Turn Homeward

Lend-Lease Training Terminated at Jax

NAATC JACKSONVILLE—The last of the French lend-lease aviators who trained under American tutelage have returned to their homeland. Their de-



FRENCH PICK UP P-BOAT BEACHING AT JAX

parture closes out the training program which commenced in 1943 and provided the pilot-hungry French forces with aviators through the darkest days of France's fight for freedom.

In the early days of the lend-lease program, most of the student pilots were Frenchmen who had escaped from the hands of the Vichy government and come from France itself. Later stages saw most of the aspirant aviators coming from North Africa. Regardless of their origin, all the students were reasonably proficient in the English language when they entered flight training and all took the prescribed course of instruction before receiving their wings.



LT. MCGINNES TAKES JAP TO VISIT KIN

Marines Aid Blind Jap Prisoner

POW Flown for Last Visit with Family

VP-116, IWO JIMA—A Japanese prisoner who is rapidly losing his sight was recently rushed home for a last look at his family before he goes totally blind. Sergeant J. Hasegawa, now held as a witness for the war crimes trial in the Bonin Islands, lost the sight of his left eye in an explosion of a radio tube.

Although he received the best of American medical care, the sergeant is gradually losing the sight of his right eye and, in a few weeks, will be totally blind. Through the kindness of the Navy and the efforts of Col. P. M. Rixey, USMC, Commander of the Bonin Occupation Force, he was flown home by NATS to spend the few remaining days of his eyesight with family and friends at Yokohama.

Patrol Squadrons Designated VP

Action Follows Directive Changing Type

In deference to Aviation Circular Letter No. 72-46, patrol squadron designations were changed from VPB to VP as of 15 May 1946. Change of plane type designation from VPB to VP was made known in Aviation Circular Letter No. 43-46 (NANews June)

This One Will Give You Creeps

A Story of Maggots and Men in Hawaii

U.S.S. SAIDOR—During a short availability period in Pearl Harbor, the *Saidor* was assigned a berth next to the garbage disposal plant. Not infrequently, when garbage was being loaded, some would spill over the side of the barge and drift around the *Saidor*.

One morning, during an inspection of the ship's sides, several white cracks in the paint work were noticeable. A closer inspection, however, showed the phenomenon to be streams of maggots making their way aboard the vessel.

A few hand sprayers and the fire hose were all that the ship had to combat these crawling pests, so the battle was soon getting out of hand. Reinforcements were called in the shape of the shipyard sanitation department. The tide of battle was turned and victory achieved by putting a large mobile sprayer with 300 feet of hose on the flight deck.

By spraying the entire side of the ship with DDT, and by clearing the dock and surrounding water of garbage, no further trouble was evidenced. Luckily, the pests were kept from the interior of the ship, but many of the ship's company got that "crawling" feeling anyway.

NATS Flies New National Routes

Non-Stop Coast-to-Coast Flights Daily

NAS OAKLAND—Naval Air Transport Service has inaugurated a daily non-stop flight between Washington and San Francisco in its interior schedule.

Four-engined *Skymasters* provide ultra-fast air service for official mail and military and foreign service personnel between the nation's busiest coastal points.

Trans-Pacific flights will make connections for speedy trips to Honolulu, Guam, Manila, Shanghai and Tokyo.

Previous transcontinental service with stops at Kansas City, Chicago, Detroit, Cleveland, and Columbus will be discontinued. New routes operating since June 15 land at Naval Bases at San Diego, Corpus Christi, and Pensacola.

NATS emergency service for Navy units was recently put to use in the Pacific. An *B4D* was used to fly an engine and spare parts to two grounded Navy planes in Australia, part of a unit closing out South Pacific bases declared



surplus by the Navy for future use.

Following the route used during the war, the plane made the run from Guam to the continent "down under" via Peleliu, Manus and Milne Bay, a round trip of 11,000 miles.

To complete the Alameda-Manila flying boat route, the *Philippine Mars* joined her sister ships the latter part of June. The huge transport flew to Alameda from the Martin Company in Baltimore immediately upon completion.



WAVE ORDERLY TESTS MIKE BEFORE A HOP



MUSIC PLAYS FROM OVERHEAD SPEAKERS

Music and Movies on NATS Runs

PA Systems Gives Flight Instructions

A public address system has been installed in the VR-1 "Hotshot" B5D, designed so that passengers can have music and possibly movies on cross-continent flights.

Created in the VR-8 Radio Maintenance Shop, the novel system is equipped with two microphones, one in the pilot's compartment and one in the cloak room aft of the main cabin. Between musical programs the pilot and orderly can announce flight instructions to the passengers during flight.

The use of inverters on the 24-volt dynamotor will permit the latest sound motion pictures to be shown on long, monotonous hops.

This is the first time any such system has been tried in aircraft, and the soundproofing of the plane had to be removed in order to install the three loud speakers, 10 feet apart, in the overhead of the main cabin.

If the initial tryout proves successful, similar systems will be placed in all coast-to-coast NATS planes.

Restricted

Movie on Typhoons Ready to Use

Latest Word on Aerology Conditions

The latest movie in the Aerology Series, No. MN1191, entitled "Typhoons and Hurricanes" is now available for general distribution. The typhoon and hurricane season is here once again and cognizant officers are urged to take immediate steps to insure that all hands have the opportunity of seeing this excellent picture.

Islands Plotted by Aerial Flares

Hydrographic Office Makes New Charts

Using flares dropped from airplanes at night, the Hydrographic Office of the Navy, in cooperation with the Army Engineers, Bureau of Aeronautics, and the Coast and Geodetic Survey, has successfully completed an experiment to determine the exact distances between points in Florida and the Bahama Islands.

Florida east coast residents have been amazed at flashes of light on the horizon for months. The flashes were made by 300,000-candlepower flares dropped from planes and used by the survey party in computing geographical positions of various islands which were found to be inaccurately located on navigators' charts.

The islands are far beyond the mainland's horizon, and cannot be located by the normal surface methods used in surveying. Like most other island groups, they were originally located by astronomical means, which proved to be inexact because of the effect of great land masses on the instruments.

The flares were dropped from Navy aircraft flying over the Gulf stream at night at 17,000 feet. Observers stationed at 50-mile intervals along the Florida coast, and other observers in the Bahamas, measured angles to the flares to determine the positions of the islands from the coast.

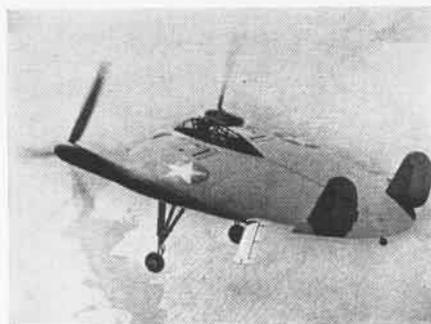
Present maps and charts may be in error as much as a mile. It is expected that the computations of the survey parties will establish the distance within a few feet.

New FSU Has Large Speed Range

Fighter May Be the Fastest on Props

The high-low speed XF5U-1, begun in 1933 by Chance Vought Aircraft, is now ready for testing. The new experimental and research fighter, which may become the fastest prop-propelled aircraft, has the remarkable characteristic of being able to fly at extremely low speeds.

Shaped like a flying beetle, the XF5U-1 has a speed range from 40 to 425 mph., incorporating two R-2000-2 two-speed engines. With the addition of water injection, the plane is ex-



BEETLE-SHAPED FIGHTER HAS NO WINGS

pected to maneuver at from 20 to 460 mph.

When gas turbines are developed to the point of installation in Navy planes, the new fighter is expected to be able to hover in the air like a helicopter or fly with the jet planes at 550 mph.

The first tests were made with a low-powered, wood and fabric prototype, designated the V-173, in 1942. These tests proved the design both usable and practical, and the structure can be made much stronger than conventional aircraft. Because of this increased strength, the prone position for the pilot has been considered.

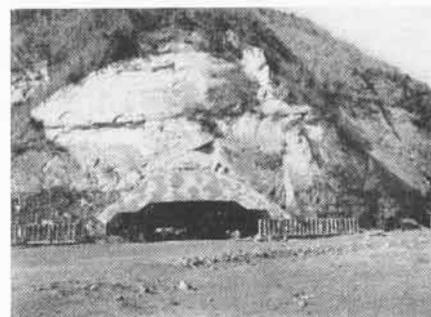
A redesigned transmission system turns the two props at one-fifth the revolutions of the engines. A new feature permits one engine to drive both props in case of the failure of one.

Marines Find Jap Navy 'Dug In'

Use Abandoned Caves for Bomb Storage

MAG-31. The Imperial Japanese Navy was going underground when the Pacific War ended as evidenced by a 25-mile system of caves discovered at the Yokosuka Marine Air Base. Various-sized caves housed hangars, shops, warehouses and living quarters of the First Technical Depot of the Japanese Navy.

In one cave system a complete emergency administration building included officers' quarters, communications, and a standby power plant. Another was a complete repair shop for "Kamikaze" torpedoes. Apparently the caves were built and equipped in a short time as bombs, paints, engines and other unrelated parts were stacked together. MAG-31 now uses one of the caves.



CAVE HANGAR HOUSES 'GEORGE' ENGINES



SPEEDY SERVICE IN RESPECT TO GASSING AND REPAIRS KEPT SUCH SHORT RANGE AIRCRAFT AS THIS FM-2 MOVING ON SCHEDULE

VRF SQUADRONS TO BE CHANGED BY NATS MOVE

FROM war waging to war wearies—that's the tale of the three-year-old Ferry Command. And, like most outfits, the NATS subsidiary is finding the glory of peace has problems more manifest than the most gripping of wars.

Particularly is this so with VRS-1 and its detachments. VRS-1 is the service squadron of the ferry outfit. It plugged through the war operating on a shoestring in such desolate places as Madera, California, and Mayport, Florida, taking care of new aircraft.

August 15, 1945, rolled around and personnel of the service units awoke with the smelting-pot hangover of having to nurse, even nipple-feed, thousands of the Navy's suddenly declared surplus aircraft back to the Valhalla of an RFC disposal center.

It's easy to see how much difference there is between servicing the comparatively minor aches of recently as-

sembled aircraft which, in itself, is no laughing matter and applying gas-line tourniquets and structural stitches with only the minimum of sutures to soon-to-be-stricken airplanes.

The story goes, and it's neither fabulous nor fictional, that the Ferry Command is never allowed to touch an airplane until after combat and training units have deemed it unsafe for flight. If such is the case, you ask, how do the ferry pilots maintain a record of so many safe flights (99.301%) and few accidents in relation to deliveries (75,000,000 miles)? To borrow the phrase of a celebrated ventriloquist's wooden dummy, "Don't think it's easy."

Thorough check-up and servicing at each stop is the answer. The short-range aircraft which were the major part of the delivery totals provoked the installation of ferry service units at interim points across the continental ferry routes.

To head these units old time pilots, new to the Navy but who had long serviced their own aircraft, and "mustangs," ex-Aviation Pilots with long time Navy flying experience, were assigned. Men were needed in the fleet, so these officers were allowed only a personnel complement which was far below their need.

Those men who were detailed to



FERRY UNIT MOVED SEA AS WELL AS LAND PLANES. HERE A PBM LIES AT A TEXAS LAKE

VRS-1 were seldom rated. In 1944, the majority of personnel in the field were Tarmac—boots awaiting flight training. Training was always parallel in importance to the service of planes.

A shortage of personnel wasn't the only problem—in fact, it wasn't even the major one. Limited facilities and shortage of spare parts was the number one headache.

Making a round trip of the service units about once every three days, a single B4D was the only means of transporting aircraft parts for a long time. Before the B4D was requisitioned, the VRS pilots had loaded the spare parts in their ferry planes and made the delivery personally.

Quite often, the B4D would arrive late in the evening at an interim stop where a plane was grounded for the proverbial "want of a nail." No delaying until morning. Though understaffed and overworked, the VRS-1 detachments would work on through the night, and morning would find the plane ready for flight.

WHAT with the few facilities available, engineering officers and crews were forced to display one trick of ingenuity and daring after another in the successful execution of ferry demands.

Take, for instance, the time a PBM made an emergency landing in an artificial lake near El Paso, Texas. Insufficient water area (nothing unusual in Texas) forced the use of JATO long before jet had been accepted as standard for PBM takeoffs. Before the take off was executed, a number of the ferry service personnel scoured the water lane for depths and stumps in the water. Odd work for an aviation mech—searching a Texas creek for stumps—but surprises came dime a dozen in ferry work.

When a TD2C crashed three miles from the nearest road, the VRS-1 detachment at Tulsa struggled to get the plane out through woods and across

fields. Finally, taking the wings off, they took a sturdy axe and cut a trail such as no aircraft had blazed before.

Repairs were made on the spot to a TBM which landed in an oat field in the Laguna Mountains between El Centro and San Diego. A 450' runway was cleared and takeoff attempted. The ground proved too soft and the plane nosed up.

A new propeller was shipped in from El Centro and takeoff attempted once again. The ground had hardened since the first attempt, so the plane got off fine. Due to surrounding terrain, great emphasis was placed on getting airborne quickly. After the plane cleared the deck, the pilot had to navigate down a narrow draw and then make a speedy climb to get out of the valley.

Because the latter third of the transcontinental ferry route bordered the Mexican nation, planes were frequently making emergency landings and crashing in Mexico. Getting assistance in the Latin American country wasn't hard—but getting intelligent assistance was. An interpreter would always have to be hired to supplement the sagebrush diplomacy of the FSU's.

In 1944 a cold front moved into the southwest area of the country and remained for six days. The resulting bad weather blocked movement of 160 planes west of Little Rock, Ark. When the weather finally cleared and the planes made ready to depart, the commanding officer of the Army air base at Little Rock left his office and went out along the line to relieve men involved in directing taxiing so that they might expedite movement of the planes.

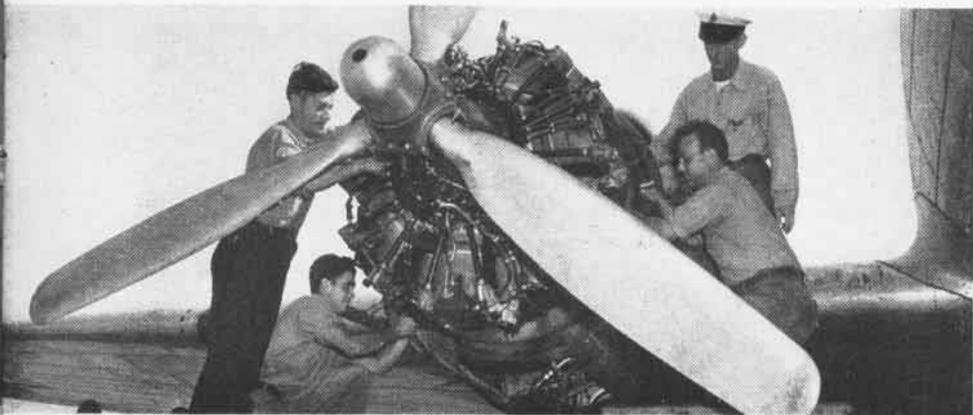
In ferry work, no one was a feather-merchant. As is evident, being lumberjacks, hydrographic and airstrip-evaluation experts, and international diplomats was all in a day's work.

July 1 brought the decommissioning of VRS-1 and the Ferry Command. The original VRF-1 still exists as a component of ComNATSLant and all ferry movements are cognizance of VRS-1.



Instruction for novices went along with actual practice and repair work in FSU's

F8F is moved into Army hangar for major overhaul at a ferry route interim point



OVERHEAD FOR FERRY SERVICE UNIT REPAIR CREWS WAS SELDOM MORE THAN BLUE SKY



MORE THAN A THOUSAND CARRIER-BASED PLANES OF THIRD FLEET STAGED AERIAL SHOW BEFORE MOVING INTO TOKYO BAY ON V-J DAY

NAVAL AIR HAS MANY CHANGES SINCE V-J DAY

AUGUST 14, one year ago, the fleet moved into Tokyo Bay beneath a screen of planes (above) and ended a long, hard war. The might of Navy guns and Navy planes had taken its toll of Jap ships and aircraft, and for the first time the Japanese people were able to witness this might without the fear of violent death.

Carriers like the *Ticonderoga* and *Bennington* lay peacefully at anchor with more Jap flags painted on the sides of their islands than could be found probably in the city of Tokyo, all testifying to the prowess of naval pilots.

But now, a year later, what has become of this great air power?

Where are the men and planes that once held the skies of the Pacific?

PILOTS DEMOBILIZED

Since the end of war the number of Naval air personnel has dropped to less than half of V-J Day total.

With 317,500 men including 49,000

pilots in 1945 all but 135,500 have been returned to civilian life, leaving only 21,500 pilots to fly the Navy's planes.

Additional fliers will be trained under a new system that will add 1500 Navy pilots and 350 Marine aviators a year to the rolls.

All Pre-Flight schools have been closed permanently, and Ottumwa will take its place as the only ground training school in the new syllabus.

PLANES SCRAPPED

Better than 11,000 ex-combat planes of assorted designs, conditions, and sizes sit at Clinton, Oklahoma. A few of them have been sold; others just sit.

Reveratory furnaces at Alameda, Jacksonville, San Diego, Corpus Christi, Norfolk and Miami have been burning part time and full time reducing transport, bomber, and carrier plane fuselages to aluminum ingots.

Thousands of the aircraft that sunk the Jap in the Pacific and the German U-boat in the Atlantic have already been returned to their original raw metal state.

A few, damaged or aged, remain on islands that were once battle fronts.

CARRIER DISPOSAL

The *Saratoga* and *Independence* end their naval careers at Bikini.

The *Enterprise* will be a national relic. Eleven CVE's will be sold for scrap.

Twelve of the largest carriers have

been placed in a reserve status. Such great ships as the *Ticonderoga*, the *Yorktown*, the *Lexington*, the *Wasp*, the *Bunker Hill* and the *Hornet* will be manned by skeleton crews until they may be needed in a national emergency.

Most of the CVE's and CVL's will join these larger carriers in the 16th and 19th standby fleets.

READY FOR ANYTHING

Although the Naval air arm has greatly diminished in size, the same mistake will not be committed twice. With newer, faster, and larger ships and planes, the flying Navy is prepared to do battle anywhere at any time.

In the past year, great improvements have been made in jet-type planes and jet-assisted takeoffs.

Pilotless aircraft, a relatively new field in aviation, has gained prominence in the past year in connection with atom bomb test.

