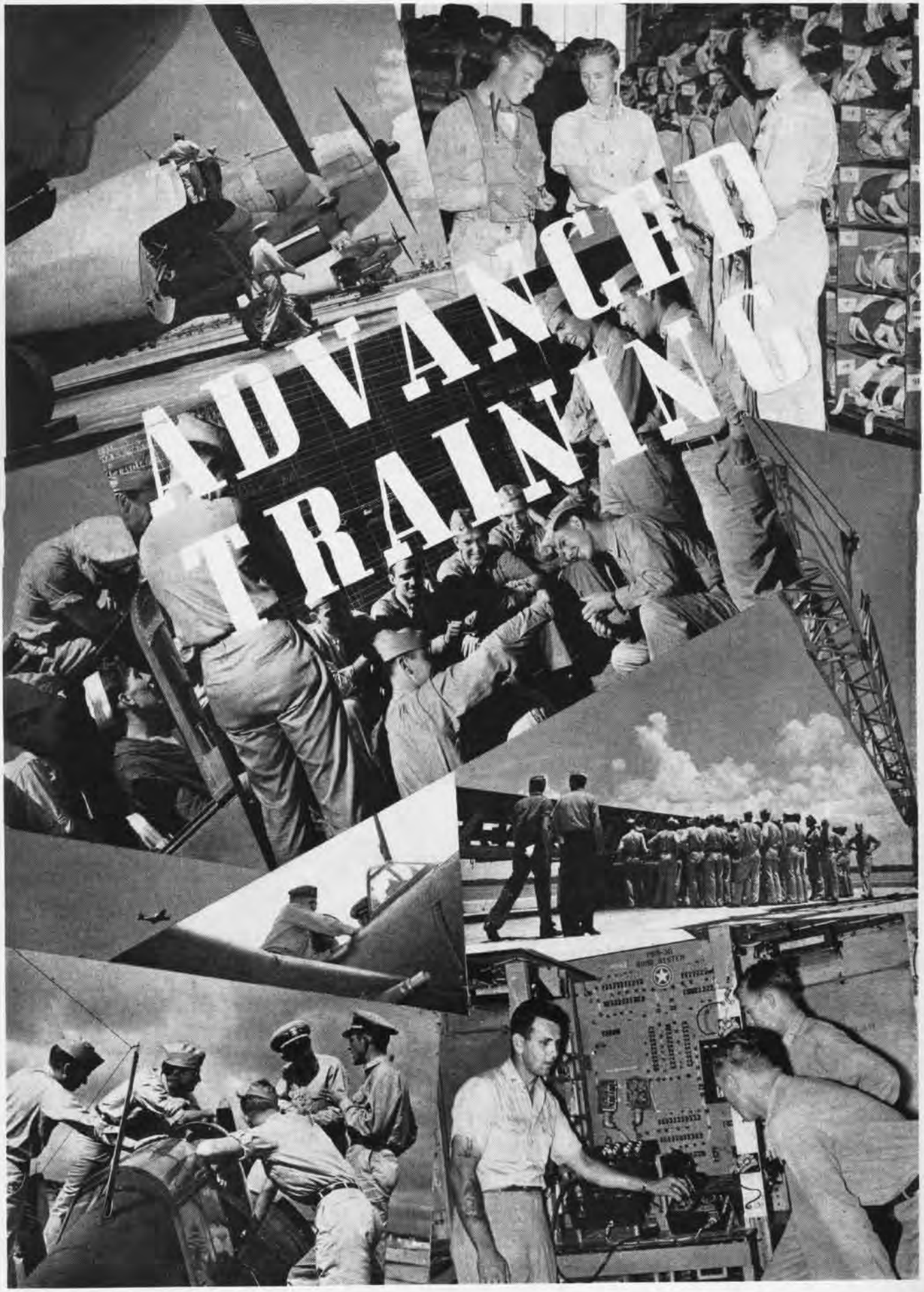
NAVAL AVIATION NEWS

Advanced Training
Waves in Aviation
Showcase Weather

October 1946

RESTRICTED


ADVANCED
TRAINING

Florida East Coast and Whiting Field at Pensacola, Scenes of Advanced Training

THEME SONG of the Naval Air Operational Training Command from Pearl Harbor to V-J day was, "We produce Naval Aviators ready for Japs, for Germans, for any type combat. Bring it on."

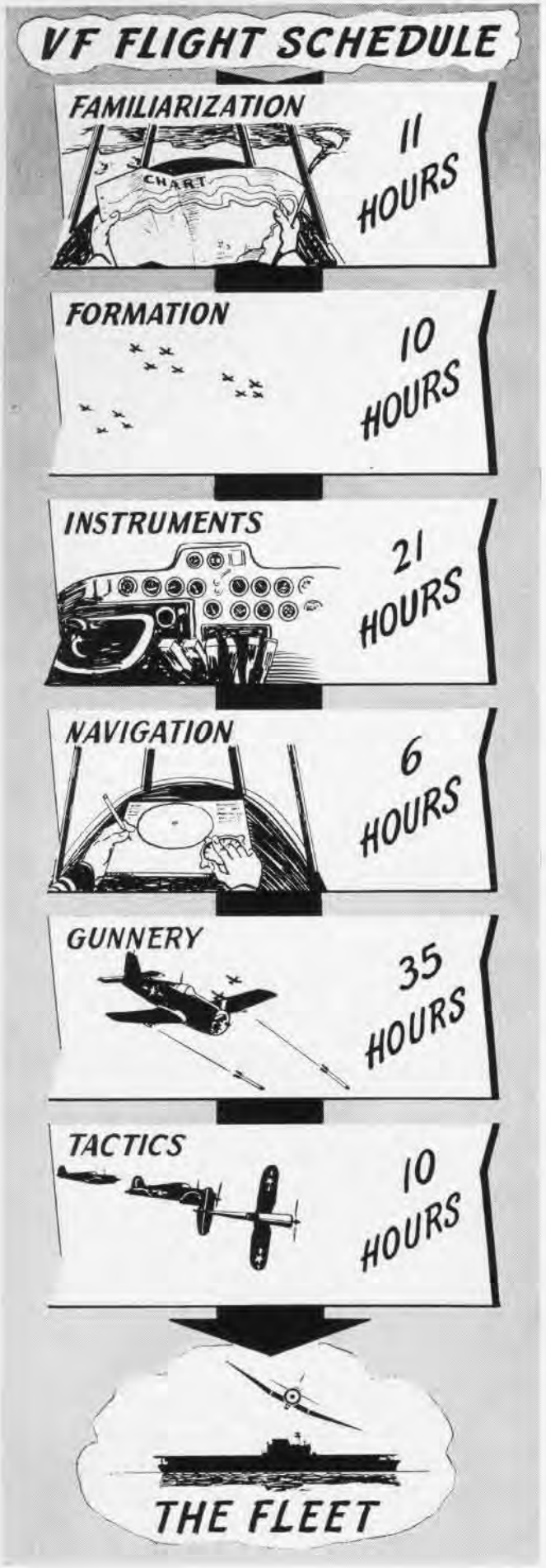
Down in Florida now they are a little less boisterous. Understand that they are no less energetic nor diligent in the pursuance of their duties of furthering the training of Naval Aviators, however; for the bragging-by-rhetoric cessation is provoked by shortage of personnel and material—not shortage of initiative or energy.

Products of Advanced Air Training (new title for operational training under the Holloway plan) may not be capable of holding up under combat conditions, but they will be expected to perform all routine or training flights conducted by fleet squadrons with the possible exception of carrier qualification in service-type aircraft.

COCKPIT-CHECKOUT VIA SELF-CONFIDENCE

They will likewise be subjected to and show evidence of a more integrated officer training program. Wartime laxities in making officers of wing-bearing boot ensigns and second lieutenants were inevitable in the accelerated operational flight training. In contrast, the reformed Advanced Air Training Command is leaning over backwards to warrant the gold bar of each of its graduates.

Recipients of the gold wings in Pensacola ceremonies are ordered to one of a number of stations within the advanced command. Here each student officer is given instruction in only one of the service types syllabus. Where in basic he was given checkouts in all types of planes, in advanced training he specializes in the particular type aircraft he chooses to fly with the fleet unit to which he will go upon completion.



Naval Aviators Receive More Training to Be Officers Than Before in New System

JACKSONVILLE Naval Air Station, headquarters for R. Adm. Ralph Davison—current Chief of Naval Air Advanced Training, is operating base for two of the advanced training units . . . VSB and VO-VCS. A norm of 121 and 18 students, respectively, is expected in these two squadrons from now on.