Huge transport planes, like the *Mars* and *Constitution*, carry men and equipment to the many new air bases.

Three super-carriers, *Franklin D. Roosevelt*, *Midway*, and *Coral Sea*, begun during the war have now been assigned to active fleets.

An Air Reserve program prevents pilots released to inactive duty from becoming rusty in flying combat planes.

From V-J Day to its first anniversary, the old Naval air arm was reduced drastically in size but acquired many new weapons with a powerful punch.

109 Stations in Postwar Navy

Status Report Reveals Their Activity

Status of 109 Naval and Marine Corps air stations and auxiliaries in the post-war period has been announced, showing that 29 of them are to be retained in full operation and the rest in varying degrees of activity.

A total of 58 stations will be in fleet operational use, 14 assigned to basic training, 10 to advanced training, 16 to Reserves and 12 for Marine corps.

The following compilation shows the post-war plans for stations not already closed, as of 1 July. The letter F indicates it will be continued in full operation, R reduced operation, M maintenance, C caretaker, I inactivated, S surplus and X disestablished.

FIRST NAVAL DISTRICT—Brunswick I Oct. 1; Charlestown F; Martha's Vineyard 15 Sept S; Newport X (BuOrd); Otis Field C; Quonset Point F; S. Weymouth M; Casco Bay I.

FOURTH NAVAL DISTRICT—Atlantic City F; Cape May S (USCG); Johnsville NAMU F; Philadelphia NAMC F; Mustin Field F; Lakehurst R.

FIFTH NAVAL DISTRICT—Chincoteague R, Dahlgren R, Edenton I Aug 1; Fentress S; Monogram C; Oceana F; Weeksville M; Norfolk F.

SIXTH NAVAL DISTRICT—Charleston X (BuShips); Glyco M.

SEVENTH NAVAL DISTRICT—Key West R; Richmond I.

EIGHTH NAVAL DISTRICT—Clinton S (RFC); Hitchcock M; Houma M.

NINTH NAVAL DISTRICT—Bunker Hill I.

ELEVENTH NAVAL DISTRICT—Brown Field C; Inyokern F; Litchfield Park M; Mojave R; Point Mugu F; Ream Field R; San Clemente C; San Diego F; San Nicholas I; Santa Ana R; Terminal Island R; El Centro R.

TWELFTH NAVAL DISTRICT—Alameda F; Crows Landing I; Fallon S; Moffett Field F; Monterey C; Santa Rosa M.

THIRTEENTH NAVAL DISTRICT—Arlington I; Astoria S; Pasco I; Seattle R; Tillamook M; Whidby Island R; Shelton I.

POTOMAC RIVER NAVAL COMMAND—Anacostia F; Patuxent F.

SEVERN RIVER NAVAL COMMAND—Naval Academy F.

BASIC TRAINING COMMAND—Barin I Jan 1947, I; Brouson I Feb 1947, I; Cabanis F; Chase C; Corpus Christi F; Cuddihy I Nov 1946 C; Ellyson, 1 Jan 47, I; Kingsville I Aug C; Pensacola F; Rodd F; Sauffey F; Waldron C; Whiting R; Ottumwa M.

ADVANCE TRAINING COMMAND—Banana River R; Cecil C; Ft. Lauderdale F; Hutchinson R; Jacksonville F; Lake City S; Mayport (USCG); Miami F; St. Simon F; Vero Beach S.

RESERVE TRAINING COMMAND—Atlanta, Columbus, Dallas, Glenview, Grosse Ile, Livermore, Los Alamitos, Memphis, Minneapolis, New Orleans, New York, Olathe, Oakland, St. Louis, Squantum, Willow Grove, all R except Livermore which will be I on 1 October.

MARINE CORPS—Atlantic I; Bogue M; Cherry Point F; Kinston S; Oak Grove F; Parris Island C; Quantico F; Congaree I; Eagle Mt. Lake I; El Toro F; Miramar F; Gillespie I.

NAB AGANA, GUAM—Fleet Weather Central has been sending two officers a day to the NATS aerology office for training in flight forecasting. Most of these officers are new in the Pacific area and are inexperienced in upper air analysis. Weather Central has also been sending aerographers to the VR-10 office for training in upper air soundings. These men fly the aerograph flight each afternoon and then return to the office for instruction in analyzing the data and preparing it for transmission to agencies using it.

WANTED - NEW BARRIER IDEA

THE BUREAU of Aeronautics is currently faced with the problem of stopping carrier type aircraft having widely different engine and landing gear arrangements. Fundamental arresting gear design has been able to keep pace with the rapidly changing characteristics of carrier aircraft to a high degree of efficiency.

Barriers on the other hand have been little more than satisfactory and in some cases not even that. The advent of tricycle landing gear plus twin propeller arrangements has made the problem of adequate barriers an item which may well affect the future of carrier aviation if a satisfactory solution is not found soon.

The Naval Aircraft Factory has already run tests on several schemes with promising results but each has its disadvantages and considerable further development is needed before practical application may be made. The assistance of engineering talent from industry, both aeronautical and mechanical, has been sought as an aid in achieving the best possible ideas on which development may be undertaken.

The Secretary of the Navy, in



Sometimes conventional planes tear into a barrier, like this F4U on Prince William

ALNAV #227 released 8 May 1946, outlined the value of constructive suggestions and creative thoughts which were submitted during World War II and emphasized the necessity for a continuance of this practice. Naval personnel and civilian employees familiar with aircraft carriers are in a favorable position to help in the solving of the carrier problem and it is hoped that new ideas and suggestions will be submitted.

The basic problem at the present time is the need for a barrier, or if necessary a system of barriers, capable of stopping under all normally expected conditions any of the following types of aircraft:

(a) Conventional tail wheel type—single propeller.

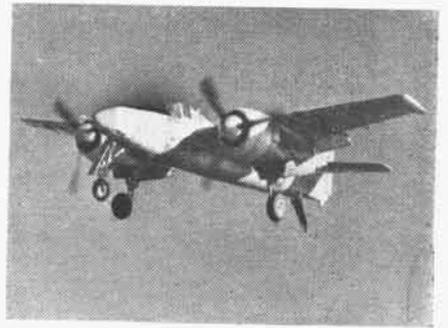
(b) Conventional tail wheels type—twin propeller.

(c) Tricycle landing gear type—twin propeller.

(d) Tricycle landing gear type—single propeller.

(e) Tricycle landing gear type—Propeller-less.

The fundamental requirements of a "Universal" barrier are as follows:



Tricycle landing gear like this F7F present new problem for designers of barrier

1. Reliable function at airplane speeds ranging from 35 to 90 MPH relative to the carrier deck.

2. Reliable function at various airplane engaging attitudes on deck and in free flight up to 18° from bottom of tire to deck.

3. Quick manipulation at will to permit alternately, parking area protection during a landing (barrier up), and the flow of normally arrested airplanes to the parking area (barrier down). The interval between landings is approximately 20 seconds.

4. Stop any of the above listed types of airplanes without hazard to pilot and deck personnel and to do so with minimum damage to the airplane.

Other design considerations would include the rapid replacement or rerigging of the barrier for further operation after it has been engaged, ruggedness, shock resistance of components, and the simplicity of operation and maintenance.

Ideas and suggestions on airplane barriers should be submitted in accordance with ALNAV #227. The Bureau of Aeronautics is the cognizant bureau.

NAS HONOLULU—VR-6 (Guam Based) recently ferried 16 N4D's from Guam to Honolulu for delivery to VR-11 of NATS. These were VR-13 aircraft which had been operating in the forward area for up to 19 months without a major overhaul. Most planes carried a crew of five: plane commander, co-pilot, navigator, radioman, and mechanic plus a selected list of spare parts. Although all cognizant air sea rescue facilities were alerted during the flights, the entire operation had no mishaps.



Catapults will accommodate any carrier type aircraft. Here an FR-1 is ready for launching on the deck of the CVE U.S.S. *Charger*. Note lengthy holdback cable which leads to holdback unit located under cockpit. Bridles used here are double bridles.

Successful operation of catapult procedure depends primarily on the complete coordination and teamwork of pilot, catapult crew and catapult operators. In the following sequence of photographs NAVAL AVIATION NEWS shows some of the steps used in the catapulting procedure. In the main these pictures were made aboard the CVE U.S.S. *Santee*. Picture of FR-1 was taken aboard the U.S.S. *Charger*.

The catapult crews are a group of highly-trained men each of whom is an expert in the various steps which go into the successful catapult launching.

The success or failure of a launching lies in the hands of these men who must operate as a well-integrated team. The catapult officer is an important member of this team and upon him rests all responsibility for safe launchings. NAF PHILADELPHIA trains crews.

It was actually the use of the catapult that allowed the Navy to maintain the high degree of efficiency shown in a final analysis of carrier operation. A CVE being relatively slow, it was the catapult that enabled task forces to keep heavily-loaded bombers in the air almost continually.

Catapulting of pilotless aircraft is a reality. The *Shangri-La* catapulted drones at the atom bomb test at Bikini.

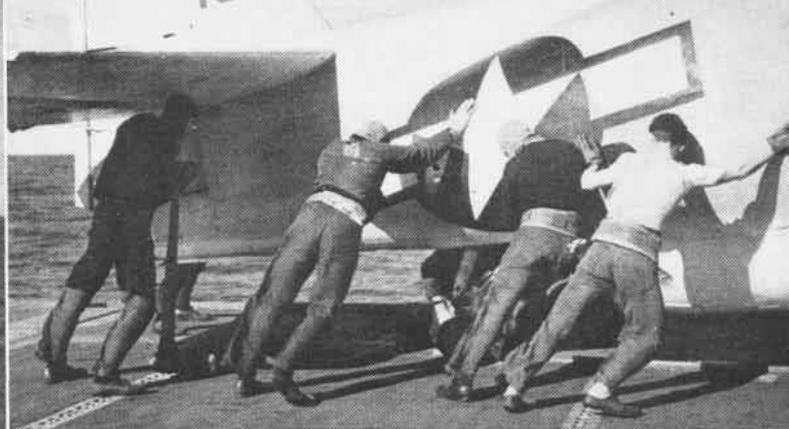


1. Taxiing into position against the stops, this TBF is directed by a crew member. Wire rope seen lying on deck under nose of plane is the bridle. Catapult is of flush-deck type with

entire mechanism located below decks. In case of TBF, a tail dolly is used sometimes to aid in swinging tail end of plane into position against the stop and in straightening the tail wheel.



2. Plane now is about to reach final position against chock. Note that each member of catapult crew has a definite position and is alert and ready to move rapidly in emergency.



3. Crew here is assisting in the final spotting of tail wheel for attachment of holdback unit. Rapidity of the launching depends upon alertness of these crews. Tail wheel should be locked.



4. Crewman attaches holdback unit to tail wheel shackle. Known as "holdback man," he waits to make connection as soon as plane is in position. Teamwork essential for success.



5. While bridle is being attached, the wheel chock is removed and system is being made ready for tensioning. Bridle men stay at their positions until tension is properly set.



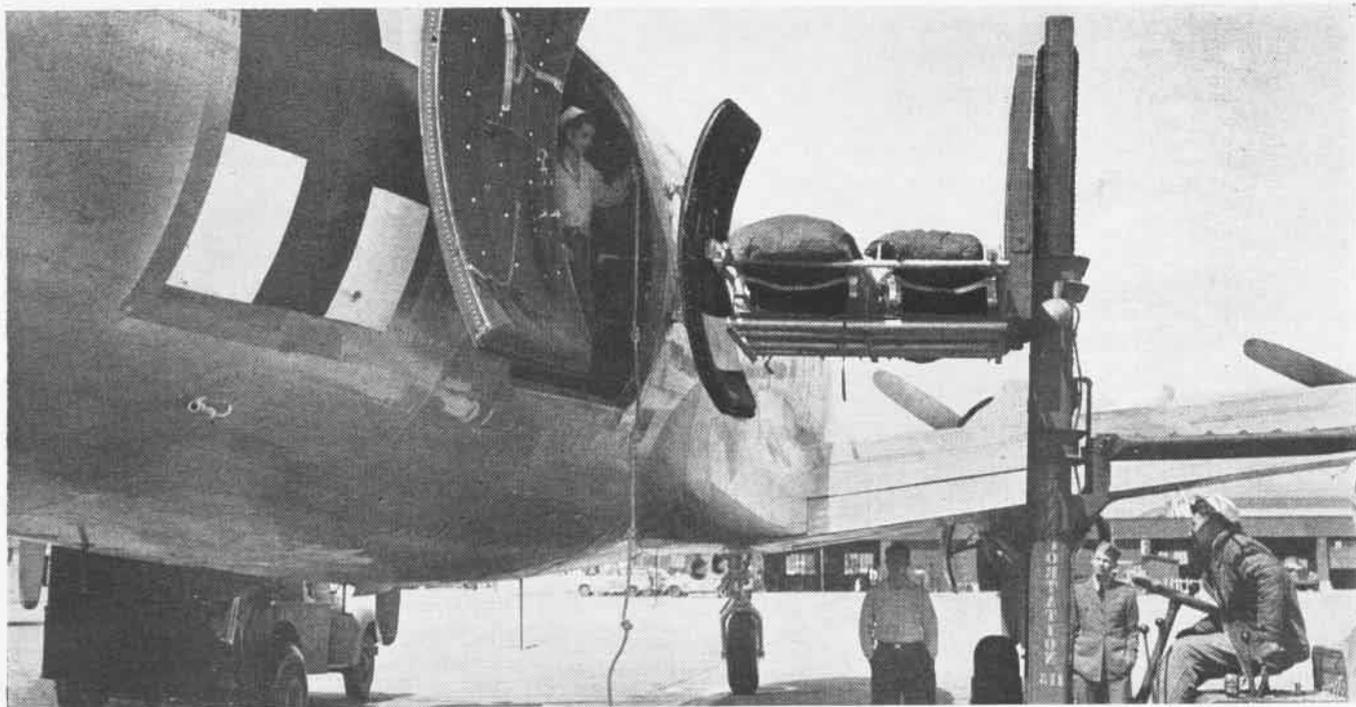
6. Holdback man signals catapult panel board operator "proper tension now applied." New improvements will gain seconds by eliminating this procedure by using automatic tensioning.



7. Signal is given by catapult officer to fire catapult. Signal is relayed to operator below deck. Terrific power of catapult is accomplished by a hydraulic ram under compressed air.

AS PLANE LEAVES DECK, BRIDLE IS CAUGHT BY BRIDLE-CATCHER ATTACHED AT BOW OF CATAPULT, CREW RESET THE CATCHER





WOUNDED MEN ARE LOADED ON THE HOSPITAL EXPRESS AS THE PLANE IS PREPARED FOR A TRANSCONTINENTAL TRIP FROM OAKLAND

AIR AMBULANCES FLY MEN TO HOSPITALS

EASTER Sunday 100 war casualties from Aiea Heights Naval Hospital near Honolulu enjoyed a hot turkey dinner complete to cranberries while enroute to California in one of the world's largest flying boats.

Several days after *Hawaii Mars* landed at Alameda, these same patients were recuperating in hospitals throughout the United States, either close to their homes or benefiting from specialized treatment at the medical centers best adapted for their ailments.

A year after V-J day, NATS transcontinental hospital flights are still at wartime proportions. Named the *Hos-*

pital Express, 15D Douglas *Skymasters* equipped as air ambulances speed hospitalized military personnel from coast to coast on a regular schedule of four round trips a week.

A complete nationwide air network places all Naval Hospitals only a few hours apart. The *Hospital Express* flies from NAS OAKLAND to NAS PATUXENT RIVER in 14 hours, stopping only at Olathe, Kansas, for refueling and picking up or discharging passengers for midwestern medical centers.

Feeder routes make connections with the east-west flights at Olathe to complete the patients' air travel to centrally located hospitals.

Before the Express arrives at NAS PATUXENT RIVER, location of NATS Atlantic Wing headquarters, an R4D air ambulance is already prepared to receive the invalids bound for east coast Naval hospitals.

One plane carries patients northward to medical centers such as Bethesda or Bainbridge, Maryland; Philadelphia; Sampson, New York; Brooklyn; or Newport, Rhode Island. Another south-servicing R4D "feeds" hospitals at Portsmouth, Virginia; Dublin, Georgia; Charleston, South Carolina; or Key West, Florida.

Planes are loaded on their return trip to Patuxent River with the west-bound patients scheduled for the next flight to Oakland.

As many as 900 Naval sick and

wounded were flown to various hospitals in the United States in one month. Since V-J Day, 26,937 sick and wounded have been moved by NATS hospital planes. All flights were completed with a 100 per cent safety record.

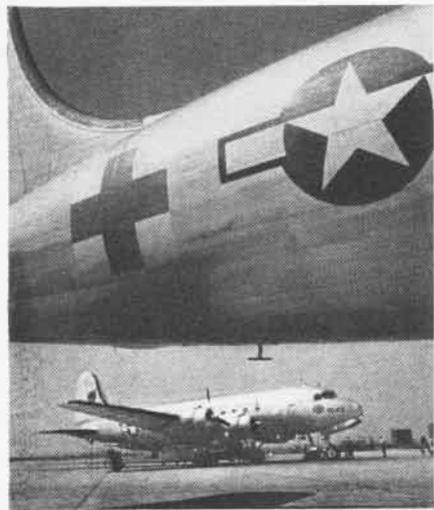
The *Hospital Express* is distinguished externally from other *Skymasters* only by a large red cross painted on the fuselage. Inwardly the air ambulance has been converted into hospital wards.

Tiers of litters, four high, line one side of the cabin while across the aisle are comfortable reclining chairs for ambulatory cases. Each R5D carries 12 litter cases and 22 patients able to travel erect.

An ambulance crew consists of three pilots, a flight nurse, a hospital corpsman and a WAVE flight orderly. The plane is run similar to a regular hospital ward. The nurse and corpsman administer medicine and sedatives and keep constant check on the patients during flight. The orderly serves hot meals, gives flight instructions, and looks to the general comfort of the passengers.

A low altitude must be maintained when lung disease patients are flown. On the transoceanic trips from Honolulu, it was necessary to hang wet towels to maintain the correct humidity.

All planes are equipped with medical needs for any emergency. A medical chest contains plasma, oxygen, drugs, bandages, fluids for intravenous



AMBULANCE PLANES FLY COAST TO COAST



PATIENTS ARE PLACED ABOARD THE MARS

injections plus the usual medicinal aids.

The drastic reduction of hospital trains has laid almost the entire burden of medical transportation on NATS. The job has been done so successfully however, that there may be no future need for either hospital ships or trains.