At BANANA RIVER NAS, 150 miles down the east coast of Florida, 97 student officers are engaged in multi-engined seaplane and amphibious training.

Two fighter squadrons at NAS OPA LOCKA (Miami) are training 287 student officers, and NAS FORT LAUDERDALE, just 40 miles to the north, carries on its wartime invoked VTB training by handling 98 students as well as 102 VBF trainees.

WHITING FIELD NAAS, under PENSACOLA NATB, is the location of a VP ATU for PB4Y's and PV's which handles 54 students.

During the 14-week period (this varies a slight bit according to plane type and the weather encountered during interim of student's training) the embryo pilots shed their novice appellation by attending a half day of ground school and spending a half-day in flight for five days out of each week. Saturday mornings are open for drills, parades or inspections.

Class periods are 50 minutes each. Number of classes per day varies between three and four depending on whether students get athletic training that particular week.

Flights vary in time according to the mission to be performed. Ground school generally keeps ahead of flight schedules due to bad weather causing cancellation of many hops.

This bad weather is a mighty important thing along the Florida coast line. Thunderstorms build up along the ocean line nearly every day in the PM hours provoking a 50% expectation of cancelled flights—an expectation generally dubbed as an understatement.

WITH the start of the fiscal year of 1947, 1570 student officers were on TEMDUFLYINS in the AAdTraCom. At the same time a total of 1882 officers, including 32 nurses, 91 waves, and 91 warrant officers, were on duty with the command.

These figures are in a ratio of 1 to 4 with those tabbed at the peak of wartime training, and the denominator on this ratio is due to grow even larger in the future.

Greatest shortage, however, is with qualified enlisted personnel. Lack of efficient mechanics, ordnancemen, and radio men is forcing each ATU to fly less and less.

While numerous of the wartime innovations have been removed from this command, i.e., night fighter training and carrier qualification, new portions of the advanced syllabus make the course as attractive—if not more so—as before. One of these is the product of a remedial step taken to correct the deficiency of aviators in matters outside of aviation and actual Navy operations.

To broaden the scope of the Naval Aviator, classes in modern history, social sciences, English, and economics have been incorporated in the training. Two classes a week, presented at night, are now on the docket.

Outstanding lecturers, well-known and proficient in the field of their subject, are teaching the college subjects. Reception of students to the new classes has decidedly been of a positive nature.

At Jacksonville, an Advanced Instructors Training Unit

Smile of nearest student indicates a Jap in the sights. Idea of device is to mark when aircraft at end of tunnel is in range

Down from a gunnery hop, these novice pilots get the word via a fleet-experienced instructor who is passing on range information

turns out 20 new flight instructors each six weeks to take their place in the training set-up.

Arranged in flights of six, the prospective instructors take turns as the practice teacher on one hop each of formation, section tactics, navigation and gunnery. Upon completion of the blind flying syllabus, 11 hops in the front seat—11 in the rear, they are given a 'white' card which qualifies them for unrestricted instrument hops. (NANEWS July, 1946.)

A sidelight of the Advanced Training Command is at St. Simon's, Ga., where radar-minded pilots are taught the extremely important job of fighter direction. Most of the students are fleet-experienced pilots who, recognizing the value of the wartime created job, have made the decision to specialize in the electronics field.

ALMOST 200 officers are to be found at St. Simon's in the fighter direction activity, thus emphasizing the spot that this training has in the Advanced Command. (NANEWS June, 1946.)

One of the big things the outsider notices in examining the training given the new officer-pilots is the stress put on the collateral duty which the officer may expect when he reaches a squadron.

The students make their choice of the collateral duty they would prefer, and they begin immediately to aid the station or training squadron officer assigned to that billet in the execution of his duties, learning and practicing tactics they must know on assuming such a job in the fleet.

Say it's navigation officer the student is angling for. He'll be given the working info on all specific nav material which his particular service type squadron employs. He is shown how to protect the gear from corrosion and rust which sea status will provoke.

Our potential nav officer is urged to devise his own system for keeping tab on pieces of gear so that he may be responsible for whatever equipment his squadron has. His initiative in his collateral duty post is an important thing.

Links to the left of me, Links to the right of me — Pilots never outgrow the box-like training aid, symbol of instruments

The Florida dusk finds these student aviators giving with the hangar flying as squadron carryall heads for BOQ and chowhall

Seaplane operations must be familiar to all VO-VCS aviators and the dope is learned by actual work as well as observation

Student at far left of ACI reading room isn't typical. Not all students can read *Sense* pamphlets upside down as he is doing

Gassing planes and wiping windshields is common act for 1946 student in advanced training. Shortage of personnel is the cause

Shortage of Personnel Provokes Use of Student Pilots as Linemen and Mechanics

All of the fighter training with the exception of fighter-bombers is carried on at Miami. Two squadrons—VF-1 and -6, the former equipped with F4U's and the latter with *Hellcats*—operate from the Opa Locka field.

As it was in wartime synthetic devices give an added boost to gunnery training. No longer in use is the famed gunairstructor but such devices as the new range-reflection machine help the novice get better scores when the target sleeve is marked.

Students in attack type planes, VSB and VT, are no longer assigned aircrewmen during their training period. An excess of the aviation gunner-radiomen has halted training of any more at either Jax or Fort Lauderdale.

Neither do multi-engined trainees have worries of carrying crewmen through the advanced stages anymore. Pilots pick up their crews on reaching the respective operating squadrons on the east or west coast of the country.

Fighter-bomber training at Lauderdale varies from the true VF syllabus in only one manner, that being an excess bombing course to replace a number of gunnery hops.

Of all the advanced training units, the observation scout squadron is the only one incorporating a revolutionary move over basic. The move of the seaplane unit from Pensacola to Jacksonville was the start of the Advanced Command's control of all single-engined seaplane training.

Students in this ATU are getting their first hop in single-engine seaplanes. Because of the small needs for the float-plane pilots in the fleet, the complement of the observation-scout unit is the smallest in the command.

Within the flight syllabus, greatest pressure in instruction is put on instrument flying. SNJ's see a lot of the air in aiding single-engine pilots, and PBM's, PB4Y's and PV's all run on instruments a good bit.

Single engine operation for landings, takeoffs, and instruments is one of the strongest training points in the multi-engined pilot's course.

In regard to these large flying boats and bombers, synthetic devices which mock them on the ground are a great aid in giving potential PPC's and PP1P's the word on operation before they ever take to the air. (See picture of pilot at mock-up flight engineer's spot.)

Typical of all advanced flight syllabi is that invoked to fighter pilot students. A panorama of what and how much the trainees get may be seen in the chart on page two. Comparable periods and type of training are given, depending on the types of service aircraft.

Flight progress of the embryo birdman is now recorded on a novel board. Golf tees, simulated as pegs, are fitted into holes and represent the pilot in the specific stage he happens to be. Just a quick glance is needed to prepare schedules.

Likewise, in ground school, similarity between the different type syllabi also exists.

Dividing the ground training into three divisions according to value to the student, the ground school head in the Advanced Command have relegated subjects into one of the following phases: *a*. Flight Training Support, *b*. Type Training Support, and *c*. Officer-Pilot Training.

Under Phase *a*, operations, instruments, gunnery, and tactics are taught 21 class periods. Phase *b* involves 100 hours of communications, navigation, engineering, survival, and radar instruction.

All items pertaining to officer-pilot qualities of the student—essentials of naval service, aerology, recognition, Civil Air Regulations, flight physiology and physical training—

are all incorporated in the 88 hours of training phase *c*.

In contrast to wartime is the fact that the majority of the ground school officers are pilots. This arrangement is good from a psychological as well as a practical standpoint. New ensigns and second lieutenants will listen more eagerly and heed more quickly someone who has gone through what they have and who has faced what they have yet to encounter than someone who is forced to talk mostly theory.

Practically no washouts occur from failure in ground school. An occasional one in flight training, however, puts the attrition rate at a meager two percent.

Removing an officer student from Advanced training is not so simple as washing out a cadet in Basic. If a trainee fails to show the proper advancement in his flying, a Squadron Board is called and reviews his case.

Should the Squadron Board's recommendation be that the novice be dropped from flight training, such recommendation is sent on to another board convened under the Superintendent of Aviation Training.

Unless a veto is placed on the previous recommendation, it is forwarded to the Bureau of Personnel via the Chief of Naval Air Advanced Training. BuPers then changes the classification of the subject officer and grounds him. He is given the opportunity to go on inactive duty.

Administration for each of the Advanced Training Units is handled in just the same manner as any squadron with the fleet. Each of the squadron commanders is Lieutenant Commander in rank.

About the skippers—the Advanced Command has sensed the value of getting veterans of combat flying in the particular service plane type to act as CO's of the training units. A number of the squadron skippers are "mustangs"—an asset that really tells in training work.

Long tours of sea duty and equally long experience with young flyers have made these officers capable of giving a helping hand to the embryo officer-pilots who check in for brushing up and polishing before going to the fleet.

THESE skippers are all, to the last one, hollering for the same things—*a*. more rated personnel to keep the planes flying, *b*. more officer-instructors and planes, and *c*. more surface transportation to augment squadron ground activities.

The shortage of enlisted personnel is as acute in Florida as in any aviation command in the Navy. Less than 60% of the planes assigned to any one squadron are in commission at a time. Failure to have more planes flying is the lack of qualified people to do the engineering and radio work.

Because of this deficiency, student-officers are finding themselves riding the gas trucks and wiping their own wind-shields as well as aiding in the 30-hour checks on engines and planes.

Such action being a general practice rather than an occasional happening, the Navy student-officer of 1946 is finding that he is a far cry from his wartime buddy who still talks of the great 'flying' he did in 'operational' and the soft life that was led.

He is finding the going a little more strict, a little more constructive, and a lot more confined to the prescribed manner in which aviators—not merely fighters—should be trained.

And—for the most part—he isn't complaining. He is taking the changes in stride (true, he didn't know the other systems) and making of his time in Advanced a profitable quarter of a year.

In spite of the handicaps, the Advanced Training Command is carrying on in a manner not comparable but far superior to the wartime 'Hurry-up-Jack' procedure.

Naval Aviators graduating from Advanced flight training these days ARE just that—flyers equipped with the knowledge to fly with the fleet, providing the best for the best.

Novice pilots are urged to familiarize themselves with the service-type planes which they will fly. Here a *Mariner* PBM's observed

Mock-up devices such as this one being checked-out by a student-officer, an aspiring flight-engineer, are used quite extensively

Decked in full flying regalia, an advanced trainee checks out at the line shack before leaving on an over-water navigation flight

GRAMPAW PETTIBONE

Go Ahead and Live

Shortly after take off, the engine of an F4U was heard to commence cutting out, followed by complete failure. The pilot started an approach to a clearing within easy gliding distance, but apparently changed his mind and began a steep turn back towards the field. The airplane stalled and spun in and the pilot was killed.

Grampaw Pettibone says:

At a time like this you always have two choices:

1. **You can lock your shoulder straps and land in the general direction that you are headed—and live to tell about it, or—**
2. **You can wrap it up in a turn back to the field and run the risk of spinning in or flying into the ground for lack of altitude . . . *usually fatal.***

Statistics show that if you make contact with the ground or water in a normal landing attitude and have your shoulder harness locked, you'll probably be able to walk away from your forced landing.

Remember, NEVER LOSE FLYING SPEED!

Don't Commit Suicide

"Dear Grampaw Pettibone:

"In reply to your request for narrow escape stories last month, here are the details of an experience I had about four weeks ago.

"On a routine training hop five *Corsairs* had just completed a break-up and joined up again, when the leader decided to return to base. The weather wasn't so bad, but to the West in the direction of the base there was a large cumulus-type cloud rising to about 10,000 feet. We started our dive and entered this cloud at about 3,000 feet. I was flying number three position in the first division. We were doing about 300 knots and in a 45 degree dive, when I happened to glance at my altimeter which read below 1000 feet and was spinning fast. Without even thinking I immediately horsed back on the stick and at the same instant my division leader and the other wingman hit the water and exploded.

"As I leveled out I saw that I was just above the water and all the time I thought, and I guess the division leader did too, that the base of the cloud would be around 2200 feet. Actually it extended right down to the water in a rain squall.

"Thanks to that glance at the altimeter, I am still walking around today.

"I hope that this proves of interest to you.

"Sincerely,
"ENS. A. W. PRICE, JR., USN"

Grampaw Pettibone says:

It certainly is of interest to me and should be to all pilots who don't want to collect on their life insurance right away. The division leader showed extremely poor judgment in taking a five plane formation down through the overcast in a deep dive. In this case it appears that it would have been easy to fly around the cloud rather than down through it.

It's a lot better to be safe than sorry. My advice to you wingmen is to break off on your own when your section leader pulls a stunt as foolish as this.

GRAMPAW'S SAFETY QUIZ

1. **A tachometer is an instrument which indicates the speed of rotation in revolutions per minute of (a) a propeller, (b) an engine.**
2. **Why is the use of oxygen on night flights above 5,000 feet required?**
3. **If you were flying as wingman in reduced visibility and you suddenly felt as though you were in some unusual attitude, what should you do?**
4. **Concerning right-of-way of similar type aircraft, when two aircraft are on crossing courses at approximately the same altitude, which aircraft gives way?**
5. **What are the two mandatory signals in carrier landing operations?**

(Answers on page 40)

Let's Get the Word!

An R4D loaded with 5200 lbs. of inflammable cargo was scheduled for a routine inter-island hop. The plane commander subsequently stated that he had not been aware of the inflammable nature of the cargo when he elected to use this flight to check out another pilot.

Shortly after take-off, the Plane Commander cut the mixture control to the port engine to simulate an emergency condition. The co-pilot, who was flying the plane from the left seat, went through regular single engine procedure, feathering the port engine and calling the tower for an emergency landing. On the final approach the wheels were lowered and locked but the hydraulic pressure did not return to normal after this operation. A hurried effort was made to restart the port engine, and as it gave a surge of power the Plane Commander signaled for the co-pilot to take it around again and for the Plane Captain to retract the wheels. A few seconds later it was discovered that the left engine was not actually delivering any appreciable amount of power. Both throttles and the prop controls were pushed all the way forward, but the aircraft continued to lose altitude while the speed dropped to 70 knots. A forced landing was effected straight ahead on a fairly flat coral area. The plane hit with the right wing slightly low, skidded 90 degrees to the right and burst into flames. The aircrew escaped with very minor scratches, but the plane was a total loss.

Grampaw Pettibone says:

Some people just never get the word. Back in July 1945 a technical order was put out (BuAer Technical Order No. 60-45) prohibiting just this kind of foolishness. Here's what it says:

"Except in an actual emergency multi-engine aircraft shall not be operated at an altitude below 500 feet above the terrain or water with any propeller fully feathered."

If that order doesn't prohibit practicing single engine landings with one prop feathered, I'll eat it. Since then the 500-foot minimum has been cancelled as an inadequate altitude and 6000 feet substituted therefor (BuAer Technical Order 8-46).

The correct and safe way to practice simulated single engine landings is by retarding one throttle to about 12 or 15 Hg. This will closely approximate the "feel" of single engine operation. The propeller

should be left in full low pitch, mixture auto rich, switch on, and fuel selector on. If you do it this way and keep an eye on your cylinder head temperatures, you've got reserve power available in case your "good" engine fails to bring you around.

Incidentally if you want to practice this maneuver with a full load, use sand bags, not *cellulose nitrate paint thinner* for ballast.

Say It Again!

Sitting behind an L.M.D. (Large Mahogany Desk) a good deal of the time and flying very little is definitely a bad combination for any aviator, so a friend of mine wrote in a letter. His experience may serve as a warning for other pilots who are desk-bound.

While flying in "sunny" California, he and his co-pilot ran into some "unusual" weather. Approaching his destination he called the tower for instructions but was unable to contact them. Communication troubles and low visibility made him uneasy about other aircraft that might be flying in the area and about the possibility of a mid-air collision. Actually there were very few planes in the air. Not having communicated with the tower he circled the field to pick up the wind direction from the wind tee and to decide which runway to use. During the final approach, his co-pilot shouted something which he did not understand. The co-pilot shouted again but the message still did not register. As he came in he realized that the landing was "hot" and that the aircraft was not slowing down. By using full force on his brakes he managed to stop the *JRB* at the very end of the *6000* foot runway. The pilot then realized that he had landed downwind with the wind blowing at 20 knots. Great Jehosephat!

Comment—**Thanks, my friend (senior pilot, too) for confessing to o!d Grampaw so that others who fly too seldom may learn again. Granted conditions were not ideal, but there were two of you—you and your co-pilot. Two heads and two pairs of eyes are better than one. You analyzed your case very well after the hop and your moral has a lot of stuff in it that other senior pilots, no matter how old or how many hours logged, should think over. As you so aptly put it, "BEFORE TAKING OFF, AGREE WITH YOUR CO-PILOT THAT SENIORITY IS NO COVER FOR STUPIDITY AND THAT AT ALL TIMES A POSITIVE WAVE-OFF SIGNAL SHOULD BE GIVEN WHEN THE SENIOR PILOT MAKES AN ERROR." Your experience, fortunately, ended happily and here's hoping it will be of value to many others.**

Carburetor Icing

Citizens living near a Reserve Base heard the intermittent sputtering of an airplane engine and then they saw a plane crash and sink into a nearby river. All this happened so suddenly that nothing could be done to save the pilot or the aircraft. The investigation revealed the following vital facts:

1. The pilot landed downwind, bounced off the water and crashed nosedown.

2. The pilot's shoulder straps were not locked, resulting in his being knocked unconscious and subsequently being drowned.