Bureau of Medicine and Surgery has expressed its pleasure that there is no longer a west coast backlog. Patients have been moved to hospitals throughout the country so rapidly that medical centers such as the one at Oak Knoll are not crowded with men waiting to be moved.

The evacuation of thousands of casualties from Pacific and European battle fronts has proved that air travel is easier on sick and wounded than surface travel for long journeys.

At most of NATS terminals throughout the country, Grey Ladies, an auxiliary organization of the American Red Cross, serve food and beverages to litter patients aboard hospital ships. Ambulatories are fed at the Red Cross canteens inside the terminal buildings.

During any flight of over four hours, either in the United States or enroute



A NURSE ADMINISTERS TO SICK ON FLIGHT

from some Pacific base, at least one hot meal is served all passengers.

The recent installation of a public address system on one of the *Hospital Express* planes adds entertainment to the already present comfort. Radio programs can be heard through the three speaker units located in the overhead, and when necessary, the orderly can give flight instructions that can be easily heard.

Tests are also being made to project motion pictures against the forward bulkhead while in flight. If the experiments are successful, all ambulance *Skymasters* will be equipped with similar systems.

NAVAL Air Transport Service Asiatic and Pacific wings have increased the number of hospital flights pouring into the California coast in the past few months. The decreasing number of hospital ships in use and the availability of more transport planes have increased the demand for air evacuation.

Hospital flights arrive regularly in Oakland from such points as Shanghai, Tokyo, Samar and Guam. The *Hawaii Mars* carries 100 patients a trip from Honolulu to Alameda.

During the early months of this year there was an average of one flight a week from Guam to Honolulu and a single weekly trip from Honolulu to Oakland.

In the past several months the Guam-Honolulu runs have trebled and six flights a week leave Honolulu.

The war is over, but casualties still exist. Illness and sickness run high in an organization as big as the Navy. The majority of war injured have been moved to stateside hospitals, but some of the recently evacuated were patients with fractures resulting from jeep and motorcycle accidents, cancer, tuberculosis, leukemia, skin infection, diabetes and mental disorders.

At the height of the Pacific war evacuation squadron VRE-1 had more than 1000 officers and men on Guam. Now, on a reduced scale, hospital service is integrated with regular air transport schedules under the post-war organization.

With the exception of the Naval Hospital at Seattle, every patient arriving on the west coast passes through Oak Knoll outside of Oakland. Here the patients are screened before being scheduled for an eastbound flight.

Since the war's end, VR-5 has flown most of the hospital planes to the west coast, where it also "feeds" invalids to the hospitals in that area. The Atlantic Wing Squadron VR-1 maintains the coast-to-coast *Hospital Express* and eastern seaboard system, while VR-3 shuttles between the Great Lakes and Gulf of Mexico from Olathe, Kansas.



INVALID IS CARRIED TO ONE OF 12 BUNKS



OXYGEN IS GIVEN TO A PATIENT ENROUTE



A WAITING AMBULANCE REMOVES INJURED



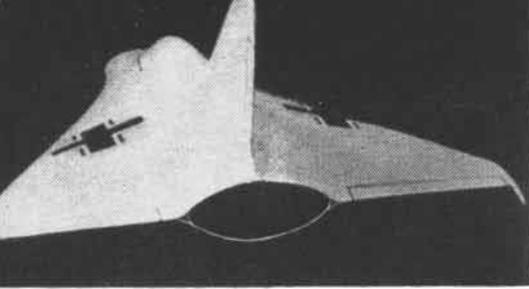
FEEDER PLANES FINISH THE AIR TRAVEL



STANDING BY FOR REMOVAL TO HOSPITAL

Experts Dig Out Enemy Data

BuAer Office Translates and Disseminates Enemy Research Collected by Government Science 'Spies'



Supersonic ram jet plane under construction in Germany was found by U.S. experts.



The Horten Flying Wing, twin-jet fighter, was in finishing stages at the war's end.



A Wave splices micro-film in preparing a report on enemy research for a contractor.

MOVING into enemy territory with the front line troops, a group of government technicians gathered all Japanese and German aircraft, parts, notes, and technical reports possible before enemy scientists had a chance to destroy the results of their research.

The findings of these men were sent to Office of Naval Intelligence in Washington where they were classified and redirected to Technical Data Division of Bureau of Aeronautics, keyboard for the dissemination of all aeronautical research information.

This division arranges for the translation, abstraction, and routing of enemy reports to all offices concerned, where they are checked with already-known data. This information together with blueprints and photographs is then recorded on microfilm and sent to qualified manufacturing concerns, educational institutions, and agencies connected with the research and construction of similar aircraft and parts.

When the allied nations began the occupation of Germany and her satellites, technical data in German swamped the division. In order to benefit from the discoveries of German scientists and technical workers as soon as possible, many of these documents have

been sent to large manufacturers to be translated by their linguists.

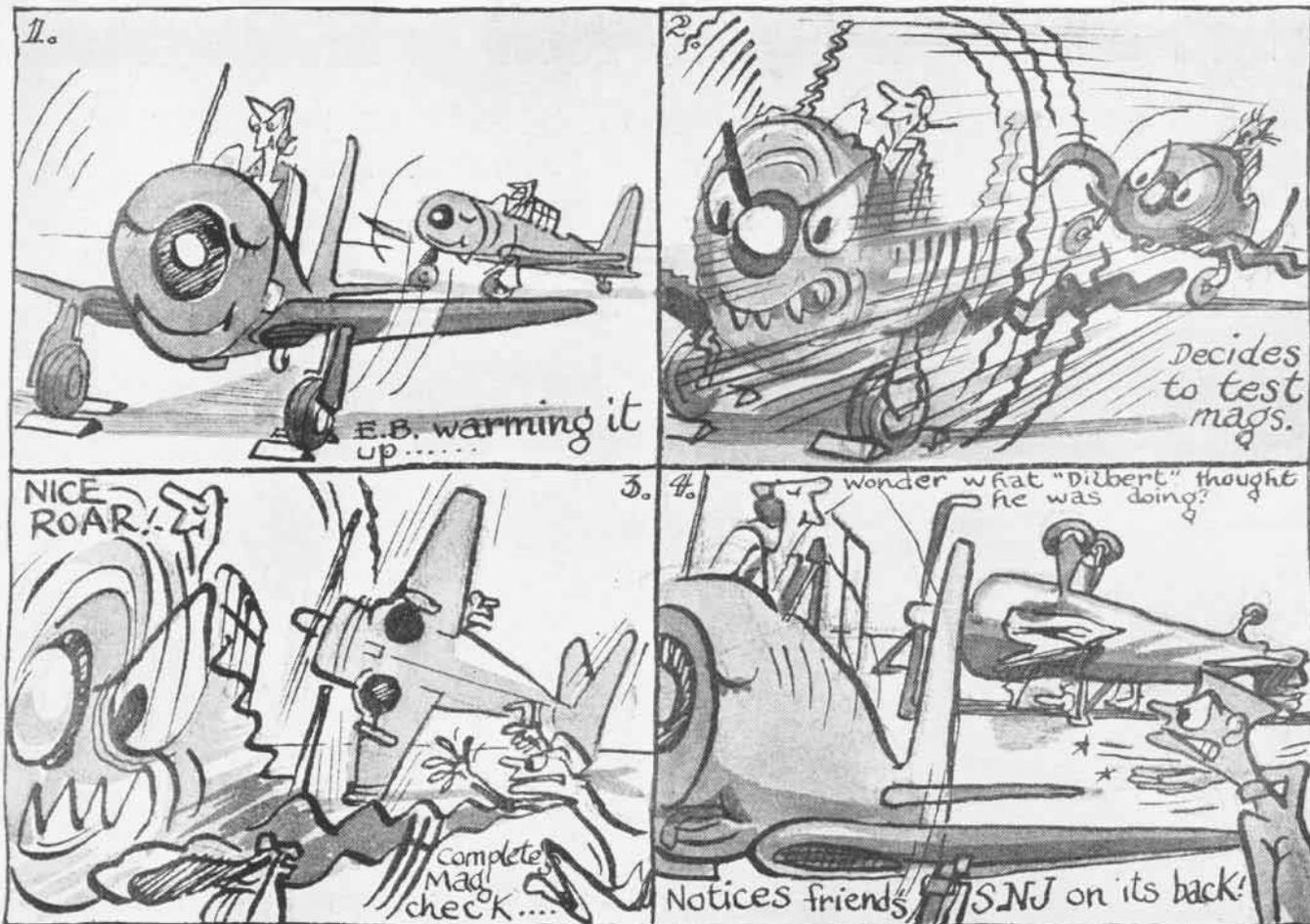
Reels of microfilm containing information gathered from the enemy and from our own research laboratories are kept on file in the Technical Data offices. Contractors and scientists are sent copies of the microfilm reports pertinent to the aeronautical work in which they are engaged. To aid manufacturers in obtaining the reports desired, a list of those available is compiled periodically and forwarded to all of the organizations and laboratories concerned with aeronautics.

A library and a research and analysis section are also maintained to assist in assembling of aeronautical material for the various branches of the Bureau of Aeronautics.

Although much data has been gathered, the Combined Intelligence Objectives Commission of British and American technicians, the Naval Technical Mission to Europe, and the Air Technical Intelligence group in Japan will continue to be sources of captured information and material for several years to come. The bulk of enemy equipment, data, and personnel has still to be evaluated, disseminated, and recorded for the use of our engineers.



A FEW OF THE REPORTS SENT OUT IN THREE MONTHS FROM TECHNICAL DATA DIVISION, INCLUDING 558,200 FEET OF MICRO-FILM



A/C EAGER BEAVER

Moral: Look Around Prior to Using Excessive Power on the Ground.



THE RECOMMENDED procedures for warm-up and ground check for each type of aircraft are given in the respective Pilot's Handbooks. The procedure for proper check of magnetos and supercharger operation is also contained in the respective Pilot's Handbooks and in current BuAer technical publications.

Strict compliance with these publications will insure correct power plant checks and procedures during ground operation but it will not guarantee accidents from happening. Far too many pilots only concern themselves with cockpit operation without taking supplementary steps of looking around to insure that their plane and other planes are properly secured and that taxiing aircraft are not endangered during the performance of these tests.

To prevent accidents during ground checks or engine run-ins, it is necessary to employ proper power plant procedures and it is also necessary to: (1) see that your plane is properly chocked and braked; (2) check security of planes astern in your propeller blast; (3) check for planes taxiing

astern; and (4) use tail tie down lines during full power turn-up.

CASE I. An F4U pilot checked his magnetos while the plane was at the downwind end of the duty taxiway with the tail of aircraft into the wind. While he was concentrating on his check, a heavy gust lifted the tail of the aircraft off the deck resulting in prop damage of all four blades.

CASE II. An F8F pilot was turning up in the chocks to check his magnetos. Another F8F plane had just cleared his chocks and was taxiing slowly, perpendicular to and astern of the plane performing the check. The taxiing pilot felt his plane vibrate and then weathercock towards the tail of the plane turning up. He retarded his throttle, pulled the stick full back, and applied brakes, but to no avail for the tail came up causing prop tips to strike the mat. The tail did not return to the deck until the plane turning up throttled back. The Board assigned 50% error to the taxiing pilot and 50% error to the pilot checking his magnetos.

CASE III. An Aviation Cadet started his engine for his fourth dual flight and while awaiting the arrival of his instructor he warmed the engine at 800 rpm. He then advanced the throttle to 1400 rpm to check the magnetos. This sudden addition of power resulted in the plane jumping the chocks and colliding with two parked planes. The student failed to keep his feet on the brakes and had his head in the cockpit watching the instruments. He was not aware that the airplane was moving until it had collided with the parked planes.

DON'T BE A COCKPIT OSTRICH. Look around while using excessive power on the ground.

Dive Bomb Auditory Altimeter

TESTS are now under way for a dive bomb pull-out warning device which if proved successful may eliminate situations similar to that pictured below in primary and operational flight training.

The new device, produced by the psycho-acoustic laboratory of Harvard University and further developed by the Special Devices Division of ORI, gives an auditory warning at the proper altitude for pulling out of a power dive.

Pilots in training or even seasoned dive bomber pilots occasionally experience a "target hypnosis," a complete concentration on the objective which prevents them from pulling out at a safe altitude.

The first model of the pull-out warn-

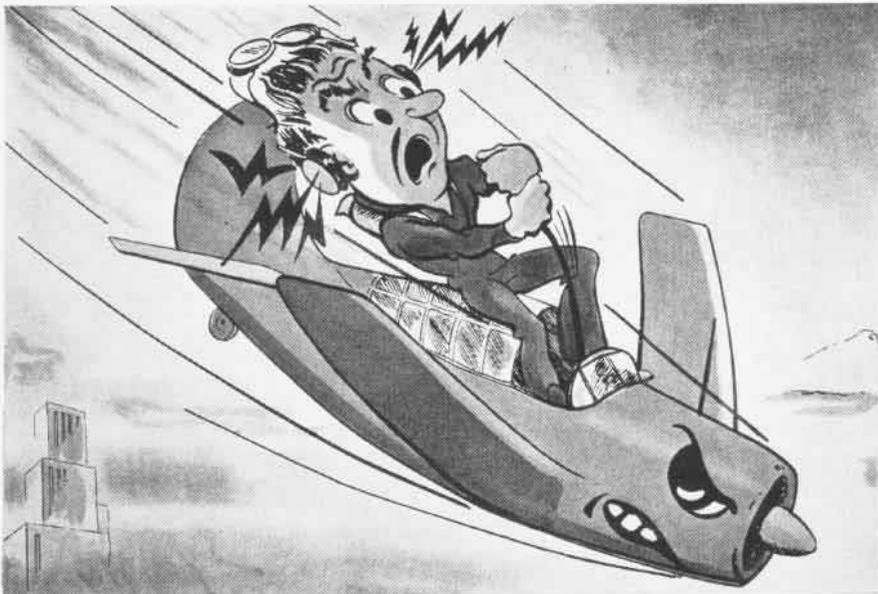
The mechanism is intended to take the place of a passenger or instructor who would call out the altitudes and give the pilot the proper time to bring the plane out of the dive.

This auditory operation relieves the pilot of the responsibility of watching the altimeter, and allows him to concentrate completely on his target.

Years of research and experimentation in the physiological effect of various sounds and sound patterns went into the development of the voice that "calls signals" from this altimeter.

Since some sounds produce a lulling effect and others immediately snap one to attention, the Harvard laboratory made a science of the exact effect produced by sound characteristics.

The information learned from hun-



ing device was completed in December of 1945 following a statistical study of the fatal accidents occurring during Navy dive bombing training.

Preliminary reports are now being compiled on the findings of a selected squadron of dive bomber pilots from VB-153, who have been carrying out evaluation tests at NAAF OCEANA near Norfolk.

The device consists essentially of an altimeter with electric wiping contacts at pre-set altitude points, which complete a junction with relay circuits in a magnetic tape device. The reproducer vocally transmits previously recorded messages giving altitudes, warnings, and pull-out instructions through a modified interphone amplifier and are received by the pilot via the conventional headset as he begins his dive.

dreds of tests went into recordings used by the Special Devices Division to advise the airman during his bombing operation.

The sound pattern, volume, pitch and modulation chosen for the recordings possess the optimum characteristics for attracting and holding the attention of the pilot.

It was also determined that optimum characteristics varied from altitude to altitude as the aircraft descended because of the variance of the surrounding air pressures. These were taken into consideration and a voice of different volume, intensity and nature is used at every contact point on the altimeter.

Recommendations for utilization of the device await reports from the tests now being conducted for ComAirLant.

BEST ANSWERS

POWER PRINCIPLES

1. The piston of an in-line aircraft engine is attached to a connecting rod. The piston of a radial aircraft engine is attached to—

- a—an agitating rod.
- b—a connecting rod.
- c—a push rod.
- d—an articulating rod.

2. Of 100% of the heat of burning developed in the internal combustion aircraft engine cylinders, about—

- a—30% becomes usable energy.
- b—50% becomes usable energy.
- c—70% becomes usable energy.
- d—90% becomes usable energy.

3. The power produced by an aircraft engine is the—

- a—same as work.
- b—time rate at which work is produced.
- c—speed rate at which torque is produced.
- d—speed rate at which work is produced.

4. The principal cause of ice formation in an aircraft carburetor is that the—

- a—vaporization of gasoline is an endothermic reaction.
- b—vaporization of moisture is an exothermic reaction.
- c—carburetor venturi creates a momentary velocity increase of the air.
- d—pressure drop in the venturi causes a corresponding temperature drop of the air.

5. The primary purpose of any internal combustion aircraft engine is to—

- a—create energy.
- b—convert heat energy into pressure energy.
- c—convert chemical energy into mechanical energy.
- d—change linear motion into rotary motion.

6. The purposes which an aircraft propeller serve are to—

- a—step-down engine speed, and to absorb indicated horsepower.
- b—load an engine, and to convert brake horsepower into thrust.
- c—absorb power, and to create rotary motion.
- d—load an engine, and to create torque.

(Answers on Page 40)

TARGET DRONE



KDD-1 POISES ON COMPRESSED AIR CATAPULT AT MOJAVE; PISTON BELOW DRONE PENETRATES WATER 'CUSHION' AT END TO HALT CAR

DESIGNED for use both as an anti-aircraft training target and for air-to-air gunnery training, the Navy's KDD-1 radio-controlled drone is regarded as a forerunner of a new phase in target design. It is being development-tested at NAS MOJAVE by the Pilotless Aircraft Unit.

The 200-mph. drone can be launched either from a catapult (AT Mk 1) with end speed of 70 mph. or from a parent aircraft, like the PBV-5A. It has a 12' wingspan, weighs 320 lbs., flies 40 minutes on kerosene and lands by 28' parachute. Steering is accomplished with a fixed V stabilizer and movable ruddervators.

Powered by one McDonnell reso-jet engine, the drone in flight resembles a normal fighter plane. The power plant derives its name from the resonance of the tube employed in design of the unit, the same as is used in the German v-1 buzz bomb and the Navy's KCW-1.

In the initial starting, compressed air is introduced into the combustion chamber, where fuel supplied by an electrically-operated fuel pump is sprayed from four fuel nozzles arranged on the inside of the grill and combines with the rammed air. An externally-powered spark plug ignites the fuel for initial combustion. Resonance within the tube controls frequency of explosions of fuel and air. Expanding gases, exiting through the venturi-like tail pipe, create a partial vacuum within the tube, opening the reed valves, and permitting a fresh supply of air to enter, thus beginning another cycle.

An unusual device employed in the initial introduction of air into the combustion chamber is the "doughnut." Rather than force the compressed air through the reed valves, risking damage to them, PAU engineers are using a 6' pipe terminating in a perforated doughnut-like ring at one end and at-

tached to a compressed air source at the other. (see picture, lower left.)

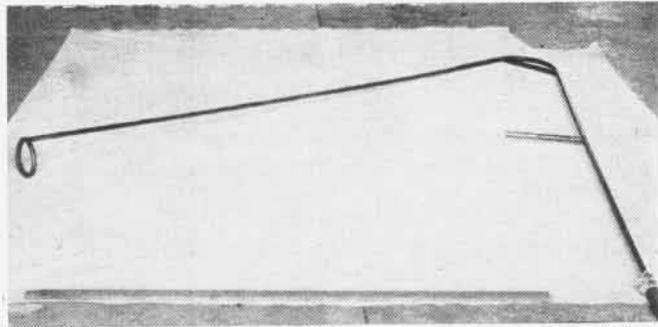
The doughnut is inserted in the tail pipe of the reso-jet unit and compressed air turned on, so that the air is forced backward through the perforated ring from just behind the ring valves, into the combustion chamber. McDonnell developed the idea, with Naval Aircraft Modification Unit testing it.

Ruddervators, as the name implies, perform functions of both rudders and elevators, their differential movement providing directional control or yaw. The elevator action of the ruddervators provides for pitch control and operates co-directionally. No trim tabs are used on them; they are controlled by push-pull rods, actuated by the servo unit.

Many "bugs" remain to be eliminated from the target, and it will be several months before it can be made available for fleet use. However, the basic concept appears to be sound and workable.



REAR VIEW SHOWS AIR COMPRESSOR WHICH GIVES FIRST PUSH



'DOUGHNUT' AIR HOSE TO FACILITATE STARTING OF RESO-JET



DUMMY TEST BREAKS CONVENTIONAL SHOULDER STRAPS AND BELT



VOLUNTEER WEARING THE NEW HARNESS IS SUBJECTED TO 65 G'S

Deceleration Vest Prevents Fatalities

A NEW AIRCRAFT crash harness, developed at the Naval Medical Research Institute at Bethesda, permits a pilot to withstand safely more than three times the number of g's that would ordinarily be fatal.

Designed to decelerate the forward motion of the flier gradually upon crash impact, the safety vest is made of undrawn nylon, a material with unusual stretching characteristics.

If final tests prove successful, the new harness will replace the conventional safety belt and shoulder straps.

The harness looks similar to a fencer's vest, with two triangular pieces of specially-treated nylon crossing the chest. The shoulder straps, joining at the top corners of the triangles, absorb all but 1800 pounds of impact force by stretching as much as 12 inches.

The majority of the remaining force is diminished by the chest-covering fabric and a nylon belt. The properties of the nylon prevent recoil, and once the harness is used in a crash, it must be replaced.

The material is similar to that manufactured for nylon stockings, except that it is not drawn and has considerable one-way elasticity. The threads, which can be pulled to double their size, have been treated with special chemical compounds to guard against humidity and temperature changes. This same kind of thread is used in cables for snatch pick ups.

Practically weightless, the harness will spread the force of impact over an area of 156 inches on the chest, shoulders and upper abdomen. The force on the solar plexus, believed to be the cause of pilots being knocked unconscious in crackups, has been largely relieved. If the crash is not too severe, the occupants of the plane should be able to remove themselves before the

plane burns, when a fire hazard is present.

Reasons for these experiments were that in many crash instances the pilot has been killed or severely injured in spite of the fact that the entire cockpit has remained undamaged.

Modern aircraft design has been to build the cockpit stronger than any other part of the plane. Although planes have been smashed beyond recognition, in most cases the cockpit has remained intact.

The new "deceleration harness" should prevent fatalities and severe injuries in most aircraft-ground collisions.

A RECENT demonstration for the benefit of the press at Bethesda, showed the amazing qualities of the new vest. A 14-foot high platform was

constructed for testing. Dropped weights subjected an impact force through an iron rod to a dummy or a volunteer.

An impact force of from 10 to 13 thousand pounds was exerted on a dummy wearing the regular safety belt and harness. Both shoulder straps snapped and the belt was held by only two small strands of thread which could have broken easily.

Had this occurred in an actual plane accident, the pilot would have either been decapitated by the instrument panel or severely injured. If a human had been subjected to this static test, it would have crushed his chest and abdomen.

A volunteer subjected himself to the same test wearing the new harness and, although the force exerted would be equivalent to plowing a plane flying at 100 miles an hour directly into the ground, he received no ill effects.

Inch marks on the shoulder straps stretched from 2½ to 3 inches apart.

The impact force was equal to 65 g's, and considering that 20 g's or 300 pounds of force would probably be fatal, the new harness will be a great safety factor.

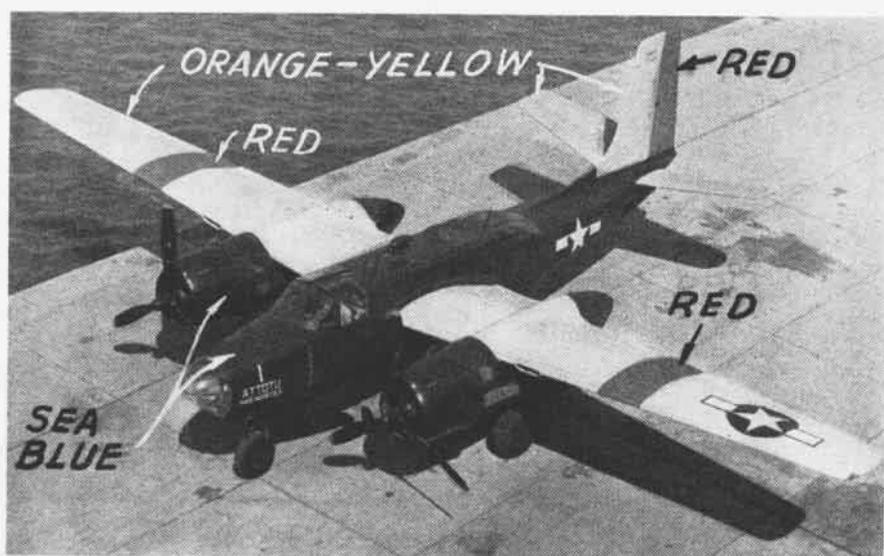
Future tests, as the final proving basis, will be held at the Naval Air Station in Philadelphia. Several robot planes carrying live chimpanzees protected by the new vests, will be deliberately crashed. If the simians survive, later tests may be conducted with human volunteers.

The vest itself is actually a by-product of intensive studies in the medical-physical principles of impact force. Practically a new field of research, investigations began with data on survivals from falls of over 50' showing it was not the "hand of God" that prevented deaths, but ground resilience.



TESTING MACHINE EXERTS IMPACT FORCES

TECHNICALLY SPEAKING



VARI-COLORED PAINT JOB OF RED, ORANGE-YELLOW AND BLUE MAKES THE JD-1 VISIBLE

New Paint Scheme on Tow Plane

JD-1 Should Be Easy to Spot from Afar

Several activities operating utility planes have requested action to simplify the maintenance of a neat and clean appearance on the all-over bright orange-yellow tow-target aircraft, JD-1. BUAER has conducted tests at NATC PATUXENT RIVER to determine the optimum alternate exterior color scheme which would provide the best combination of good recognition, maintenance and visibility features.

These tests indicated that although the orange-yellow may most often be harmfully affected by dirt, oil and grime, it is still the best color for maximum range of visual detection.

The final selection of a scheme was therefore based on the premise of retaining as much of the orange-yellow as possible, in those areas where it would be least frequently dulled by dirt and exhaust gases. The remainder of the plane was changed to sea-blue. Red was applied in certain areas to convey the element of danger to nearby planes of fouling in the tow gear or being accidentally fired upon.

Essentially, the scheme now consists of blue fuselage and engine nacelles, orange-yellow wings and empennage, with red on the rudder and in bands around the wings. Complete details for overhaul centers are being published as Amendment -4 to Navy Aero Specification SR-2E.

A striking aspect of this new scheme

is the fact that, excluding the finish specified for target drone aircraft throughout the war, target-towing aircraft now exhibit the largest application of red color to any U. S. naval aircraft since the recent advent of the late Japanese meatball.

Instrument Inspection At Jax

NAS JACKSONVILLE—The Inspection Department has established a triple bench inspection procedure in the A&R instrument shop. To insure complete and authoritative coverage, five instrument inspection groups were organized: pressure, electrical, optical, gyro, mechanical.

The inspector assigned to each group is required to conduct an in-process check during reassembly. In his examination of parts or portions of the assemblies many possible future failures are intercepted in the making. The inspector then observes the test procedures and, upon satisfactory performance of the instrument, places his initials in crayon on the glass face of the instrument. As many instruments do not bear serial numbers, the crayon marking serves as a temporary confirmation of the test.

When the finishing touches have been completed, the inspector makes a final check, removes his initials from the face of the instrument, and substitutes the regular inspection "decal" bearing his stamp, initials, identifying numbers.

It is felt that the accuracy of instruments is better assured by having each

inspector specialize in one group of instruments; however, to insure coverage in emergencies, provision is made for each man to keep up to date in at least one other group in addition to his specific assignment. The inspectors' sources of information are grouped with tolerance data being developed from technical directives into fast reference card files for each group.

As a check back on the efficiency of the instrument shop inspectors, those instruments which are installed in aircraft in the A&R shop are again triple checked: once by the instrument installation inspector, again by flight test (pre-flight inspection) and finally by the Inspection Department test pilots.

Camera Port Installed by VT-89

In covering landing operations in China last fall, VT-89 achieved good results in the use of the K-20 camera on the photographic reconnaissance hops. The good work was, in portion, responsible to the photographic ports installed in the tunnel windows of the TBM's, which allows free access for the camera and eliminates the trouble of scratched or dirty windows.

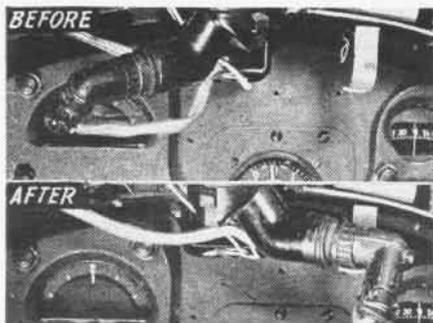
The port is merely a 4" diameter hole cut in the center of the tunnel window with edges reinforced both inside and out by a 3/4" aluminum strip. This is fastened to the plexiglas by bolts placed at an interval of one inch around the strip. Four of these bolts are mounted with a plexiglas cover for the port. The cover, 6" in diameter, is made of 1/2" plexiglas which is approximately twice the thickness of that in the tunnel window.

Portable Ramp Aids Passengers

NAS SAN DIEGO—This station, one of the busiest in the United States during the war, has finally received a new loading ramp for embarking passengers on aircraft. A commercial product, the "aerostand," was modified by operations personnel to fit any plane.



LOADING PLATFORM IS READILY ADJUSTED



LAMP HOUSING SWITCH BARES INSTRUMENT

Change Helps Panel's Visibility

VBF-81—During night flying in preparation for forthcoming exercises with the fast carrier task force operation, it was noticed that the gunsight lamp housing on F4U-4's in the 97,000 series blanked out the gyro horizon.

To remedy the situation, the spare lamp clip was moved from the left to the right hand side of the instrument panel. In its place was installed a clip to hold the gun sight lamp housing to the right, thus leaving all instruments free of obstruction.

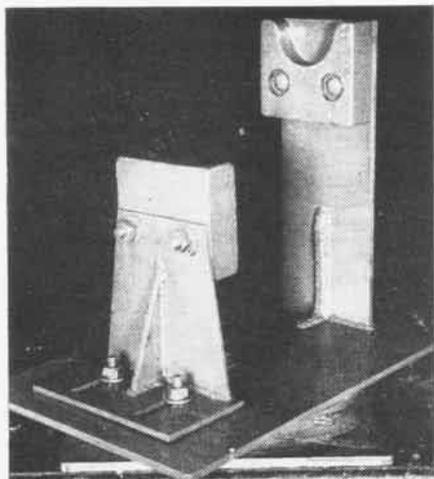
► **BuAer Comment**—BuAer concurs with VBF-81's recommendation.

Stand Speeds Crankcase Work

NAS QUONSET—A stand to facilitate assembly of aircraft crankcases was designed by machinist's mate at this activity under the Navy Employees' Suggestion Program. It has enabled one man to do the work of two and saved an estimated \$4000 annually. Mechanics can handle cases easier and quicker with less injury to themselves and less damage to cases.

The stand consists of two semi-circular bearings bolted to two angle plates on a suitable base. One of the angle plates is welded to the base while the other is provided with slots to permit lateral adjustment in relation to the fixed plate. In use, the crankcase is mounted vertically on the stand and access is gained to all working areas.

[DESIGNED BY FRANK ZAGRODNEY, AMM1/c]



STAND AFFORDS ACCESS TO CRANK CASE

Stator Repair Idea Wins Cash

NAS ALAMEDA—An employe of the A&R starter overhaul shop won \$250 for a beneficial suggestion for repairing stators of Jack and Heintz electric aircraft starters. The problem involved was frequent replacement of an expensive part of approximately 40 percent of the electric starters overhauled.

It was found that windings in the stators became grounded because of an accumulation of carbon dust between the top bands and the insulating washers, making them unfit for future use. The following instructions provide an effective method for reclaiming almost all such stators:

1. Remove top stator band from stator by removing the 10 top screws. It will be necessary to unsolder the heads of the four inner screws.
2. Clean carbon particles from surfaces of stator, center and top stator bands and the two insulating washers.
3. Reinsulate stator face, both sides of insulating washers, lower side of top stator band and both sides of center stator band with insulex or other varnish.
4. Replace all parts removed and paint exterior face with insulating varnish. One or both insulating washers should be replaced if either appears worn or heavily impregnated with carbon.

[DEVELOPED BY LYNN ALBRECHT]

► **BuAer Comment**—J. & H. stated that starters are thoroughly painted with black insulating varnish previous to installation and should require only periodic cleaning with compressed air blast. The above method may be used if starters are found with an accumulation of carbon causing electrical shorting.

Co-Pilots Get Training at Yoke

VP-123—This squadron's peacetime activities include a flight training program to qualify co-pilots for solo work, using a syllabus patterned after the standard multi-engine training course for PPC's given at NAS HUTCHINSON.

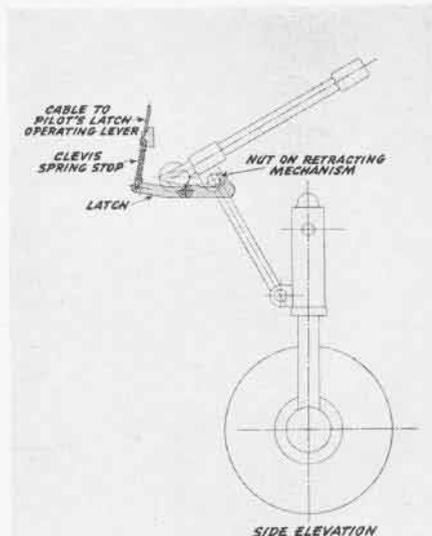
It was found that the average pilot (650 hours) handled the aircraft surprisingly well considering that most of his flight time had been spent in the co-pilot's seat.

The flight photographic training course in F6F-5 type aircraft greatly increased the confidence and air sense of co-pilots in their Privateer training and was believed responsible for the unusual alacrity with which they readied themselves for solo work in larger aircraft.

A ground training program for all squadron officers also was drafted. It included lectures, tests and problems in navigation, electronics and engineering. About 12 hours of ground work a month was given each pilot, ample time to maintain them at high efficiency.

Gear "Down" Lock Device Added

To prevent unintentional retraction of the landing gear during take-offs, landings, and taxiing, Naval Air Material Center, Philadelphia, has designed and perfected a device for locking the land-



CLEVIS SPRING STOP PROVIDES TENSION

ing gear of JRB-2-type aircraft in the "down" position.

Installation of a latch on the landing gear assembly, so arranged as to prevent movement of the retracting mechanism by latching a nut on this mechanism to the fixed structure when the wheels are in the "down" position, accomplishes the desired restriction of accidental retraction of the gear.

The newly installed latch is controlled by a lever located adjacent to the landing gear switch. Position of this lever is such that it causes interference with the switch safety cover when the lever is in the down position. Due to this, the lever must be raised, thus unlocking the landing gear, before the switch cover can be swung aside to put the switch in the "up" position. Since the lever is spring-tensioned down, it held in its "up" position by resting on the top edge of the switch cover, the cover being held out by the switch itself. For lowering of the landing gear, it is only necessary to put the switch in the "down" position, raise the lever sufficiently far to release the switch cover, and drop the lever.

Advantages of the new device are plainly evident. Not only does it provide a simple mechanical lock on the landing gear, but it also makes an extra safety feature by creating an extra operation before the plane's landing gear may be lowered which, necessarily, decreases the possibility of the pilot unintentionally retracting the landing gear when attempting to raise the flaps.

As this mechanism was first developed on a JRB-2, use of the new instrument on later model JRB's and SNB's, which have the landing gear switch located on the instrument panel rather than below the prop and engine controls will necessitate relocating the switch in the original JRB-2 position.

SCREEN NEWS

Medical Films The following films for medical personnel have been distributed to the aviation film libraries listed below:

- MN-1966 *Sciatic Pain and the Intervertebrate Disk* (Nonclassified; 25 minutes)
- MN-2715A *Early Care of Plastic Surgical Cases—Wounds of the Hand* (Nonclassified; 13 minutes)
- MN-3726K *Medicine in Action—Release #11—Cholera Can Be Conquered* (Nonclassified; 10 minutes)
- MN-6128A *Plastic Surgery of the Hand* (Nonclassified; 15 minutes)
- MN-6485 *Plastic Repair of Cheek and Lip* (Nonclassified; 9 minutes)

"Typhoons and Hurricanes" is a dramatized, clearly and interestingly presented motion picture intended for all hands. General characteristics of a typhoon are presented. Emphasis is given to the doctrine that the best way to deal with a typhoon is to avoid it entirely, but methods of navigation in each of the storm quadrants are given.

- MN-1191 *Typhoons and Hurricanes* (Nonclassified; 34 minutes)
Sent to: Aviation Film Libraries; Carriers; AV's; AVP's.