3. Aerology reported occasional light rain in the area.

4. Carburetor pre-heat air control handle was halfway between "Cold" and "Warm" positions.

5. The pilot of an SNJ, circling over the scene of the crash, encountered icing difficulties at 1000 feet. He immediately applied full pre-heat, thus correcting the dangerous drop in manifold pressure.

Grampaw Pettibone says:

Too bad! Carburetor icing, poor ditching procedure and failure to lock shoulder straps were the principal causes for the death of this pilot. This kind of accident can happen to anyone, but it also can be avoided. In the first place, ICING was the direct cause of the crash. Even the witnesses heard the engine sputtering as the pilot attempted to reach the river.

In order to avoid icing conditions in the carburetor, you must know the type of carburetor used in your airplane. In this case it was a float type in which carburetor air is warmed by hot air entering from the exhaust manifold shroud. When descending to lower altitudes at reduced power settings, and when there is a great deal of moisture in the air, you must use *full* pre-heat. Put the control lever full down in the "Warm" position. Take a look at Flight Safety Bulletin 10-44. It is good insurance and doesn't cost you a dime.

And those shoulder straps! They are there for your safety—USE THEM. The proper use of shoulder straps has prevented a goodly number of pilots and passengers from being killed; straps have reduced and/or prevented serious head and facial injuries. If you are knocked unconscious, your chances of escaping from a sinking or burning airplane are practically nil. Get familiar with these safety precautions and you'll grow whiskers like ol' Grampaw's.

Showing The Army How To Do It

The pilot of an F8F landed at an outlying field. After talking to an Army P-38 pilot he made a normal take-off and immediately after passing over the upwind end of the runway at an altitude of 75 feet, attempted a barrel roll. The aircraft scooped out and crashed, bursting into flames.

Beneath this stone
Lies Ensign Banks.
There was lots of gas
In the other tanks.

Two months before this accident this very pilot, the operations officer of his squadron, published a squadron memorandum to all pilots stating: "All stunting, tail chasing, or simulated combat will be performed above 6,000 feet. Low flying or flat-hatting will not be tolerated; this is construed to include any maneuver performed at such altitude so as to endanger the pilot, plane, property or personnel on the ground."

Grampaw Pettibone says:

Seems to me a fellow ought to practice what he preaches. Be smart boys. When any of you get the urge to pull one like this—DON'T.

Don't Overload Your Plane

Investigation following the crash of an SNB-2 revealed these facts:

1. The pilot had orders not to carry more than five people on the flight, but picked up two additional passengers for the return trip, despite the fact that there were only five chutes and five harnesses aboard the plane.

2. The total weight of passengers, baggage, miscellaneous material, and fuel was approximately 3000 lbs. at take off on the return flight.

3. That while the airplane was not actually over the load limit, it was heavily loaded and the distribution of the load was highly contrary to a favorable balance for this type aircraft.

4. That the plane crashed a few minutes after entering an area where visibility was restricted due to smoke from extensive grass fires.

Comment:

Since there were no survivors or witnesses to this crash the cause cannot be definitely determined. It is, however, very probable that the unfavorable weight and balance condition combined with the sudden shift to instrument flying was the principal crash factor.

The aircraft apparently hit the ground at very high speed and in a steep right spiral. It is quite possible that the tail-heavy condition was aggravated by a movement of personnel just after the pilot went on instruments. There is some evidence to indicate that one of the pilots had left the pilot's compartment and was near the rear of the cabin at the time of the crash.

BuAer Technical Orders 82-45 and 83-45 and Aviation Circular Letter 104-45 established rigid weight and balance requirements for the operation of Navy planes, particularly for those which are easily loaded improperly due to cabin size, etc. The strict enforcement of these regulations by pilots and clearance authorities will prevent other accidents caused by improper loading.

EX-MEMBERS OF VMF-142 TALK OVER OLD TIMES AND MASS TOTALS OF JAP VICTIMS

NATS AND MARINES GET 'GO' SIGN

Transport operations of the Air Reserve got an official start in the Aviation Planning directive of 19 July 1946. Like the other assignments made to the Chief of Naval Air Reserve Training in that directive, VR squadron organization and operation was named as a priority mission.

Based on the conclusion that 50% of wartime NATS pilots are seeking admittance to the Organized Reserve and that the majority of them will not be connected with airline flying, 24 VR squadrons across the country including two each at Glenview and Livermore will operate as the primary transport function of the Reserve program.

A limited number of R4D aircraft are available for the training of these squadrons' members. Only 36 have been assigned.

Expectations are for the two-week active duty training period each year to be the time members of the Reserve will serve with the NATS operating squadron nearest their Reserve station.

Marching stride for stride with the Navy squadrons are the components of the Marine Air Reserve program. Though fighter pilots continue to be the largest number reported in the Marine program, suitable numbers of multi-engine and attack-type pilots have registered to make the Marines a working, ready-to-fight outfit.

At Opa Locka, some old Marine fighter pilots now with the Organized Reserve unit there who formerly were with VMF-142 in the Pacific drew up a box score of their 'kills' and reminisced over the tough times of the past. (See picture, above, by *Miami Herald.*)

At other Reserve stations the following was occurring:

● NAS Atlanta—Georgia Tech, home of the famous Ramblin' Wrecks, has rented nine buildings valued at $1,500,000 for the next year at a price of $1. Seven hundred fifty students, many of them reservists, will be using the buildings as barracks, shops, and classrooms. A fence is to be erected to separate the Navy and the civilian-leased property.

● NAS Anacostia—Famed and familiar faces are seen daily about the Air Reserve training unit, with ground officers, pilots and crewmen "gladhanding" one another in the passageways after months in civilian clothes.

Recognition of old friends these days presents "Jekyll and Hyde" complexities. Some reservists come aboard in mufti prior to changing into uniform and the dignified "banker type" who just rolled into the area in a Cadillac limousine may be a mechanic on the line a few minutes later.

● NAS Squantum—The airfield here recently was named "Shea Field" in honor of the late Commander John J. Shea, USN, former executive officer of the station.

● NAS St. Louis—Favorable endorsement has been received on a proposal to lengthen runways on Smartt Field from 2000 feet to 3,500 feet to accommodate CV service-type aircraft used in the Air Reserve training program. Another project underway calls for conversion of two barracks buildings at this station into housing for Naval personnel and their families.

● NAS Livermore—Arrangements are being made to transfer Reserve training activity from Livermore to Oakland NAS. As this station is an outgrowth of the old Naval Reserve Aviation Base, Oakland, it seems fitting that Reserve flying should return there. Oakland formerly was location of NATS activities in the bay area.

● NAAS Cecil Field—The Air Reserve training unit here has expanded its maintenance facilities by establishing ordnance, electronic, metal and engineering shops and is maintaining and repairing a substantial part of the 28 service aircraft and 7 training planes assigned to it. Sufficient stationkeeper personnel have been secured to maintain the planes and the tarmacs, having been trained for line duty, have released qualified mechanics for more important duties.

● NAS Grosse Ile—A new flush-type runway lighting system has been installed on the flying field with extension attachments for use with deep snow. A new aircraft control tower was built on top the main landplane hangar.

● NAS San Diego—V-5 students attached to the Air Reserve training unit expressed amazement at the small size of a CVE's flight deck during a recent inspection tour of the U.S.S. *Bairoko* (CVE-115). They were taken on an escorted tour of the ship from stem to stern, given a lecture by the air officer on air department operations and shown a movie on typical carrier action in the Pacific. These tarmacs have been doing a fine job in assisting in maintenance and servicing of naval aircraft.

● NAS Glenview—Furnishing planes to do formation flying at civic aerial celebrations has been one of the activities of this Reserve Training Unit. They participated in demonstrations at Ottawa, Evanston, DeKalb, and Arlington Heights, Ill.; Kenosha, Fond Du Lac, Evansville and Wisconsin Rapids, Wis.; and Whiting and Plymouth, Ind. The station also installed an exhibit of aeronautical equipment at the Milwaukee Centurama exhibition and did flight maneuvers over the exposition grounds.