Use of Parachutes Recommended for all flying personnel is a newly released film on the use of parachutes. The picture includes the different chute types, when they are used, and inspection of the chute. Also shown are jump procedures from various type plane openings; how to land in wooded areas, on land, and on the sea; collapsing the canopy on land and water; and use of the para-raft.

- MN-5801 *Use of Parachutes* (Nonclassified; 12 minutes)
Sent to: Aviation Film Libraries; Carriers.

Aviation Film Libraries are at the following locations:

NAVY

Naval Air Stations: Navy #115, 116, 117, 720; Kodiak, Alameda, New York, Patuxent, Quonset, San Diego, and Seattle. *Training Aids Libraries*: Navy #128, 926; NOB Norfolk. CASU(F) 42, FPO San Francisco; NAMC Philadelphia; NATB Corpus Christi; NATB Pensacola; NAAAvTraCom Jacksonville; NAResTraCom Glenview; and NAT&EC Lakehurst.

MARINE CORPS

Marine Corps Air Stations: Navy #61, Cherry Point, El Toro, and Quantico.



NAS PENSACOLA—Plans were formulated at this base for a gigantic mass evacuation of the entire southeastern part of the United States and West Indies in the event of a hurricane in the area. All flyable aircraft will be sent to refuge airports near FORT WORTH, DALLAS, and EAGLE MOUNTAIN LAKE.—*The Beam*.



SUPPLY NEWS

FROM ASO AND SUPPLY DIVISION BUAER

Stock Hi-Shear Rivet Tool Kits

A tool kit for installation and removal of Hi-Shear Rivets, manufactured by the Hi-Shear Rivet Tool Co. under their part number T-325, ASO stock number R40-K-145, is now under procurement. Flat head Hi-Shear rivets, type NAS-178, are now stocked by ASO in Class 43. This type of rivet is a comparatively new development and is not commonly used on naval aircraft; however, aircraft diverted from the Army use this type of rivet extensively.

The twelve special tools comprising the unit are contained in a canvas kit weighing approximately one and one-half pounds. Included are: (1) four rivet sets for installing 3/16", 1/4", 5/16" and 3/8" size flat head Hi-Shear rivets; (2) a flush head for use in backing rivets when used with a squeezer or in reverse riveting installation; (3) a hand set adapter for driving rivets by hand; (4) a rivet set extension and offset gun adapter for driving rivets in a restricted area; (5) a straight gun adapter for use with rivet guns taking a .401 shank; (6) a large gun adapter for use with rivet guns taking a .498 shank; (7) a bushing for use with an electric drill for removing 3/16" and 1/4" size rivets; (8) a larger bushing for 5/16" and 3/8" rivets.

Hi-Shear rivets are driven in the same manner as standard rivets and may be driven from either end by using conventional rivet guns or squeezers in conjunction with the special Hi-Shear tools in this kit. When pneumatic power is not available, Hi-Shear rivets may be installed by hand, using the proper size rivet set in conjunction with the rivet set extension and hand adapter.

Production Lag Affects Supply

Operating activities should anticipate their spare parts requirements as far in advance as possible if they hope for delivery within a reasonable time. ASO reports that reconversion to peacetime economy, with its attendant lag in production throughout industry, is being felt in aviation supply channels. With contractors overloaded on commercial orders and also handicapped by shortage of experienced personnel, Navy requests for materials are no longer handled with wartime speed.

Although ASO is making every effort to serve the field with the same efficiency and rapid service that was achieved during the war, some delays are inevitable. Anticipation of future needs on the part of operating activities will help maintain a smoothly functioning supply system.

Pending final clarification of peacetime policy regarding Army for Navy procurement, there is no change at present in the procedure. For example: Navy will obtain Wright aeronautical material through Army contracts, which is the

same policy used during the recent war.

Airframe Spares Procurement

At a conference between BUAER and ASO representatives in May, agreements were reached which shall serve as general guides for spares procurement for planes for which life-of-type airframe spares had never been procured; namely, trainers, transports, utility, and Catalinas. BUAER will direct dismantling of 125 SNB's thus reducing requirements for SNB-JWB. The present computed requirements are considered satisfactory for the SNJ, PBV, R5D, GH-NH, R4D, and the R5C. The spares for the latter should be procured from AAF, as should those for the J-1 (not one of the types mentioned above).

Because of planned increased operation a boost of spares support for the R50 is considered necessary. A decrease in SNB spares requirements may be possible. It is probable that all transports will require de-icing, anti-icing and oxygen. Procurement action is not required until receipt of BUAER directive.

Microfilm F4U Index Distributed

A master microfilm index developed by Chance Vought numerically lists structural parts peculiar to the F4U-4 and common to the F4U-4 and F4U-1. It also indicates the BUAER number of the airplane to which the part is applicable and the next larger assembly. The list shows part number supersedure in one direction only and does not show interchangeability.

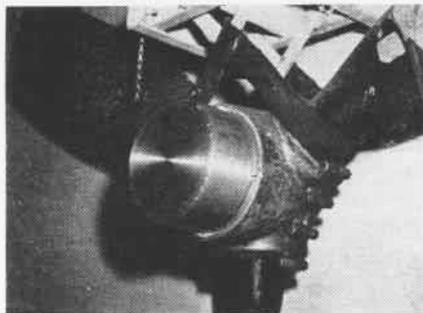
For example, page 65 lists Part No. vs-11782 channel as superseded by Part No. vs-41681 channel. However, Part No. vs-41681 listed on page 410 does not show supersedure over Part No. vs-11782 or whether it is interchangeable.

This index has been distributed by the Maintenance Division, BUAER, Navy Department, Washington 25, D. C., and all activities using microfilm equipment in connection with the support of F4U airplanes should have a copy.

Revised Forms For Usage Data

Collection of accessories usage data from the various A&R establishments is being expanded to include equipment not covered heretofore. All "L" forms for the collection of these data are being revised. Latest engineering changes, supersedures, and stock numbers will be reflected in these forms. In addition, "L" forms are being prepared for the collection of airframes usage data on PBM, PB4Y-B, R50.

Allowance List for electronics equipment will be published, with the assistance of BUAER. It is expected that EUR's, Electronics Usage Report Forms, will be distributed at the same time for the collection of usage data on this type of equipment.



SURVEYED PROP DOME CATCHES OIL DRIP

Dummy Dome Stops Oil Leakage

A practical means of preventing oil leakage from the hub while removing and handling hydromatic propellers has been developed by the propeller shop at A&R, NAS SAN DIEGO.

The fix consists of a surveyed dome reworked and installed on the hub as an oil retainer. It also provides a temporary support for the propeller after removal.

The suggestion, passed on to a CV and several operating units, was received with enthusiasm. Maintenance men, fed up with the generally messy situation involved in trying to stop propeller oil leakage with rags, particularly on a windy day, will welcome this retainer.

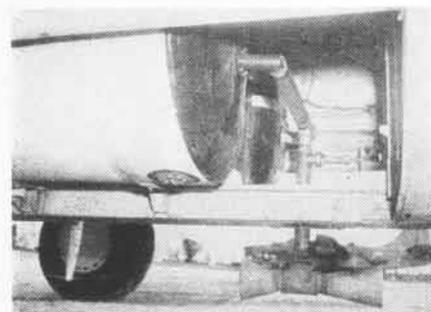
BuAer Comment—A very good idea. In addition to eliminating dripping oil, the dummy dome effectively prevents entrance of foreign material into the hub. Recommend general usage.

Pacific War on Bugs Continues

VP-102—This squadron recently adapted a *Privateer* to its assignment of spraying islands in the Bonins, Marianas, and the western Carolines with DDT. Because of its range and payload, this plane is ideal for spraying the insecticide.

Installed locally, a venturi spray nozzle aids the gravity flow of DDT from both after bomb bay tanks. The bomb bay tanks are held in place by the usual straps, but, as the DDT mixture is heavier than the same amount of gasoline, a bomb hoist is left permanently installed as protection against strap failure.

Pilots are carefully briefed to secure maximum coverage and concentration.



PRIVATEER HAS VENTURI NOZZLE FOR DDT

When terrain permits, spraying runs are made crosswind at 100 feet altitude and at an airspeed of 150 kts.

Previously these islands were sprayed on a rigid schedule, but as most insect life is now under control, flights are now made only on the Island Commander's request.

MAG-24—With approach of summer, this Group has begun preparations to spray DDT over the Nan Yuan Airfield area at Peiping, China. Since no standard spray tank installations were immediately available, an installation has been designed and made locally.

An electric fuel pump is installed on a bracket atop a modified F4U-4 wing fuel tank and wired to a switch in the cockpit. The by-pass valve on the fuel pump is rendered inoperative to prevent syphoning of the solution.

On the bottom of the droppable fuel tank near the rear is welded a mounting bracket for the installation of a spray bar which is mounted parallel to the aircraft wings and resembles an airfoil.

One hose connects the fuel tank outlet stand pipe and the intake of the fuel pump. Another connects the outlet of the fuel pump and the spray bar. Best results have been obtained by setting the fuel pump pressure to maximum and cruising the aircraft, with full or partial flaps, at 120 kts.

BuMed Studies Bail-out System

More than 700 bail-outs have been made by Marine pilots at Cherry Point assisting in the BuMED-BuAER research project to determine safety factors in escape from aircraft.

Corsairs used for the experiments are lashed to the ground and the engine revved up to 120 mph speed. Pilots go over the side while movie cameras grind, recording their techniques so errors can be spotted. The camera also records a clock which helps in the scientific analysis.

Before they make the tests, the pilots are measured to determine what part size has in successful bailouts and best cockpit design. With the advent of high speed planes, problems of getting out of them alive increase greatly.

Delivery of New Turrets Slated

With cancellation of the PB4Y program, the only possible installations for the Martin X220CH-1A turret are the XP2V and the XP4M in the deck positions. Weight considerations for these airplanes make the installations unlikely. Delivery of the turret, originally scheduled for the PB4Y-3 airplane that was to have had 20mm. installations throughout, is scheduled early in 1946.

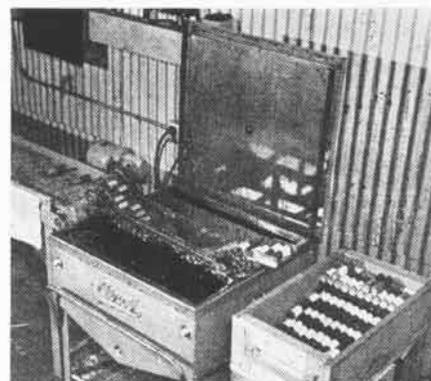
The remotely-controlled mount, for which the Emerson company was awarded a contract to build a wooden mockup and

one prototype following a design competition, will be completed in February. Known as the Emerson X220HU-1, it is a remotely controlled installation in that the gunner is located immediately outside the ball like gun enclosure structure. This installation will replace the Mk 4 mount in the tail of the P2V.

The 20 mm. ball with Maxson drive, Emerson turret X220SE-101, is scheduled for the nose of the XP2V. Emerson is also building the nose of the airplane. The prototype turret installed in the prototype nose should be completed in February.

Preserving Reconditioned Plugs

NAS SAN DIEGO—With the equipment shown in accompanying cut, the Supply Dept. can package 1,500 spark



PLUG CONTAINERS ARE TWICE WAX SEALED

plugs per hour. Plugs in individual containers are fed to a small bucket type conveyor which runs them through a wax sealer onto a conveyor belt. Travel time of the belt is sufficient for wax to set.

Plugs then are wrapped in waxed paper and packed in a cardboard car-

ton, the number boxed together being determined by requirements for the most popular engine using that particular plug. The carton is wrapped in grade C paper, labeled, and hand dipped in a second wax tank. Finally these unit packages are boxed, labeled, and forwarded to the storehouse to await issue.

► **BuAer Comment**—This appears to be an efficient method for wax sealing where the work load warrants. The machine could be fabricated from local surplus material.

Hydraulic Reservoirs Get Test

NAMC PHILADELPHIA—Aeronautical materials laboratory of Naval Air Experimental Station, Philadelphia, tests hydraulic reservoirs for accepted and experimental Naval aircraft by simulating possible flight attitudes of the airplane. One of the most important design features of a hydraulic reservoir is that it should not permit air to enter the system in any normally encountered airplane attitude whether it be on the ground, in level flight, climb, dive, bank or inverted. When air is drawn into a hydraulic system it may cause the pump to lose its prime, result in excessive wear of moving parts, such as pump gears and cylinder pistons, and permit a lag between actuation of controls and functioning of mechanisms.

Tests are conducted with the reservoir strapped to a jig permitting universal positioning. Hydraulic fluid is circulated through the reservoir at varying flow rates up to the maximum for the particular model airplane. The reservoir is first tested in ground position of the airplane. Any air inclusion is observed in a sight glass situated in the suction line between reservoir and pump. The reservoir is then flow tested in level flight attitude.

After this it is slowly rotated to a vertical climb position through an inverted position and vertical dive and back to level flight as in a loop maneuver. When a position is reached at which large volumes of air spurt through the sight glass, the suction outlet to the pump has become partly uncovered and a limiting position for this reservoir has been found.

The same procedure is followed for left hand and right hand banks. A reservoir that admits excessive air in normal flight maneuvers of the model airplane for which it is designated is not considered suitable.

Suggest Changing F8F Rockets

CASU-22—J. A. Logg, ACOM, has suggested a change in the F8F rocket firing system to provide for single as well as pairs firing of rockets. The suggestion would utilize the first and second stations of the rocket selector

switch Mk 1. At present the third and fourth stations fire pairs of rockets while the first and second stations are inoperative. By the addition of two wires, one each from the first and second stations of the rocket selector switch to the fire wall connection box, the R/P system will fire rockets in "singles," one at each of the stations.

"Pairs" firing would be accomplished by use of a two-pole single throw switch installed on the left armament panel. A four-wire conduit would connect the two outboard rocket circuits and the two inboard rocket circuits at the rocket selector switch to the "pairs," or closed, side of the two-pole switch. When the switch is on "pairs" and the rocket selector switch is on the first station, the firing impulse will be sent to one of the outboard launchers and also, by way of the two-pole switch, to the other outboard launcher. In the same manner, when the second impulse is sent through the system both inboard rockets will be fired.

The two-pole-single throw switch, mounted on the left armament panel, would be within easy reach of the pilot. In either "singles" or "pairs" firing, the rocket selector switch would be set on the first station. When the switch on the left armament panel is open, each of the four stations of the rocket selector switch will fire one rocket. When the switch is on "pairs," each of the first two stations will fire a pair of rockets.

► **BuAer Comment**—The suggested change is applicable to only 150 planes. F8F-1 aircraft #151 and following were modified by the contractor to provide for single firing.

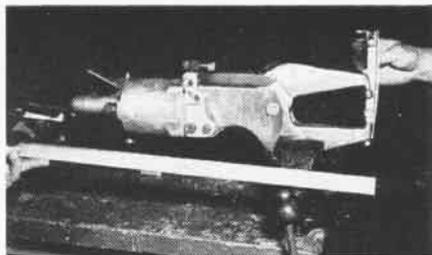
NAS Moffett Develops Field Fix

NAS MOFFETT FIELD—This air station has received commendation from BUAEF for having taken the initiative in developing a field fix for the cracked fuel inlet boss. The overhaul procedure developed is described in M. F. Stromberg Model NAY9E1 Carburetor Local Change No. 1 and P & W R-1340 Engine Bulletin No. 214 dated 10 April, 1946.

Squeezer Insert Saves Money

NAS CORPUS CHRISTI—Two civilian workers here have developed inserts for use with a pneumatic squeezer to extract old bushings and insert new ones into the cowl flap casting in one operation. Since the former method involved two operations and changing of four parts, the new one will save time and an estimated \$3,595 annually.

The new bushing is set on the pilot insert, the pilot guided into the old bushing, then pressure is applied, forcing the old bushing into a cup insert on the other side of the casting. The new



SQUEEZER FIXES COWL FLAP CASTINGS

bushing follows the old one and is automatically seated in the casting, completing the operation.

[DESIGNERS HERMAN MCGRAW, WESLEY RYAN]

Firemen Improve New Trucks

MAG 31—During the cold winter months when it was necessary to employ home-made stoves of all sizes and shapes, the fire department of this Marine Air Group stationed at Yokosuka MAB found it necessary to improvise new fire-fighting equipment more suitable for combating fires in buildings and caves than the standard crash apparatus.

A personnel carrier was converted to a pump truck by removing a Chrysler Defense Pumper with a capacity of 1000 gallons per minute from its all metal trailer and remounting it on the 1½-ton carrier. A fence constructed of 2x4's and 1x4's was bolted onto the sides of the seats, enabling 900 feet of 2½-inch hose to be laid in six tiers, three on each side of the truck.

U-hangers to accommodate two fifteen-foot lengths of six-inch draughting hose were welded on the fender and along the sides of the truck. Liquid foamite and a respirator are stored behind the driver's seat. An adjustable ladder, two axes and a CO₂ bottle are mounted on the left side of the truck. A coupling at the rear can pull a spare pumper.

A ¾-ton weapons carrier pulls a Chrysler Defense Pumper, and holds 600 feet of 2½-inch hose. It is also equipped with foamite, a powdered foamite generator a liquid foamite nozzle, picks and shovels, emergency lanterns, a respirator, and a Grant Portable Multiversal Monitor Nozzle with a capacity of 150 gallons per minute.



HOME-MADE APPARATUS IS USED IN CAVES

ENGINE CARE RACE AGAINST CORROSION

WHERE preservation of inactive aircraft engines is concerned, the rule is: *Do it immediately and do a thorough job.* "Too little and too late" is the story behind the numerous RUDM's coming in to BUAER as a result of the issuance of General Engine Bulletin No. 61. Many activities are failing properly to care for engines which are temporarily inactive.

These RUDM's fall into two classes: A large number concern engines being turned in by operating or supporting activities for overhaul without adequate preservation. Others, all too large a group, are submitted on engines which were never in operational service since overhaul but were permitted to deteriorate by storage or other activities.

Corrosion in an engine operated in adverse climatic conditions usually starts as soon as the engine is idle. This is true particularly inside engine cylinders, where visible rust will start to form within a few hours after shut-down. In constantly operating aircraft this is not particularly damaging, as subsequent operation of the engine removes surface rust from the critical surfaces before pitting can occur. But for an engine being removed from service, immediate steps must be taken to prevent the start of corrosion or check its progress.