● NAS Brooklyn—With commissioning of VMF-132, a famous World War II squadron was perpetuated. Originally a dive bomber squadron in 1935, it won a Presidential Unit citation for its work on Guadalcanal. Its CO's included Brig. Gen. Christian G. Schilt, now Commander of Marine Air Reserve Training, and Major Joe Sailor, killed at Guadalcanal, considered to have been the Marines' outstanding dive bomber pilot.

● NAS Norfolk—Majority of the CVE pilots completed their checkouts in the SNJ aircraft during last month and are ready to tackle all others. The five hour refresher in the plane was ample enough time for all to become familiar with it.

A closing note to the Reserve page may be found this month with the word that the 'skirts' are still around—and welcome they are, too. The Navy Department has announced that Waves will be re-enlisted in the Naval Air Reserves with all of the benefits extended to them as to the males.

DID YOU KNOW?

VB Squadron Gets Safety Prize

21 Minor Accidents Sets Low Record

BEECHCRAFTERS WIN

With only 21 minor accidents during the first six months of 1946, Squadron Three, VB-2, multi engine landplanes training at Pensacola, has won the Basic Training Command Aviation Safety Award for its excellent record.

The squadron had no fatal accidents and lost no planes as a result of damage incurred in flight training during which it flew almost 21,000 hours. Second highest squadron in the competition was Squadron Two-Able, Basic SNJ, at Cuddihy Field, and third Squadron Six, SNJ Carrier Qualification planes at Pensacola.

The next competition period will include July through December and all squadrons in training at Corpus or Pensacola will compete.

It's Not Miles Now, It's Knots

Army Air Forces and Navy Go Nautical

To end the confusion which arose during the war over the Army's use of "miles an hour" and the Navy's use of "knots." the two services have agreed to adopt the latter term when applied to aeronautical matters.

The Aeronautical Board directed that BuAer and the Army Air Forces use the knot and the 6,080-foot nautical mile as the standard aeronautical units of speed and distance respectively. It further directed that the two specify the use of knots and nautical miles in all future procurement of airspeed indicators, charts, and related equipment, and future issues of applicable handbooks and technical orders.

Coast Guard Takes Over Mayport

Station Will Be Only Training School

The Naval Auxiliary Air Station at Mayport, Fla., which was "rolled up" in the postwar decommissioning program in June, has been taken over by the Coast Guard and is that service's only recruit training facility.

During the war Mayport was a subsidiary field for the operational training command at Jacksonville and a headquarters for air/sea rescue operations off the Jax coast. Hundreds of rescues were made by its crash boats and Dumbos.

Besides a training station, the Mayport property will be used by the Coast Guard for continued air/sea rescue, as an air station and to help operate lighthouses and aids to navigation in the area. It has facilities to train 3,000 men a year. Former USCG training stations at Curtis Bay, Md., and Alameda have been folded up.

Khaki to Become Summer Service

Grays Will Be Permitted Until Oct. 1948

Khaki uniforms are to be designated as summer service at a later date, according to ALNAV 406 which was recently released by the Secretary of the Navy. Gray uniforms will be permitted until 15 October 1948.

The ALNAV, released for the information of commissioned, warrant and chief petty officers, states that khaki tropical worsted, wool gabardine, palm beach or rayon gabardine uniforms will be designated as the summer service uniform. Khaki cotton shirt and trousers will be designated as the summer working uniform and white uniform as summer dress.

Museum Keeps Wartime Records

California Shrine Saves Seabee History

Designed to preserve much of the Construction Battalion's history, a museum for wartime records, trophies and other mementoes is being established at the Navy Construction Battalion Center, Port Hueneme, Cal.

Photographs, souvenirs, equipment and battalion insignia of the Seabees and the Navy Civil Engineer Corps will be preserved in the shrine for World War II veterans. Copies of citations and unit commendations are displayed as well as battalion newspapers.

Located in a former utility building, the museum houses many ingenious devices developed by the Seabees at island bases. These include wind-operated washing machines and Seabee handiwork with plexiglas and metal.

NAVAL AVIATION'S 33d BIRTHDAY

THE SECRETARY OF THE NAVY
Washington

27 August 1946

Vice Admiral A. W. Radford
Deputy Chief of Naval Operations for Air
Navy Department
Washington 25, D.C.

DEAR ADMIRAL RADFORD:

I join you in celebrating our thirty-third anniversary of the founding of Naval Aviation.

The skillful and tireless performance of duty through the years of the war as the spearhead and eyes of the fleet, Naval Aviation continues in a tradition that leads us to greater triumphs.

Today our nation enjoys the product of that triumph in a newly won peace—a peace which must be preserved by strength.

Please convey my congratulations to the men and women who have made possible outstanding growth and development of Naval Aviation and its glorious place in the tradition of Naval History.

Sincerely yours,

/s/ JAMES FORRESTAL

HEADQUARTERS, ARMY AIR FORCES
Office of the Commanding General

28 August 1946

DEAR ADMIRAL RADFORD:

I am reminded that thirty-three years ago, on August 30, 1913, Acting Secretary of the Navy Franklin D. Roosevelt signed an order establishing an Aeronautical Division in the Navy Department. On this anniversary of the occasion it gives me great pleasure to extend, on behalf of the Army Air Forces, congratulations on the record of notable achievements and on the service which that organization has rendered in the defense of our country.

During World War II the Aeronautical Division of the Navy won many distinguished victories and greatly helped to effect the final surrender of the Japanese Empire.

In the years to come it is our joint responsibility to maintain the superiority of American air power.

May I express my own best wishes for the continuing success of our joint mission.

Sincerely,

/s/ Carl Spaatz
CARL SPAATZ
General, United States Army

VP-53 Covers Wide Pacific Area

Lost Catalina Tours in East Indies

VP-53—This squadron, operating nine PBY-6A's, claims the unique distinction of having covered a larger chunk of the Pacific Ocean during the last quarter than any other squadron of its kind or size in the history of Naval Aviation.

During this time planes have been stationed on air/sea rescue and courier duties covering a circular area with Saipan as the center and squadron headquarters, with Majuro, Kwajalein, Marcus, Yokosuka, Japan; Shanghai, China; Saigon, Indo China; Singapore, Batavia and Bali, Netherlands East Indies, and Pelelieu on the rim of the circle. Tarawa, Ponape, Iwo Jima and Guam also have been serviced.

One plane piloted by Lt. Comdr. John S. Leffen left Saipan on a 10-day flight. It extended to 42 days through China, Dutch East Indies, where facilities of the British, Dutch, Australians were relied on and cheerfully furnished, finally culminating in an engine change at Batavia. The plane was unheard of at squadron headquarters from 8 June to 29 June when it returned to Saipan.

Rescue Program Name Changed

Coast Guard To Handle Search, Rescue

The name "Air/Sea Rescue" has been changed to "Search and Rescue" when applied to the program of saving downed personnel on land or sea, according to AlNav 450. The change was made to conform with terminology now used internationally and to indicate the increased scope of activities or rescue organizations.

Official cognizance of the search and rescue program, lodged in the Navy during the war, recently was transferred to the United States Coast Guard. Some Naval stations will still operate their own rescue facilities in areas where Coast Guard services are lacking.

NATS Revises Flight Schedules

Four Squadrons Serve Pacific, Asia

NATS PACIFIC—Schedules of the Pacific-Asiatic wing of NATS have been revised as of 1 September, affecting operations of VR-2, VR-5, VR-6 and VR-11.

VR-2 flies one JRM round trip a week between Alameda and Saipan and one between Alameda and Manila (Sangley Point).

VR-5 flies seven R5D round trips between Seattle and Moffett Field, two R5D trips from Seattle to Kodiak and five to Adak. Two round trips go to Attu, one a hospital flight.

VR-11 flies 14 R5D round trips between Honolulu and Moffett Field and 14 R5D round trips between Honolulu and Guam. Six of the flights are as hospital planes. One round trip a week goes from Honolulu to Midway.

VR-6 makes four R5D round trips between Guam and Manila, two to Samar, two to Manus, six to Tokyo, five between Guam and Tsingtao and five to Shanghai. Four of its flights are hospital trips operating on regular schedules.

Navy Pilots Wanted to Fill Communications Billets With Fleet

Applications are desired from a score of Naval Aviators for a one-year post graduate course in applied communications class, convening January, 1947, at the U.S. Naval Academy. Applications must be submitted via official channels to reach BUPERS prior to 15 October, according to ALNAV 480.

Importance of communications in success or failure of a mission was demonstrated many times during the war in the Pacific. Aviators trained in the communications course will be assigned to air staff billets afloat or air stations. They will supervise communications personnel and service operations of all types of apparatus used by the Naval Communications Service.

The one-year course at Annapolis will include a thorough training in all phases of electronics engineering such as fundamentals of electricity, electron tubes, vacuum tube circuits, circuit analysis, radar, sonar, direction finders and radar countermeasures, transmitters and receivers. Besides this the students will get fundamentals of physics, naval machinery and engineering, and damage control as they affect communications systems.

Due to the shortage of aviators who are trained in communications, it is expected this training of officers to fill the billets will be continued indefinitely. This would also assure a turnover of assignments and enhance advancement possibilities.

To be eligible for the school, officers must have been commissioned an ensign between 6 June 1940 and 19 June 1942 inclusive or be transferred line officers with those dates of precedence.

NERVE CENTER OF ANY FIGHTING SHIP IS ITS 'SHACK,' WHERE COMMUNICATIONS CENTER

SHOW ME THE WAY TO GO HOME

DEAD RECKONING

Determine wind direction and velocity, course and ground speed, using Mk III Plotting Board and data furnished below.

Given: (a) TAS 170 Kts.

(b) Variation 13° E.

(c) Magnetic Hdgs. Drift

(1) 230°	8° L
(2) 290°	2° R
(3) 170°	9° L

(d) Course and G.S. to be determined from (c)-(1) above.

NOTE: Detailed information on the uses of the Mk III and subsequent models of the Plotting Board may be found in the Air Navigation Bulletin, Supplement No. 7, NAVAER 00-80V-22E.

(Answers on Page 40)

HURRICANES

1. **A hurricane is**
- ☐ *a*–an intense anti-cyclone.
- ☐ *b*–called a *monsoon* in the orient.
- ☐ *c*–the same thing as a tornado.
- ☐ *d*–a tropical cyclone.

2. **Hurricanes originate in the doldrums, and as they recurve toward the North or South pole their path is**
- ☐ *a*–clockwise in Northern latitudes
- ☐ *b*–counterclockwise in Northern latitudes.
- ☐ *c*–clockwise in Southern latitudes.
- ☐ *d*–clockwise in both Northern and Southern latitudes.

3. **The area of light variable winds and clear sky in the center of a hurricane is called the**
- ☐ *a*–hub.
- ☐ *b*–eye.
- ☐ *c*–calm.
- ☐ *d*–heart.

4. **The winds blowing around the center of a hurricane circulate**
- ☐ *a*–clockwise direction in Northern latitudes.
- ☐ *b*–counterclockwise direction in Northern latitudes.
- ☐ *c*–counterclockwise direction in Southern latitudes.
- ☐ *d*–counterclockwise direction in both Northern and Southern latitudes.

5. **Hurricanes never occur in the**
- ☐ *a*–South Atlantic.
- ☐ *b*–South Pacific.
- ☐ *c*–Indian Ocean.
- ☐ *d*–Caribbean.

6. **Most hurricanes travel at a speed of**
- ☐ *a*–75-100 m.p.h.
- ☐ *b*–50- 60 m.p.h.
- ☐ *c*–30- 40 m.p.h.
- ☐ *d*–10- 20 m.p.h.

7. **A waterspout is**
- ☐ *a*–the first stage in the development of a hurricane.
- ☐ *b*–a tornado that formed over water.
- ☐ *c*–the last stage of a hurricane before it dissipates entirely.
- ☐ *d*–an extra-tropical cyclone of hurricane intensity.

(Answers on Page 40)

VR-1–This NATS squadron made a special flight to carry a Navy enlisted man stricken with infantile paralysis from Norfolk to a hospital nearer his home, Augusta, Me. The man, Harold Reynolds, S1c, was transported in an iron lung. The squadron recently flew a lung to San Juan for several patients stricken in that area.

CONSTITUTION IS 20 TONS HEAVIER THAN MARS BUT HAS ALMOST TWICE ITS SPEED

NAVY GETS LARGE TRANSPORT

New Constitution Has 189-Ft. Wing Span, Flies 5,000 Miles At More Than 300 Miles Hour

THE BIGGEST aircraft in the Navy–the Lockheed *Constitution*–rolled out on the ramp the last of August, the first of a line of 50 such aircraft the Navy once planned to produce from plans laid back in 1943. Two of the 168-passenger planes will be purchased and after flight testing will be turned over to Naval Air Transport Service.

Here are the statistics on the new *Constitution:* weight, 92 tons; engines, four Wasp *Majors* producing 12,000 hp.; wing span, 189 feet; length, 156 feet; range, 5,000 miles; takeoff run, 2,300 feet; stalling speed, 80 mph.

Its short takeoff requirement and long range were designed especially for operation in the Pacific areas and small landing fields. Anything that will go in a railroad car can be carried in its spacious cargo deck, which has 3,000 cubic feet of storage space. Its "double-bubble" fuselage has three cabins on two separate decks, taking 92 passengers in the upper and 76 on the lower.

Designed for fast transport of personnel and high priority cargo over long ocean hops, the XR6O-1 has pressurized cabins for use up to its ceiling of 25,000 feet. It carries reversible inboard props to cut down landing runs.

The main landing gear has four wheels with pre-rotation devices turning at landing speed just before the plane touches, preventing shock impact. It is the first Navy plane with latest type four-wheel landing gear.

Thermal anti-icers divert heat from the exhausts through ducts in the leading edges of the wings, 50-foot high tail fin and stabilizers–one of the latest flight safety features to be put on a plane.

Thickness of its wings permits a man to inspect and work on the engines, mechanical, electrical and hydraulic fittings while the plane is flying.

PASSENGERS enter through the nose-gear well and through a door in the port side of the fuselage aft of the wing. The plane operates with a crew of seven, a small number considering the size of the plane–the captain, pilot, co-pilot, radio operator, flight engineer, navigator and assistant flight engineer, with two or four stewards. It also can carry a complete relief crew.

There are 59 windows along the fuselage and 13 emergency exits besides the seven doors. Standard tie-down fittings inside permit carrying aircraft engines, jeeps and other bulky material.

Characteristics of the plane were planned so that more powerful engines could be installed when they became available, thus making it possible to add 100 mph. or better to its speed with its basic configuration. Although larger than any other Navy aircraft, it is not as big as the six-engined Hughes flying boat being assembled on the West Coast.

Although its range is given as 5,000 miles, its 9,000-gallon gasoline capacity, under certain conditions, would boost this to as much as 7,000 miles.

HELLCATS SOAR OFF OVERHEAD AS SMOKING 'JAP' HEADS HOME

PILOTS OF EXHIBITION TEAM TELL PUBLIC WHAT THEY WILL SEE

DUMMY DROPS OUT OF 'ENEMY' PLANE

PUBLIC SEES NAVY FIGHTERS IN ACTION

A TEAM of pilots formed in Advanced Training Command has been touring the country thrilling the public at air shows and teaching novice fighter pilots in airborne classes.

Demonstrations have been made in F6F's, although the team recently changed to F8F's. During the performance a member of the unit announces what is going on over a loudspeaker system. An R4D loaded with equipment and men followed.

At each performance, the pilots make low-altitude precision maneuvers over the airport. Three of the four planes fly tight formation while another lingers close-by as a "spare." Following the section tactics at low altitude comes the "punch" act.

A fifth member of the team flies an SNJ painted up with the "Rising Sun." He makes attacks on the group, which uses teamwork employed during the war to "shoot down" the plane.

Climaxing the show, the SNJ is seen to appear afire as the pilot detonates a smoke bomb and releases a dummy which is parachuted to earth. The plane then wobbles off toward the horizon and the F6F's return to the field. The *Lancers* participated in the Denver Air Exposition and Cleveland Air Races.

TEAM OF FIGHTER EXHIBITION PILOTS FLIES FORMATION FOR VARIOUS AIR SHOWS

WAVE POWER IN AVIATION

THE WOMEN'S Reserve Representative was quizzing an old-timer male aviation chief machinist's mate at NAS WHITING FIELD, Florida. "I didn't want women mechs," he said, "but I had to take them, and now I'll say I was wrong. I have nearly 200 women manning this line, and it's the best line I've ever had. The planes have never been cleaner or more carefully checked. There's nothing those women won't or can't do. And they don't gripe. I'll take all you can send me! See that gal over there? She's my first plane captain."

Thus, time after time, the pattern was repeated in receiving WAVES at an air station—from incredulity through skepticism to enthusiasm and acceptance. Now, with October finding most of the Women's Reserve back in civilian life, a survey of their work in aeronautics is timely, and the survey, by its very scope, becomes a tribute.

The "Yeomanettes" of 1918 gave way to "Women Accepted for Voluntary Emergency Service" in World War II. They really were accepted—yes, and clamored for—in jobs that would have amazed their predecessors. Nowhere in the Navy was this more apparent than in the various naval aviation activities.