Once started, corrosion will continue, to a degree, even after corrosion preventive compounds have been applied. The process continues even when the deterioration is not apparent. The preserving of an engine, therefore, should be accomplished at the same time that it is being placed into inactive status.

PRESERVATION to prevent corrosion, as presently applied, consists primarily of placing a barrier between the critical metal surfaces and any moisture that may reach them. This can be done either by the application of a barrier (coating) directly upon the surface of a metal, or by enclosure within a sealed barrier in an atmosphere dehydrated to a relative humidity low enough to preclude condensation of moisture from possible temperature changes.

A coating applied directly to the critical parts, to be of any value over an extended period of time, must be one that will remain quite firm and not evaporate too readily. The application and removal of such a barrier offers many problems. For engines being returned for overhaul, when no further operation before disassembly is

FROM ENGINES TO DUST
LET SOMEBODY ELSE WORRY ABOUT IT, WE'RE THROUGH WITH IT



MAYBE WE CAN SAVE THE BOX



expected, this is not too objectionable. It is not very desirable, however, for engines destined for service.

For this reason, and because it offers more positive protection, engines intended for service are usually preserved by the dehydration method. This consists of first sealing the critical parts in a dehydrated atmosphere by sealing the engine itself and, for any extended storage, further enclosing it within a sealed barrier in a dehydrated atmosphere. The additional barrier is considered necessary because, although the sealed engine itself constitutes the primary barrier for exclusion of moisture from the critical interior, it is very difficult to get a reasonably tight seal for any extended period.

In addition, sealing the engine alone gives no protection to the exterior without use of coatings which are difficult to remove. Furthermore, no protection is given to most ignition systems and other sections of the engine that cannot be effectively sealed and dehydrated.

An engine in operation contains considerable moisture in vapor both from the surrounding atmosphere and from

the results of combustion. As the engine cools after shut-down much of this moisture will condense on the metal surfaces. It is therefore important that some form of coating be applied directly to the critical surfaces before this condensation can take place to any extent.

Logically, a material which will present an immediate barrier to the condensing moisture is one that can be applied while the engine is still in operation. As a compound so applied must have sufficient lubricating qualities and a viscosity range approximately equal to the prescribed lubricant for the engine, only temporary protection can be expected from its use. This protection, however, is sufficient to care for the engine for a limited time until it is placed in a suitable atmosphere or coated with a compound providing a longer lasting barrier.

ESSENTIALLY the corrosion preventive compounds now in use fall into two classes. One class may be considered as a purely physical barrier. The other, containing inhibitors which are usually water soluble, will act directly upon the small amount of moisture which may be present prior to application.

In the choice of a compound for a specific use, a number of factors must be considered. Most important are the lasting qualities, effectiveness in the presence of moisture, difficulty of application or removal, and miscibility with oils already present. For this reason, only the specified compounds or recognized satisfactory substitutes should be used, as prescribed by instructions.

While General Engine Bulletin No. 38 now gives a choice of acceptable methods for preparing an engine being returned for overhaul, only the *complete* and meticulous use of the method selected can be satisfactory. Use of expended dehydrator plugs and the practice of only *partly sealing an engine*, as is quite often done, can be considered only a futile gesture. Since preserving should be accomplished at the same time that an engine is being placed into inactive status, only the activity removing an engine for overhaul can give it this initial protection.

Many RUDM's are received with the conclusion that the overhauling activity had not preserved the engine properly. However, engine logs show that engines are permitted by receiving activities to remain idle, unsealed and unattended, for periods amounting to several

DEHYDRATOR TURNED RED

TEAR IN PLIOFILM BAG



Engine in faulty enclosure is in more danger from condensing moisture than one freely ventilated. Use care in adjusting bag

Both operating and storage activities have slipped up in proper care of inactive engines. All details are important in this job

months. This is particularly true when engines are prepared for installation on quick engine change mounts.

As overhauled engines are preserved primarily by sealing and maintaining the critical internal parts in a dehydrated atmosphere, when the seals are broken the engines are *no longer preserved*, and the preservation responsibility then rests with the actual custodians. It must be remembered that the sealing of the engine alone is not full protection and will hold an engine only for a limited length of time varying with the climate and weather.

ACTIVITIES storing engines often permit an engine preserved by the dehydration method to stand with a ruptured or otherwise unsatisfactory enclosure, as signalled by the humidity indicator card, for some time before giving it any attention. Considering that a volume of atmosphere in an enclosure not freely ventilated will cause a breathing inward in decreasing temperatures and resultant higher relative humidity, and a breathing out in rising temperatures and relatively lower humidity, it can be seen that within the enclosure numerous dew points will be reached, depositing moisture on all internal as well as external exposed surfaces.

Because of the capacity of the dehydrating agent present within the enclosure, dew points are usually not reached immediately, but will be

reached in a time dependent upon the ambient relative humidity and the changes in temperature. When dew points are reached, deposited moisture no longer evaporates. Consequently, an engine in an imperfect enclosure requires immediate attention, as it will soon be in greater danger from constantly condensing moisture than one freely ventilated.

It is understandable that activities operating aircraft and activities supporting units operating aircraft place emphasis on maintenance for operational use, and all attention is given to maintaining the greatest possible availability of flyable planes. However, commanding and other responsible officers should realize that much equip-

ment, temporarily in an inactive status, is unnecessarily damaged merely because no one makes a definite point of sparing a little effort to give this equipment proper care at the proper time.

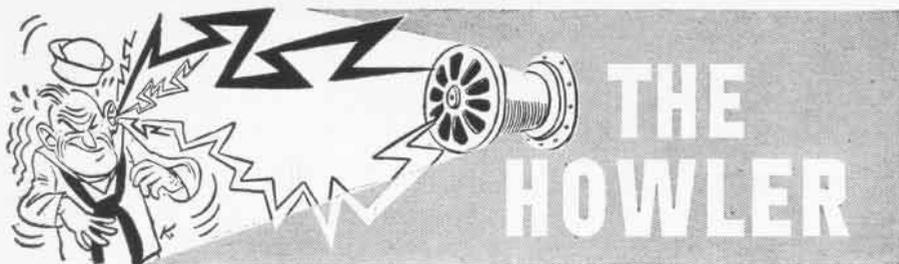
THE RESULT is increased overhaul costs because of the labor of processing parts, replacement of parts, and surveying of equipment damaged beyond economical overhaul. Moreover, new equipment and equipment never in active service since overhaul is sometimes permitted to deteriorate by a storage or supporting activity until it requires reconditioning or overhaul.

This situation may have been unavoidable to a degree while the Navy was actively waging a war, although much equipment was unnecessarily damaged beyond recovery even then. Now that budgets are being cut and the Navy is losing a considerable number of experienced personnel, more attention must be given to the conservation of equipment while it is in good condition rather than expend man-hours and money in recovery and replacement.

All activities maintaining or storing engines should review their local procedure and make definite efforts toward improvement. The proverbial "ounce of prevention" can in this case be the cure. When the cost of aircraft engines is considered, there can be little question that they should be protected in the best possible manner.



IT STARTS WHILE YOU'RE HAVING LUNCH



Check Crew Negligence With an oil drain plug missing and all oil lost from the engine of his F6F-5, the student pilot didn't have much choice. He made an emergency wheels up and flaps down landing, coming through all right himself, but the aircraft was a strike. Of course the pilot didn't know about the missing plug. All he knew was that his oil pressure was going down—60 lbs. then 20 lbs.—and his prop was stuck in low pitch.

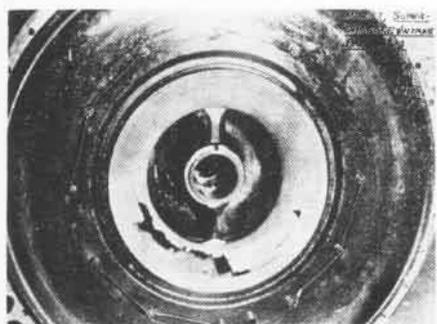
Faulty maintenance causing 100% material failure was the report of the board in this case. Investigation at the scene of the crash showed that the oil drain plug, rear case, P/N 20126, was missing. The aircraft, 11 hours before, had gone through a routine check, the final phase of which consisted of flushing the supercharger clutch. The oil drain plug evidently was not safely wired when replaced, and worked out because of vibration.

As the desludging operation is a part of the check, it was the direct responsibility of the check crew leader to make sure that this plug was safely wired. He failed.

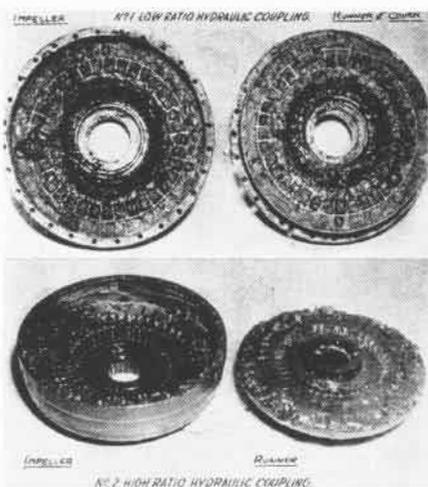
Plane captains should remember that those among their ranks who are alert enough to discover and take appropriate action on such discrepancies soon relieve careless check crew members and advance to higher ratings. Human lives are the important consideration in aircraft maintenance. Personnel who keep this thought foremost in their minds make better maintenance men than those endowed solely with mechanical aptitude.

Attention Pilots. Sludge accumulation in supercharger clutches is a contributing factor in many engine failures. Pilots and crews are responsible for properly carrying out the desludging procedure. Technical Order No. 80-45, 7 September 1945, and General Engine Bulletin No. 77, 26 September 1945, were issued solely for the purpose of combating sludge accumulation. They apply to all R-1820, R-2600, R-1830, R-2000, and R-2800 engines.

The accompanying photographs show



INSERT DAMAGED BY LOSS OF CLEARANCE

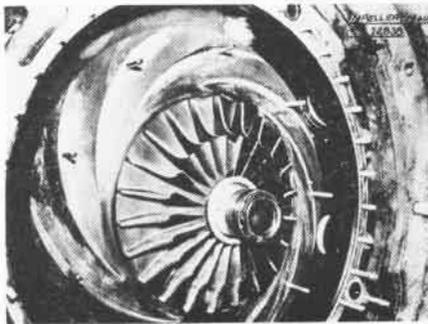


HEAVY SLUDGE WILL PREVENT OPERATION

supercharger clutch parts of disassembled R-2800-18 engines removed from F4U-4 type aircraft upon return from a shakedown cruise of a recently commissioned air group. These pictures were distributed with the comment that "Apparently only the 'pride' of the engines kept the pilots from ditching or crash landing, as sufficient power output was virtually impossible due to neglect on the part of the previous operators."

Another RUDM on an F6F-5 aircraft, R-2800-10W Nash Kelvinator engine, reports failure of the high ratio clutch assembly, P/N 51296. The creeper desludging type clutch assembly would not disengage from high blower.

Operating activities handling aircraft with engines equipped with superchargers should stress the importance of compliance with T.O. No. 80-45. These instructions, when carefully followed, will eliminate premature drive and clutch failures caused by improper operation and care of superchargers. The damage resulting from negligence is evident in these photographs which are worth thoughtful study.



VANES OF MAIN IMPELLER SHOW INJURY

Fuel Strainer Wing Nut Failures of the wing nut on type C-6 fuel strainers installed on F4U-4 type aircraft can be prevented by compliance with existing directives. Power Plant Accessories Bulletins No. 71-44, 30 December 1944, and 13-45, 19 March 1945, recommend, respectively, *hand* tightening of the wing nut to 50-inch pounds and rework of the fuel strainer cover to increase the effectiveness of the "O" ring seal.

Cockpit Heater Short. The pilot of an SB2C-4E reported a fire in the cockpit after turning on the cockpit heater switch. He immediately turned off the cockpit heater (Stewart Warner, Model 794-E) and the fire burned itself out within a few minutes.

Investigation showed that the electric igniter terminal was bent in such a manner that contact was made with the shell of the electric igniter, P/N 106213 (see picture). A hole was burned through the shell of the electric igniter, thus allowing fuel to escape and cause the fire when the cockpit heater was turned on.

It is believed that the hole was burned through the shell of the igniter either by the electric terminal arcing against the shell or by the heating element being shorted against the shell on the inside of the igniter.

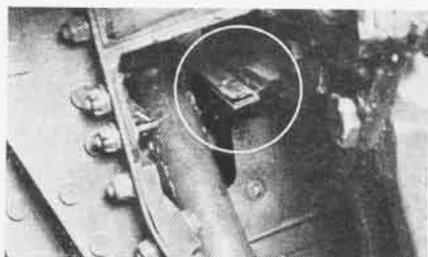
Although this may be an isolated case, all activities should carefully inspect the heater to make certain that ignition lead wire cannot become grounded. The E&M Manual (Section U) specifies inspection of heater casting at each 100 hour operating period. This heater will soon be replaced with one of larger capacity for heating both cockpits and defrosting the windshield.

Wing Folding Mechanism An Aircraft Maintenance Field Representative reports that several F4U-4 aircraft of CASU-33 were found to have the rummers, P/N VS-15727-1 broken at the inboard end of the wing folding mechanism track assembly. This condition evidently was caused by taxiing the aircraft long distances with wings in the folded position without adequate means of support.

When the wings are in this position, the collar assembly, P/N VS-15021, is riding at the extreme inboard end of the track assembly. The undue amount of pressure at this point, caused by the vibration of the wings being blown by airflow from the propeller, in time caused weakening of the metal and eventual cracking at the weakened area.

Pilots at this activity were instructed not to fold their wings at the end of the taxiway but to leave wings spread until reaching the parking area and then fold them prior to moving into final parking position.

CVE-116 reported the same trouble and recommended use of the eighth hole in the jury strut while planes are parked on deck with wings folded, thereby assuring that the rollers ride at a better supporting point in the track. BuAer concurs with the local corrective action taken in each of these two cases. If the difficulty persists,



BREAK IN WING FOLDING TRACK ASSEMBLY

even with these precautions observed, BUAER will initiate corrective action.

Runways Marked For Night Use

NAS ALAMEDA—Since development of night airport operations requires runway markings clearly visible for night flying, a reflecting material consisting of small glass beads imbedded in a specially prepared white runway striping paint (Corps of Engineers Spec. No. T-1290) was adopted by BUAER as standard. Difficulty was found, however, in applying this to runways by the usual striping methods. The Public Works Shop at NAS ALAMEDA, after considerable experimentation, developed a practical and controlled method, finding that a Kelly-Creswell road striping machine, properly outfitted, would serve the purpose.

This machine, with a tandem platform for an operator, is a self-propelled striper. The paint is forced out by an air compressor attached to a 12-gallon pressure paint pot, using a standard spray gun for applying the paint. To this machine was attached a hopper, placed 18 inches behind the paint dispenser. The hopper, geared to the rear wheel, makes uniform application of the beads to the runway surface possible regardless of speed. The Kelly-Creswell is capable of traveling from two to five mph, and the speed for this operation averages four mph.

For efficient operation, a crew of three men is used. One man, riding the machine, guides it along the line laid out by the surveyors. A truck, with the other two men, follows along, acting as a shop-on-wheels to provide refills of paint and beads. For a 4500' strip the machine takes four refills, an operation requiring about 15 minutes a refill. For the standard 6" stripe the application rate for the paint is 240 lineal feet per gallon and for the beads 12 pounds per gallon of paint.

The reflector bead dispensing machine is used for all night runway marking at NAS ALAMEDA and at all its auxiliary stations.

NAS CORPUS CHRISTI—Six Chilean officers were given their graduation diplomas and "wings of gold" at a recent ceremony at this training station. The fliers embarked to Washington and New York from where they will return to their native land to teach flying there.—*The Beam*.

Emphasis Is On Industry Safety

With the return of peacetime operations in A&R shops and other Naval industrial establishments, the emphasis again is being put on employee safety and reduction of accidents.

Accidents cost money. They take lives and they keep workers in bed, fouling up production plans in their shops. With this issue, NAVAL AVIATION NEWS is publishing a quarterly report of industrial accidents (below).

Figures compiled by the Safety Branch, Office of Industrial Relations, will be reproduced to show how stations are doing in keeping down time-consuming accidents among their civilian workers.

The first column of figures shown here gives an idea of the comparative frequency of accidents at various stations, the figure actually being the total number of time-loss accidents per million hours worked. The second column shows how badly hurt the workers were by indicating the number of working days lost per 1,000 days worked at the station.

AIR STATION INDUSTRIAL ACCIDENTS

January through April, 1946

STATION	Accident Frequency*	Days Lost**
Alameda, NAS	8.71	1,528
Alameda, NAB (a)	15.61	200
Anacosta	16.86	247
Astoria	21.39	032
Atlanta	18.21	310
Atlantic City	3.92	012
Banana River	6.85	299
Parber's Point	19.74	260
Brunswick	11.67	053
Cherry Point	15.02	279
Coco Solo	32.40	331
Corpus Christi (b)	4.39	590
El Centro	7.14	071
El Toro	17.26	2,990
Ewa	34.24	509
Ft. Lauderdale	17.47	070
Glynco	9.13	164
Hilo	41.16	555
Jacksonville (c)	11.24	161
Kaneohe Bay	7.03	089
Key West	3.37	303
Lake City	12.81	295
Lakehurst	9.64	013
Memphis	3.32	012
Miami	14.83	132
Moffett Field	9.39	6,289
Mojave	16.50	132
Norfolk	11.93	136
Patuxent River	8.61	282
Pearl Harbor	9.55	076
Pensacola (d)	2.69	182
Philadelphia	2.70	065
Ononset Point	15.82	203
San Diego NAS	21.73	1,581
San Diego MCAS	23.03	355
San Juan	7.78	251
Seattle	7.63	131
So. Weymouth	24.29	146
Squantum	21.55	1,070
St. Simons	36.76	1,360
Terminal Island	10.25	267
Whidby Island	11.33	397
AVERAGE ALL STATIONS	10.46	671

*Number of lost-time accidents per million hours worked.

**Number of days lost per thousand hours worked.

(a) Includes Arcata, Crow's Landing, Hollister, King City, Monterey, Oakland, Santa Rosa, Vernalis and Watsonville, and Fallon (Jan-March only).

(b) Includes Rodd, Cubaniss, Cuddihy, Kingsville, Chase, Waldron, Ward Island.

(c) Includes Municipal I, Mayport, Cecil, Nav Pers. Sep. Center.

(d) Includes Chevalier, Barin, Bronson, Ellyson, Saufley and Whiting.

PHOTOGRAPHY



Oblique F-56's Shoot Bomb in a PBM-5

Another new type of installation designed especially for coverage of *Operations Crossroads* is called the "Pick-a-back" (or Piggyback) mount. It consists of two F-56 cameras of different focal lengths (either 8½ and 20-inch or 20 and 40-inch) mounted obliquely, one above the other, and aimed at the same point.

Both cameras are operated simultaneously by one photographer, whose primary duty is to aim them during the period of the bomb burst. The electrical system is designed to permit remote control which starts the cameras by a radio impulse from another controlling plane.

VP-22 at San Diego tested the equipment in their PBM-5's, the type planes using the mount in the Bikini tests. The cameras were mounted by an adapter mount in the starboard waist hatch in place of the waist gun, and the receiver for the radio control was located on the APU deck.

Five flights were made to completely check remote control operation from another PBM-5 between 25 and 50 miles away. Distance from the target was maintained by radar and communications with the controlling plane were carried on from the waist station by means of extensions to the ART-13 transmitter and the BC-348Q receiver.

35 mm. Mitchell in TBM-3E Over Bikini

The photographic unit of *Crossroads* designed a mount for the 35mm. Mitchell motion picture camera in the turret of a TBM-3E, which was used in the preliminary training and testing in preparation for the Bikini tests. The camera is mounted on a piece of sponge rubber which is attached to a dural-covered piece of plywood cut to fit into the turret ring. Very excellent results were reported.



SERVICE TEST

INTERIM REPORT DIGEST

This digest covers the 15 May, 1 June Interim Reports of Service Test, NATC PATUXENT, and does not necessarily reflect BUAEF policy.

F8F-1 (54 Hours' Test)

Hydraulic System Hydraulic lines between accumulator and hand pump selector valve failed after three to four hours of flight operations. It is believed that air, source unknown, enters hydraulic system, causing regulator to induce high frequency vibration in pressure lines leading from the system regulator.

Hydraulic system subsequently was modified by Grumman. During 21 hours of flight operations since modification, four different pressure lines between regulator, accumulator, and system relief valve have failed. These lines were not replaced by Grumman and could have been fatigued by trouble occurring before system was modified.

Hydraulic Actuating Cylinders Right landing gear actuating cylinder had high pressure internal leak after 15.2 hours and 17 cycles of operation. Disassembly showed circumferential scars on "O" ring seal, P/N AN622736. Cylinder barrel and piston were unmarred.

Oil Consumption Specific oil consumption after 44 hours was: NRP, 1700 BHP—.0161 lb/hp/hr; 65% of NRP, 1105 BHP—.0094 lb/hp/hr.

F8F-1C (8 Hours' Test)

Armament Installation Airplane is equipped with four forward firing T31 20MM cannons mounted in the wing center section, two in each wing. Provisions are made for 188 rounds of ammunition for each outboard gun and 225 rounds for each inboard gun. Ammunition is carried in four wing compartments integral with the wing center section.

Cannons are charged hydraulically and fired electrically. Electric heaters for each cannon are installed. Cannons are boresighted to converge horizontally with airplane centerline at 300 yards and vertically with the line of sight at 300 yards.

The remainder of the armament installation, same as the F8F-1, consists

of a Mk 8 gunsight, an AN-N6-A gun camera, a Mk 51-12 bomb rack installed on the centerline fuselage, a Mk 51-12 bomb rack installed on the underside of each wing at station #96, and four Mk 9 rocket pylons installed on the underside of the wing center section, two each side, at stations #114 and #127.

F2G-1 (96 Hours' Test)

Exhaust Port Coupling Coupling on cylinder A-5 was found to be loose at 86.6 hours of test time. Pal nut was missing and brass hold down nut was loose on the hold down stud. Brass nut was retorqued and pal nut replaced.

Post flight inspection of the installation at 96 hours showed coupling sheared at shoulder, leaving a portion in the cylinder. Hold down stud was broken off flush with cylinder.

Cylinder assembly is being replaced and 120 hour test with engine P-65 continued. All previous exhaust coupling trouble has been confined to a backing out of the coupling from the cylinder head, with neither the coupling nor the stud showing any failures as described above.

Manifold Drain Intake drain, P/N R 82-G-60331, on number five bank intake manifold broke at 96 hours. Knob and spring came completely out, leaving the valve closed. This condition creates no flight hazard, but does cause danger in starting due to the possibility of hydraulic action if excess fuel collects in lower manifolds. Previous failure of intake drain valve occurred at 52.5 hours on valve serving number four bank.

Push Rod Housing Seals Seals on B-1 and C-1 exhaust push rods were removed to investigate cause of oil leaks. Seals were crystallized and broken. Seals are neoprene type, P/N PWA-A 889N7.

Starter Failure At 63.4 hours starter would mesh but failed to energize electrically. Positive terminal ring lead to field coil was broken, leaving the circuit open. Screw holding the terminal block to the case was properly safety wired but loose about $\frac{1}{4}$ of a turn. It is believed

that heat due to current through the ring lead released some tension from the screw securing the terminal block, thereby giving the block freedom to vibrate. This in turn caused the ring to crack open. This is the second identical failure of this part in the F2G type aircraft.

Flap Assembly Inboard flap assembly has been removed and replaced, incorporating F4U, FG, and F3A Aircraft Service Change No. 227.

XBT2D-1 (44 Hours' Test)

Eclipse Inverter When attitude gyro, master direction indicator, and turn and bank indicator failed to operate, investigation showed that inverter, type 1346 A, model 1, style A, was not functioning properly. Carbon pile regulator, type 1067, model 2, style A, serial 1-3, had broken away from its base at the shock mounts, tearing away at the rubber portion. This caused the ground lead to part from the terminal post, stopping the alternator. Failure is believed to be result of recent catapult shots and arrested landings tests at NAMC Philadelphia. *Recommend* that the carbon pile regulator mount be strengthened and that the ground lead be lengthened to prevent parting of the lead.

Engine Breather Line Douglas Engineering Order No. 5250632 was incorporated on this airplane, replacing the fibre glass flexible engine breather line with a Dural tubing and sk 1030 hose.



XBT2C-1 (18 Hours' Test)

This aircraft is a single engine, single place, low-wing monoplane with a jump seat for the radar operator. It is adaptable to both carrier and land-based operations, and is so designed that it can be used either as a torpedo bomber, dive bomber, or level bomber.

Armament consists of two fixed 20-mm aircraft cannons, one mounted in each wing center panel, and provisions for 200 rounds per cannon. Three Mk 51 Mod 12 bomb racks and four Mk 8 Mod O bomb shackles are located in bomb bay. Two Mk 51 Mod 12 bomb racks are installed on the wing center panel. Four Mk 9 rocket launchers may be put on each outer wing panel.

Landing Gear Right landing gear failed to retract after six hours flight time. Oleo had extended $\frac{3}{4}$ " too much and the collapsing mechanism prevented full retraction. Oleo was bled and flights resumed with satisfactory performance except that the right oleo later developed a small leak at the "O" ring seal.

Exhaust Stack Clamp Bolt Three of the stainless steel exhaust stack clamp bolts sheared after 11 hours of flight at cruising powers. Bolts were satisfactorily replaced with standard AN bolts of the same size.

Cockpit Canopy Hydraulically operated canopy has given trouble because of accidental emergency openings. Both the emergency release valve and the hydraulic by-pass valves are painted red, and crew members have a tendency to open wrong valve when attempting to open canopy from the outside. By-pass valve is being painted white and emergency release valve is being safetied with fine wire to prevent accidental opening.



SCRAP YARD AND FURNACE AREA OF SALVAGE PLANT; AIRCRAFT IN REAR AWAIT CUTTING

PUBLICATIONS

- AVIATION CIRCULAR LETTERS**
- 85-46 Motor Vehicles, Spare Parts, Tools and Consumables for Aircraft Carriers—Outfitting and Replenishment of.
 - 86-46 Complaints Regarding Infractions of Flight Regulations—Proper Handling of.
 - 87-46 Model Designations F4U-4B, F8F-1B, FSF-2 and F4U-5.
 - 88-46 Aviation Gasoline, Use of.
 - 89-46 Class "C" and Class "D" Aircraft Maintenance Activities—Maintenance Mission of.
 - 90-46 Flight Safety.
 - 91-46 Conduct of Aircraft Units Participating in Celebrations.
 - 92-46 Standard AN/ARC-1 VHF Radio Channel-Frequency Plan.
 - 93-46 Handbooks, Manuals, Catalogs, Specifications, and Equipment, revised classification of.
 - 94-46 (Confidential) Handbooks, Manuals, Catalogs, Specifications, and Equipment, revised classification of.
 - 95-46 Transient Aircraft—Hospitality to be Accorded
 - 96-46 Restriction of Transient Military Aircraft at Naval Air Fields.
 - 97-46 Classification of Aerial Photographs.
 - 98-46 Civil Aeronautics Administration Aircraft—Operational and repair of.
 - 99-46 XP5M-1 Model Designation—establishment of.
 - 100-46 XUC-1 Aircraft Model Designation, XUC-1K Pilotless Aircraft Model Designation; establishment of.
 - 101-46 KDR-1 Pilotless Aircraft Model Designation; establishment of.
- TECHNICAL NOTES**
- 16-46 Model TBM-3W Airplanes—Flight Characteristics.
 - 17-46 Parachute Storage Installations in PR4Y-2 Airplanes.
 - 18-46 Rearrangement of Batteries and Internal Wiring in Battery Box, CY-237/ARW-26, A Part of A N/ARW-36A Radio Receiver.
- TECHNICAL ORDERS**
- 16-46 Modifications to A N/APA-5 and A N/APA-5A Equipment to Improve Regulated Voltage Stability.
 - 17-46 Model SNB-2 Series Airplanes Restrictions and Permissible Maneuvers.
 - 18-46 Aircraft Hose—Identification, Installation, Inspection, Storage and Handling of.
 - 19-46 Aircraft Tire Pressure Decalcomanias—Replacement of.
 - 20-46 AR-8 Airborne Lifeboat—Parachute Release Mechanism—Installation in.
 - 21-46 Sway Bracing of Droppable Fuel Tanks—Restrictions on.

Warcraft Returning to Industry

Geographically located at the major point of entry on the west coast, NAS ALAMEDA faced the problem of disposing of mountains of battle-damaged, obsolete and war-weary planes and parts that were being returned from the combat areas since the early months of 1943.

Since labor, transportation, and storage were extremely critical, and bulk handling was expensive, it seemed logical to reduce bulky contaminated aluminum scrap to a solid salable state on the spot, and at the same time recover usable components for the reuse of the service.

"Salvage Lists" and procedures were devised and by April 1944 a low tem-

perature reverberatory melting furnace with a capacity of 2000 pounds an hour was turning out raw material for industry. New uses for the previously waste scrap are continually being developed. Industries in chemicals, cosmetics, steel flux, die cast, sand cast, mermentant moulds and aluminum alloy are the chief buyers at present. The post-war Alameda production is 600,000 pounds a month, and 8,000,000 pounds have been produced and sold since the plant began operations. Furnace installation cost about \$8,000. Furnaces for converting warplanes to scrap ingots also are in operation at Jacksonville, San Diego, Corpus Christi, Norfolk and Miami (NANews, April).



A war-weary Coronado comes to an inglorious end as it is cut up into small sections to be made ready for the furnace



Seven days' production at Alameda totaling 225,000 pounds of 80% pure aluminum which will bring the government \$15,502.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

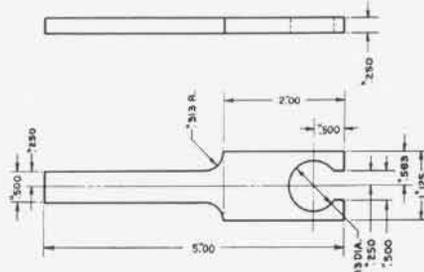
Accidental Firing of .50 Cal. Wing Gun

The following accidental firing report was received by BuOrd and is published (in part) in the interests of safety. This is an isolated case and will not be covered by further directives; however, this occurred, unnecessarily endangering many lives.

"One round of .50 cal. ammunition was fired from the wing gun of an F4U aircraft. The projectile hit about one-third of the way up on the forward bulkhead of the number one elevator well, penetrated the forecastle, and the water closet, perforated a steam line and dispersed a number of metal fragments. The projectile then penetrated the starboard door to the water closet, aft bulkhead of the forecastle, junior officers' bunk room and lodged in the mattress of a bunk. Fortunately, no personnel injuries were incurred."

"It is the opinion of this command, after making a thorough investigation, that the accident was a result of a broken sear slide which could have caused a run-away gun had not the belt ammunition been removed in the feed chutes."

The following statement was made by the ordnanceman who was performing the unloading operation. "The first thing that I did, was to check the gun switches and master arming switch. They were in the "Off" position and the gun chargers were turned down on "Safe" position. I opened the port and starboard gun doors and raised the cover latches on both outboard guns and pulled the ammunition from the feed chutes. I removed the ammunition



HANDLE LENGTH CAN FIT PLANE SERVICED

from the T-slot of the starboard gun. I tried to remove the round from the T-slot of the port outboard gun and could not. I let the bolt go home and the gun fired. I was intending to close the cover and charge the gun. Therefore the round would have been extracted from the chamber when the bolt moved aft."

This Bureau concurs with the originator in that the cause of accidental firing was obviously a broken sear slide. While this is an unusual occurrence, it can and has happened before. This accident would not have occurred had the ordnanceman concerned been cognizant of O.T.I. GV11-44 which states, "That ordnancemen be instructed to never assume that a gun is on "Safe" and never ease the bolt forward with the charger without previously clearing the gun of ammunition."

It is recommended that a device such as that pictured here or similar in design be constructed locally and employed in the removal of ammunition from the T-slot of all .50 cal. guns. These tools are un-

der procurement by this Bureau and will be distributed when available. The practice of removing such rounds by charging into butts or when accidental firing would in no way endanger personnel or material. The removal of these rounds by charging, while not inherently dangerous, may through some defect, unnecessarily endanger the lives of personnel in the vicinity.

Ordnance Publications You Should Read

In the past two months there has been noted a decided increase in the number of accident reports received. The severity and nature of these accidents was such as to create doubt as to their completeness. It is entirely possible that similar malfunctions which fortunately have not injured personnel or done extreme damage have not been reported. Further, the cause of the malfunction or accident reported has not always been considered a closed case by BuOrd, yet further investigation has been impossible because the component parts involved have been either lost or discarded.

The major cause, of all reports received, has been traceable directly to poor maintenance, and a disregard of safety precautions.

In view of the rapid turn-over of personnel it is of the utmost importance that complete and thorough indoctrination be emphasized and it is therefore desired to call the following publications to the attention of all officers and men connected with aviation ordnance:

ORDNANCE TECHNICAL INSTRUCTIONS—GV2-44, GV35-43, V13-43, GV11-44 (para. 7(b)).

ORDNANCE PAMPHLET—1317, pages 84 and 85.

ORDNANCE CIRCULAR LETTER—NavOrd V2-46.

The proper use of, and a thorough familiarity with, the contents of these publications should greatly reduce the number and severity of malfunctions, by increasing the reliability of maintenance.

All cases of malfunction, damage, or accident involving ordnance equipment must be the subject of a report addressed to the Chief of the Bureau of Ordnance. The case in question should not be considered closed, nor should the parts or assemblies involved, including those broken or deformed be discarded, until a reply, to that effect is received from this Bureau.

20mm Gas Cylinder Guide Lock Washer

Recently a new 20mm. M3 automatic gun gas cylinder guide lock washer (A-7229175) has been procured which will eventually replace the present gas cylinder guide lock washer (A25611).

Recurrent failures of the old lock washer (A25611) have made it necessary to develop a more sturdy lock washer to withstand stresses encountered in firing of the M3 gun. There has been no change in the mechanical design of the lock washer other than to increase its thickness from .042" to .062".

Other improvements include the changing of the material specification from medium structural carbon steel with no heat

Succeeds List of June 1, 1946

1 July 1946

LIST OF NUMBER AND DATE OF LATEST ISSUE OF AIRCRAFT SERVICE CHANGES AND BULLETINS

Aircraft	Bulletin	Date	Change	Date
F6F.....	139	5-9-46	96	12-20-45
F4U-F3A-FG.....	279	5-6-46	240	2-15-46
F7F.....	32	5-23-46	33	3-1-46
F8F.....	19	4-22-46	16	6-20-46
FR.....	14	4-17-46	29	5-2-46
F2G.....	0	—	1	5-8-46
PV.....	187	3-18-46	191	3-20-46
PBM.....	169	4-4-46	181	12-29-45
PBY.....	144	5-2-46	187	10-19-46
PB4Y.....	227	5-14-46	196	6-4-46
R5C.....	83	6-3-46	157	12-18-45
R4D.....	59	5-13-46	48	10-3-45
R5D.....	89	5-15-46	141	2-18-46
RY.....	91	4-19-46	38	6-4-46
SB2C-SBF-SBW.....	242	6-12-46	166	5-20-46
SC.....	103	6-6-46	51	4-10-46
TBF-TBM.....	220	1-25-46	247	12-5-46
TBY.....	23	2-18-46	6	10-26-45

For complete list of Aircraft Service Changes and Bulletins, see Naval Aeronautics Publications Index NAVAER 00-500 and supplement 00-500A.