Approximately 30% of the 86,000 members of the Women's Reserve who served in the Navy during this war were assigned to aviation—more than to any other one branch. (BUMED was the runner-up.) In fact, aviation used more than twice the number of women that BUPERS, back in 1942, had originally planned to recruit for the entire Navy. Around 26,000 WAVES participated in aviation activities. The peak number on duty at any one time was reached in May 1945 when the rolls showed a total of 23,943. Of these, 21,963 were enlisted WAVES, and 1,980 were officers. The enlisted personnel lined up as follows: DCNO (Air)—195, BUAER—894, Duty in field (USA)—20,301, Duty in Hawaii—1,073. Officer Billets: DCNO (Air) 84, BUAER—186, General duty in field—1,087, Communication—341, Supply Corps—282.

The WAVES on duty in the field were stationed all over the country. From the major air stations to the smaller facilities, practically every aviation activity had its quota of Women's Reserves. Many of these, of course were doing work which required no particular aeronautical training; the air stations too needed yeomen and storekeepers, recreation and insurance officers. But a large number were definitely prepared for specialized aviation jobs. Turning girls, whose previous mechanical experience had been limited to using a can opener or worrying a jammed zipper, into expert machinist's mates and metalsmiths, for example, wasn't done overnight. The aviation training program functioned with imagination and optimism, and the results justified the faith. The principle of coeducation was followed, thus assuring training identical to that which was given the men.

RIVETING OR WELDING, WAVE METALSMITHS IN A&R SHOPS PUT MEN ON THEIR METTLE

GIRLS EXCELLED IN INSTRUMENT REPAIR

PILOTS APPRECIATED CARE IN THIS JOB

TRAINING in special aviation ratings was given to 7,889 WAVES. The following tabulation by rating shows the length of the course and number of women trained in each group.

Aviation Machinist's Mates	21 wks	2,731
Aviation Metalsmiths	21 wks	236
Link Trainer Operators (Specialists T)	10 wks	1,701
Control Tower Operators (Specialists Y)	6 wks	602
Parachute Riggers	12 wks	419
Aerographer's Mates	12 wks	650
Pigeonmen	24 wks	20
Aviation Machinist's Mates (Instruments)	15 wks	649
Jam Handy Operators	2 wks	100
Gunnery Instructors (Specialists G)	6 wks	505
Camera Repairmen (Specialists P)	51 wks	51
Link Celestial Navigation Trainer Operators (LCNT)	10 wks	235
Air Transport Crewmen (Specialists V)	6 wks	190

Space limitation prevents detailed accounts of the successes and difficulties encountered by the WAVES in these training courses. There were misfits, of course, but on the whole the record was extremely gratifying. An official report on aviation metalsmith training, a rate in which there was much doubt of women's ability to measure up, gives an interesting commentary on the type of competition that the men faced. "The WAVES proved early in the training that they could hold their own. In the class of 120 graduating 24 July 1943, there were 10 WAVES. Only 50% of the graduates, under the Bureau of Personnel directive, could be rated. Seven of the WAVES, or 70%, received their crows. In the class graduating 31 July 1943, the two highest standing students were WAVES; in fact five out of the top eight were WAVES."

Specialized training for WAVE officers, length of course, and number trained, total 576, is summarized here:

Aerological Engineering	9 mos.	113
Photo Interpretation	2 mos.	11
Aircraft Recognition	2 mos.	9
Gunnery	1 mo.	10
Radio-Radar Admin.	2 mos.	121
Air Navigation	4 mos.	100
Link Celestial Navigation Training	2 mos.	46
Air Combat Information	2 mos.	11
Communications Procedures (to instruct aircrew)	18 wks.	20
Aviation Indoctrination (preparatory to WRR and admin. billets)	2 wks.	135

Two types of service in which WAVES particularly excelled were precision instrument work and teaching. Evidently woman's reputed capacity for infinite patience and attention to

MACHINIST'S MATES MEET CAPT. McAFEE

HE'S GOT THE GUN, ANNIE CALLS SHOTS

NAVIGATORS WON WINGS, TAUGHT, FLEW

WAVE INSTRUCTOR IN LOW PRESSURE TEST

nation to her task and feels more personal concern about each student. A third may be that women, knowing that they would never go into battle, found in their students their nearest approach to the war front. They flew and shot by proxy through the men trained."

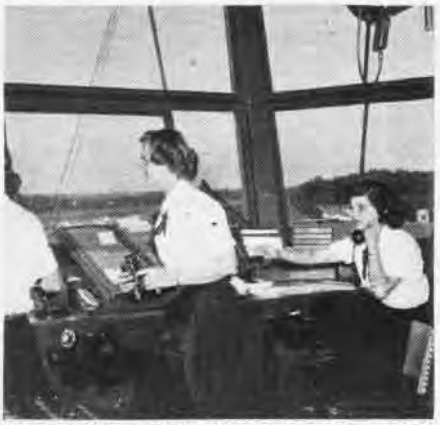
There were complications in assimilating 26,000 WAVES into naval aviation. Adjustments had to be made. For instance, there is the story of the cadet who had to bail out one day. After a safe parachute landing he looked at the name tag on his chute—packed by Weiderman. Tradition called for a present for the packer. Armed with a fifth of Scotch, the cadet appeared at the loft and asked for Weiderman. In answer to a yell WAVE Weiderman approached.

The cadet was startled: "Is that Weiderman? Lord! I've got to go!"

He fled. In a half hour he was back carrying a box of candy which he presented with appropriate gratitude.

The Navy has asked for 5,500 WAVE volunteers to remain on active duty until July 1947. The drive to reenlist 2,000 former WAVES specifies a need in 14 rating groups, 9 being aviation rates. If the quota is reached, it is expected that aviation will use 1500 enlisted WAVES and 170 women officers.

INSTRUMENT FLIGHT WAS HER SPECIALTY



"WE LIKED THEIR VOICES" SAID PILOTS

detail paid off in jobs demanding these attributes. Illustrative of this is the rating of aviation machinist's mate (instrument). The civilian superintendent of the training school declared flatly that the women were better than men at instrument work and that the WAVE trainees were better than any other women he had trained. Here, not physical strength was the criterion of success, but patience and accuracy. Similarly in the work of specialist (P), camera repairman, the smaller size of a woman's hand allows repairs inside the camera box with greater ease.

TEACHERS were legion among the WAVE recruits—both "ex" and potential. The specialists (T), link trainer operator, and specialists (G) gunnery instructors, are outstanding examples of how the Navy capitalized on feminine teaching ability. Over 90% of the link operators were women, and their loss with demobilization (only 2½% remain) is being sorely felt.

Success of the WAVES in instructional billets has been shrewdly analyzed in a report made by the BUAER-DCNO (Air) Women's Reserve Representative. "One reason is that women screened for this task were selected in part because of successful teaching experience as civilians. Another seems to be that the woman lends more imagi-

GREASE, NOT GLAMOR, FEATURED MANY AVIATION JOBS. BUT THE WAVES COULD TAKE IT

Boots Get 'Cruise' on Station

San Diego Takes Them for 5-Day Tour

NAS SAN DIEGO—This air station has declared a new deal for newly-reported enlisted men by instituting a "shakedown cruise" about the station to familiarize them with its physical layout, bus lines and schools.

Known as the 2X-Division, the new unit was begun by decision of Capt. L. E. Gehres, CO, to assist new men in finding their way around the huge industrial plant on North Island. It gives them five full days of familiarization before job-placement.

A former aviation pilot, now Lt. W. A. Blizzard, is leader of the division. The general program includes tours of the Island, a complete circuit of each bus line, a visit to every spot of importance, lectures on best use of NAS facilities, safety procedures and techniques, a listing of what the station offers its men and other useful "word."

Lt. Blizzard's "guided tour" includes a personal visit with Capt. Gehres who greets each detachment of men. With better than 1400 acres of ground covered by hundreds of buildings to learn, newcomers formerly found themselves lost in a mad whirl, sometimes for weeks or months. Learning new jobs, locating barracks and service facilities, settling into new industrial job techniques, getting acquainted with new officers and shipmates—these were problems which resulted in considerable confusion and some unhappiness. As a morale and efficiency booster, 2X-Division is proving a big success.

The plan puts into operation an idea once desired by the Bureau of Navigation, under which "boots" received aboard a ship, for instance, would have up to 30 days in a special divisional category getting accustomed to the strange new ways of shipboard life.