LATEST BULLETINS ENGINE, AUXILIARY POWER PLANT, ACCESSORY, PROPELLER Dated 1 June 1946

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
PRATT & WHITNEY				
PR-985	—	—	—	—
R-1340	—	—	—	—
R-1830	421	5-27-46	Conversion of R-1830-90C with Two Speed Blower to R-1830-90D with Single Speed Blower.....	To include additional parts and information
	Supp. 1	—	—	—
	459	5-20-46	Valve Rocker to Rocker Shaft Clearance.....	To change the replacement clearance between the valve rocker and valve rocker shaft on applicable engines
	461	6-10-46	Ignition Manifold—Supporting Brackets—Reinforcement of.....	To increase the strength of subject brackets
R-2000	151	5-20-46	Valve Rocker to Rocker Shaft Clearance.....	To change the replacement clearance between the valve rocker and valve rocker shaft on applicable engines
R-2800	0	5-4-46	Index, Numerical—R-2800 Engine Bulletins.....	To list R-2800 engine bulletins in effect and list of bulletins cancelled
	Supp. 1 to Rev. I	—	—	—
	282	5-20-46	Stromberg Model PR-58E1 and PR-58E2 Carburetors, 398345 Spacer on—Use of.....	To clarify the use of 398345 spacers between the rear and center bodies of the regulator nut used on the Stromberg PR-58E1 and PR-58E2 injection carburetors
	283	5-23-46	Blower Inlet Butterfly Valve.....	To provide instructions for reworking the blower inlet valve to provide additional air flow to the blower chamber.
	285	5-20-46	Valve Rocker to Rocker Shaft Clearance.....	To change the replacement clearance between the valve rocker and valve rocker shaft on applicable engines
R-4360	19	5-31-46	Starter Drive Support Assembly.....	To provide information on a more durable starter drive arrangement
	26	5-14-46	Power Control Mounting Pad.....	To give instructions for reworking the forward edges of mounting flanges to prevent interference
	27	5-20-46	Knuckle Pins.....	To preclude the possibility of galling and to provide for greater strength of the non-intersected knuckle pins
WRIGHT				
R-1820	—	—	—	—
R-2600	—	—	—	—
R-3350	35	5-13-46	Modernization of R-3350-8 Engines.....	To make all necessary modifications in the engines listed for purposes of modernization
GENERAL ENGINE BULLETIN				
	8	—	—	—
Reclamation	Instructions	—	—	—
	2-P-2	5-22-46	Crankshafts—P&W R-985 and R-1340 Engines.....	—
	2-P-4	5-22-46	Crankshafts—Chromium Plating P&W R-1830 Engines.....	—
	2-P-5	5-22-46	Crankshafts—P&W Engines.....	—
	2-P-6	5-22-46	Secondary Counterbalance Spring Coupling Floating Plate—P&W Engines.....	—
	3-P-5	5-22-46	Diaphragms, Regulator Air in Stromberg Injection Carburetors—Coating of.....	—
	70	5-14-46	Stromberg Injection Carburetors—Modification of Vapor Vent Floats.....	To establish a more satisfactory type of rework than outlined in the original bulletin
	Rev. 1	—	—	—
	78	6-4-46	Stromberg Injection Carburetors—Cancellation of Instructions to Leave Mixture Control in Auto Lean after Stopping Engines.....	To provide additional information
	Supp. 1	—	—	—
	84	5-20-46	Diaphragms, Regulator Air in Stromberg Injection Carburetors—Coating of.....	To prevent cracking of the regulator air diaphragm due to oxidation in the carburetor
	85	5-14-46	Stromberg Injection Carburetor—Checking Air Section for Leakage of.....	To standardize a procedure at overhaul activities for checking the air section of the carburetor
	Rev. 1	—	—	—
POWER PLANT ACCESSORIES BULLETINS				
	2-46	5-20-46	Pesco Model IE-521-D, DA, DC and DAC Hydraulic Pumps—Reworking of Base.....	To correct errors in Power Plant Accessories Bulletin No. 5-45
HAMILTON STANDARD PROPELLER				
	45	5-31-46	Hamilton Standard Service Bulletin No. 106—Approval of.....	To approve Hamilton Standard Service Bulletin No. 106—Approval of

treatment, to spring steel heat treated to Rockwell C43-48. It is expected that the lock washer (A7229175) will alleviate all difficulties previously encountered with gas cylinder guide lock washers; however, the lock washer (A25611) will continue to be used until all supplies on hand are exhausted.

Modified Lock Plunger on 20mm. Guns

The Navy's 20mm. M3 automatic guns of recent manufacture incorporate a redesigned rear buffer lock plunger (A7229174). Redesign of the lock plunger (A25564) has been found necessary because of the recurrent failures of this item when roughly and improperly pulled out of the locked position.

Differences between the two plungers are that the diameter of the redesigned plunger shaft (A7229174), except for .382" at the end, has been increased from .195" to .248" and the material specifications have been changed from free cutting steel

with no heat treatment to alloy steel, heat treated to Rockwell C30-C36.

The plunger (A7229174) will not be installed retroactively on 20mm. M3 guns but will appear only on those of recent manufacture, otherwise it would be necessary to modify slightly the rear buffer lock plunger hole. A possible exception to this rule is in the event an old lock plunger (A25564) is not available. In this case it will be a relatively simple operation to enlarge the plunger hole in the rear buffer to incorporate the redesigned plunger. Attention is invited to the fact that the plunger (A25564) can only be used in those rear buffer assemblies manufactured prior to the subject redesign.

Rocket Circuit Tester Tried Out

NAS NORFOLK—At the direction of BuORD, tests of two Army-type Triplett rocket circuit testers have recently been conducted by a local CASU for this

activity and worked out successfully.

A number of Mk 11, Mod. O scars were tested with the circuit tester, and no defective rounds were found. These rockets were subsequently fired with no misfire, indicating that the circuit tester had performed satisfactorily.

Forty-one Mk 7, 3.25" rocket motors were tested and fired. All rockets within the "OK" range fired satisfactorily. Three rockets, which indicated no reading in testing, did not fire. One rocket with a "low" test reading, did not fire.

The results of the tests indicate that the use of the rocket circuit tester is highly desirable, since in every case the defective rounds were clearly indicated and did not fire, while all rockets within the "OK" range fired satisfactorily when the CASU tested them.

LETTERS

SIRS:

It is suggested that when new items of safety and survival equipment like rafts, anti-blackout suits, exposure suits and the like, are publicized in NAVAL AVIATION NEWS, that the approximate dates the material will be available through Navy Supply channels and were allocated also be publicized.

CASU-22

G. C. MILLER

¶ Because the system of distributing such equipment frequently is rather lengthy, NANews has not tried to tell where allocations were made. However, such data is available in each Technical Order or Note issued about the new equipment coincident with its being supplied to the field. When possible, NANews will try to give approximate dates of availability. Ordinarily, we carry articles on new gear only when it is available, to prevent demands on supply points for non-existent items.

SIRS:

Concerning your explanation of the Aerographer taking a balloon sounding (Cover, NAVAL AVIATION NEWS, April 1946), I would like to point to the fact that a balloon sounding, of the type he is shown making, is made to determine the wind direction and velocity aloft *only* and not the temperature and pressure. The temperature, humidity and pressure aloft are obtained by means of an Aerograph flight or a radiosonde sounding.

L. M. O'RORK, AERMIc
AEROLOGICAL OFFICE

NAAS Chincoteague, Va.

¶ Correct. Also correct is Noll G. Thompson, CAerM, on the *Langley*, who noted the man was an aerographer's mate, not an aerographer—who is a warrant officer. Reports are not made hourly but every six hours. NANews was incorrectly advised about picture by bureau "expert."

SIRS:

Throughout my service life with the British Naval Air Arm I have enjoyed your twice-monthly publication. I have enclosed a few photographs which might



be of interest to your readers, one of them showing the Warrick, an air/sea rescue version of the Wellington bomber.

It is equipped to drop its twin-screw life boat, comparable to the American AR-8, whenever and wherever an RAF or Royal Navy crew is in need of flotation.

LAF/O K. W. POWELL
Naval Air Sea Warfare Development Unit
Nr. Emswrth, Hants, England

SIRS:

The Information Desk in Operations has circulated the following poem around North Island and it seems most worthy of printing. The actual origin is not known.

There's no way of knowing
Where airplanes are going
Until they come here to clear.
We know you're persistent
And very insistent
And would like an egg in your beer.

Our men are efficient
And aircraft sufficient
To fly you from here by plane,
So sit here and sweat
And please don't fret
And, for pete's sake, please don't complain.

Please understand
We have on hand
No extra chutes for your use,
So be a good fella
And bring your umbrella
In case it runs out of juice.

Our room is quite small
And can't hold you all
So please wait it out in our waiting room.
And please understand
You can't have us canned—
The heck with your rank, we're the boss.

CAPTAIN L. E. GEHRES, USN
COMMANDING OFFICER

SIRS:

Back in the early thirties, flag pole sitting was one of the more honorable professions. Just the other day one of our lieutenants attempted a revival of the art with an air-age twist. He went Shipwreck Kelly several better by trying it in a *Corsair*!

Records for flag pole sitting in heavier-than-air craft are not available in our squadron files, so we reserve our claims until we hear from the *Sporting News*. In this case the tenure of perch was practically instantaneous, but long enough to shear off the left wing up to the trim tab.

This is not generally considered good technique when only fifty-six feet from six-feet-under in the FCLP circle, but our intrepid lieutenant carried the maneuver off successfully and returned to base as the only living *Corsair* flag pole sitter of our acquaintance.

When interviewed, "To what do you attribute your success?" he replied with becoming modesty, "To the geniuses who laid out that FCLP circle directly over the station with two white flag poles, sans flags, directly in our path, so that we all looked like skiers in a slalom race!"

E. G. SCHWAB
VF-82 COMMANDING OFFICER



The Cover V-J Day in Tokyo Bay, 1945, saw U.S.S. *Ticonderoga* hoist the Stars and Stripes in victory as she sailed into Jap home waters. Today, the *Ticonderoga* lies idle at a dock in Puget Sound. Her crew and planes are gone.

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Basic Air Training	1
Grampaw Pettibone	6
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ANSWERS TO QUIZZES

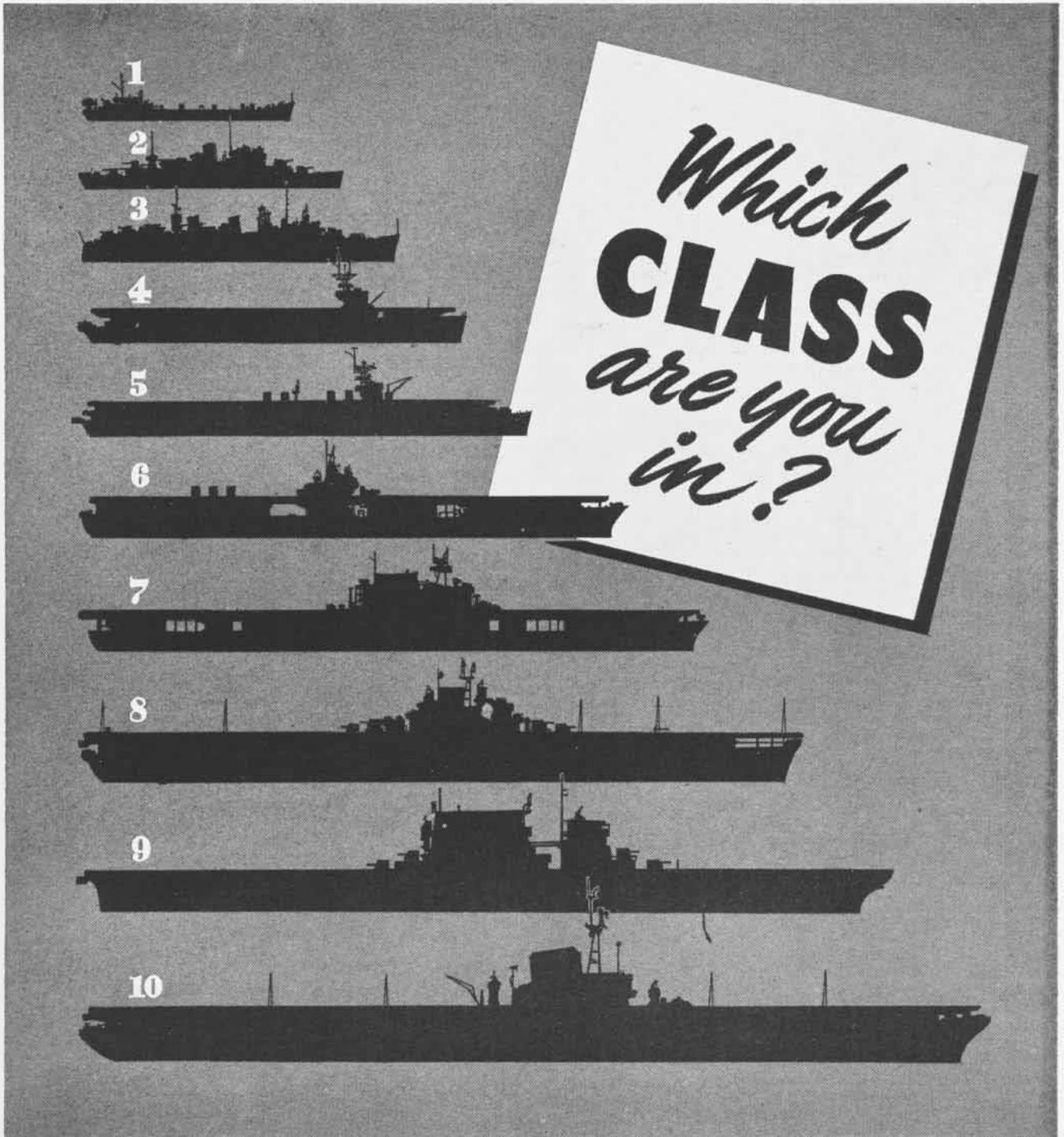
- **GRAMPAW QUIZ (p. 6)**
 1. Clockwise (right hand) traffic around the airport. Ref: C.A.A. Manual 60, "Air Traffic Rules," page 5.
 2. No. This will tend to increase the dive angle and make the pull-out more difficult. Ref: BuAer Tech. Note 20-44.
 3. To the right. The rotation of winds about a low pressure area is counterclockwise in northern latitudes. By circumventing the storm to the right you may expect favorable tail winds. Ref: Training Film MN-119; 63688, "Flying the Weather Map."
 4. "Obtain approval for a change of flight plan or approval of an instrument flight plan prior to entering such weather conditions. If this is not possible, it is the responsibility of the pilot to conduct flight in weather conditions not requiring approval (basic CFR minimums or better) to his destination or to another airport." Ref: C.A.A. Manual 60, "Air Traffic Rules," page 18.
 5. "—that portion of the approach at a right angle to the landing direction on the downwind side of the airport." Ref: C.A.A. Manual 60, "Air Traffic Rules," page 3.

● **NAVIGATION QUIZ (p. 10)**
Time of turn, 1540.

● **BEST ANSWERS (p. 24)**
1-d, 2-a, 3-b, 4-a, 5-c, 6-b.

NEWS

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



SILHOUETTES TELL ONLY HALF THE STORY

FROM 15,000 feet a fighter pilot can tell the *Big E* from an Essex class flattop and never miss. A lookout on the bridge of a cruiser can distinguish a CVL from a CVE when they're spots on the horizon. It's all a matter of islands, stacks, decks, turrets and hull lines—plus good training. But silhouettes won't reveal which flattops filed monthly news reports. To tell a reporting class carrier from a non-reporting class you have to

read NAVAL AVIATION NEWS. It's stories not silhouettes that identify the ships that submit News reports regularly. (See Aviation Circular Letter No. 128-45.) Which class is your ship in? Like the fighter pilot or the lookout, you probably can pick it out at a glance. But can you find it mentioned in this issue of NAVAL AVIATION NEWS? If you can't chances are it's because your ship hasn't bothered to be a reporting class vessel. For quiz answers invert page and read small type below. To determine your ship's class, read NAVAL AVIATION NEWS.

Ans.: 1. LST 2. AVP (seaplane tender) 3. AS (submarine tender) 4. Sangamon class CVE 5. CVL class Independence 6. Ranger 7. Enterprise 8. Essex 9. Saratoga 10. Midway

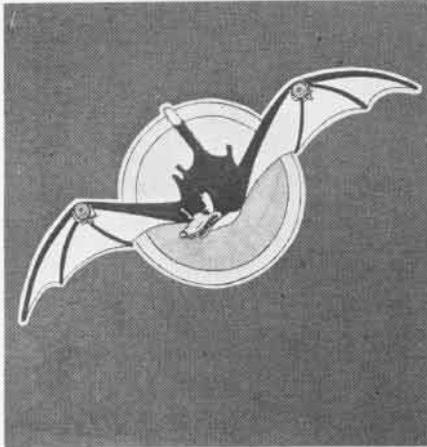


SQUADRON INSIGNIA

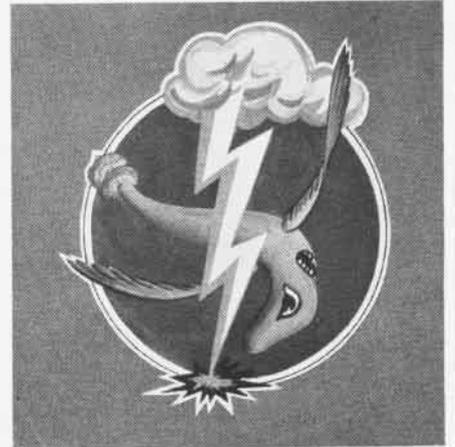
DEATH PUTS ITS FINGER on an intended victim in the VMF(N)-531 squadron insignia. Flashes from the eye hollows designate a secret locating device used by these first Marine night-fighters as they operate in a blackened sky. Dubbed by themselves the "Black Sheep Squadron," the members of VMF-214, once commanded by "Black Sheep Pappy" Boyington, felt they were the "outcasts of the Marine Corps," because when they were reorganized in 1943 they were not sent back into any major combat until the strikes on Rabaul.



VP-143



VT-27



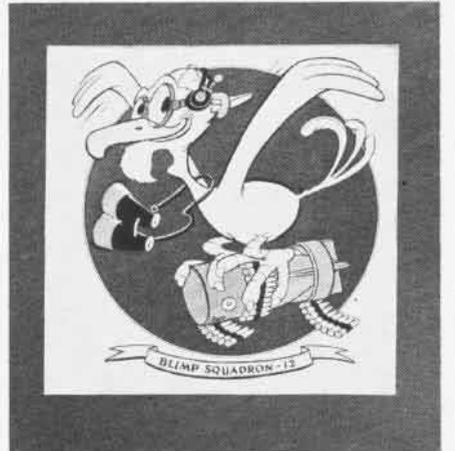
VT-21



VMF-214



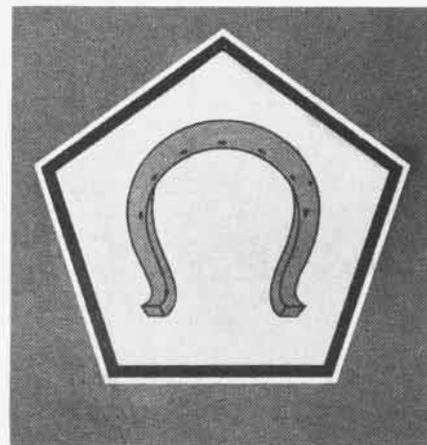
VMF(N) 531



ZP-12



VMF-221



CAG-7



VF-75