Hail Damages Cecil Field Planes

Sudden Storm Ignores Outlying Fields

While most of the local area was being subjected to light thunder showers, NAAS CECIL FIELD was singled out by a malicious cloud as the target for a vicious hail storm attack. Apparently the attack was "on target" as the brunt of the storm passed directly over the ramp and hangar, but did not fall at nearby outlying fields.

Recall was issued when the thunder showers were observed and all planes were on the deck either at Cecil Field or outlying fields before a light rain started to fall. The rain soon turned to hail, causing visibility to lower to 0-1/16 and ceiling to 0-50.

The hail lasted for approximately 10 minutes followed by moderate rain for another 10 minutes. Gusts of 50 kts.

REMEMBER *the old wheeze about not being able to touch something with a 10-foot pole? Well, it came true literally out at the Bikini atom bomb tests in July when the drone* Hellcats *came back from flying through radioactive clouds "hot" with gamma rays. The drones carried boxes with special paper in them, attached to the underside of their wings to get samples of radioactivity. Here an officer uses a special tool to unscrew bolts of the box paper holder so it can be examined. Geiger counter warns him of danger*

FREAK FLORIDA HAIL GIVES NO WARNING

from the northwest were recorded at this time.

All fabric surfaces such as flaps, ailerons and flippers on 45 airplanes were damaged. Complete fabric resurfacing was required on one GH-2 and on three N2S aircraft. Several buildings suffered broken windows and slight damage to paint surfaces, awnings and roofing. The canvas tops of Navy motor vehicles were riddled.

CAG-4 Learns About 'Ship Navy'

Lectures Cover General Naval Subjects

CAG-4—With the cessation of hostilities and subsequent reconversion of the Navy to training, this air group instigated an intensive training program dealing not only with Naval Aviation but other Naval subjects as well such as shipboard gunnery, damage control and navigation.

The program consists mainly of lectures, movies, tours of the ship and maintenance of Junior Officers' Journals. Lectures are given by ship's officers and enlisted men as well as by members of the air group. Aviation subjects covered include safety in flight, handling of emergencies, survival, dock technique, airmanship, engine operation, electronics work, familiarization with aircraft components, navigation and maintenance of the plane and its equipment.

NATS Helps Beat Arctic Winter

Moves Priority Cargo to Oil Fields

VR-5—Five flights made by the squadron between San Diego, Seattle and Alaska enabled ships at Point Barrow to beat the Arctic winter in unloading materials needed for the Umiak oil-drilling project.

The Navy contractor needed the flights to move perishables which ships could not handle due to limited reefer space available for cargo. It was a race against time before the oncoming Arctic winter. Priority cargo also included loading slights, weasel tracks and other items needed for dock operations to unload ships before cold weather. A total of 123,000 pounds of backlog cargo went into Point Barrow in that time.

Marines Stress Instrument Work

All Pilots Go Through Their Courses

MCAS EL TORO—The emphasis in post war aviation is on instrument flight and the Marine Corps is in step with the trend. Instrument flight section maintains and carries out training for all squadrons and air groups based at El Toro and for all pilots of Marine Air, West Coast.

The course consists of eight basic flights in the rear seat of an SNJ; needle, ball and airspeed is taught along with and in relation to attitude instrument flight, including gyro compass, gyro horizon and altimeter. On completing the basic course, the student gets five hours of radio range work including instrument letdowns.

Following radio work, the student gets six hops in the F4U-4. Instrument conditions are simulated by use of amber plexiglas around the cockpit and blue goggles worn by the student. A qualified instructor chases the amber plane, watching for other aircraft and giving instruction by radio. The squadron has 12 F4U-4's for this work.

All students get 22 hours of ground school, consisting of aerodynamics, radio range theory and practice, voice procedure, ZB theory and practice, civil air regulations, gyro instruments, pressure instruments, magnetic compass, flight logs and plans, E6B computer, RDF and ADF, and aerology.

The Link trainer syllabus consists of 12 hours of basic instrument and radio range practice. Multi-engine and transport pilots get 5 extra hours of RDF, radio compass and procedures in boxing a station.

Devices Authorized for Combat

Wearers of Medals May Add Bronze 'V'

Personnel who were awarded the Legion of Merit or the Bronze Star Medal for services or acts performed in actual combat with the enemy are now authorized to wear a Combat Distinguishing Device upon both the service ribbon and the suspension ribbon of the medal.

The device is a block letter "V" made of bronze, one-fourth inch in height, and is to be worn in the center of the ribbon. Only one such device shall be worn upon a single ribbon and gold or silver stars shall indicate more than one award.

The Secretary of the Navy has announced that, pending the publication of lists of personnel authorized to wear the devices, commanding officers may authorize the wearing of the "V" in cases where citations unmistakably indicate services or acts in actual combat. This shall be subject to confirmation by action of the Bureau of Personnel.

NEW SKYRAIDER CARRIES BOMBS, TORPEDOES EXTERNALLY TO BOOST GET-AWAY SPEED

NEW BOMBER PACKS PUNCH, LONG RANGE

THE NAVY has placed an order for 277 AD-1 dive-bombers and expects to start equipping squadrons soon with the new Douglas aircraft.

Formerly called the BT2D-1, the single-place torpedo and bombing plane is 50 miles an hour faster than any wartime predecessor of its type. Instead of bomb bays as were used in the TBF and SB2C, the AD-1 will carry its torpedoes, bombs and rockets externally. When operating as a dive-bomber it will use external dive brakes on the sides and belly of the fuselage, aft of the trailing edge of the wing (see photo, right), instead of dive flaps on the wings.

The *Skyraider* is rated in excess of 1,500 miles range, can carry 6,000 pounds of bombs, rockets or torpedoes and is equipped with the high-speed 20 mm. machine gun. Its greater speed and maneuverability, plus its fighting equipment, make it a fighting successor to the bulkier TBF's and SB2C's.

The new dive bomber originally was conceived in July 1944 for *Essex*-class carriers. It is powered by a single Wright B-3350 radial engine delivering 2,500 hp. at takeoff. It has a wingspan of 50 feet, folds to 24 feet, and carries a four-bladed Aeroproducts propeller 13½ feet in diameter. Its length is 39 feet and weight empty 10,470 pounds.

Douglas engineers say the fuselage dive brakes afford the equivalent retarding effect of conventional trailing edge wing flaps with less than 80 percent of the brake area previously required. With brakes open, the plane can dive vertically under 300 mph.

Decision to carry the bombs and torpedoes externally insures the plane maximum going-away speed after dropping its load, whereas a built-in bomb bay would have cut this speed. Three external bomb racks permit carrying bombs, torpedoes, *Tiny Tim* rockets, 5" HVAR's and droppable fuel tanks.

THREE FUSELAGE FLAPS REPLACE OLD BANANA-PEEL TYPE TRIED ON EARLIER BTD PLANE

SHOWCASE WEATHER

SEVEN-LEAGUE boots and panoramic vision would be ideal equipment for weather study. Lacking such gifts, aerology instructors and their students have been provided with a good substitute in the form of three-dimensional weather models which furnish vivid illustrations of various phenomena. The models, seven to a set, are well-constructed artistic displays, even achieving the effect of motion through an ingenious lighting arrangement.

Not only weather conditions, but also the relationship between those conditions and proper flight procedure are included in study of the displays. Miniature aircraft can be seen in the models, seeking the best path with relation to the atmospheric set-up pictured. These devices are expected to be a valuable aid in the early training of pilots in the science of weather. A preflight student familiar with the significance of the models will have a better grasp of how the weather in its various aspects affects his activities. Aviators are among the people who must give the lie to Mark Twain's observation that "Everybody talks about the weather but nobody does anything about it."

Size of the models is approximately 2 x 3 x 1¼ feet. They are mounted on supporting tables for convenient display. Part of a set is pictured below.

Specifically, the seven models are as follows:

1. The Atmosphere—The relationship between the troposphere, tropopause and stratosphere, the rate of decrease in oxygen content of air, the zones of occurrence of weather phenomena, of ignition of meteorites and of the aurora are all indicated.

2. The World of Clouds—The major cloud types are duplicated and arranged correctly according to heights of base and top. Wind currents in and about the clouds are indicated as well as the nature of precipitation falling from various active cloud types. Regions dangerous to aviation are clearly shown and preferred airplane paths indicated.

3. The Cold Front—A cross-section of a cold front is pictured, together with preferred plane routes around danger areas. Zones of precipitation, lightning, etc., are shown prominently. Relative motions of air masses and wind directions are illustrated.

4. The Warm Front—The model of the warm front is similar in nature and intent to that of the cold front. The view extends from New York to Atlanta, with notations at ground level indicating what the eye of an observer at various points along the way would be able to see.

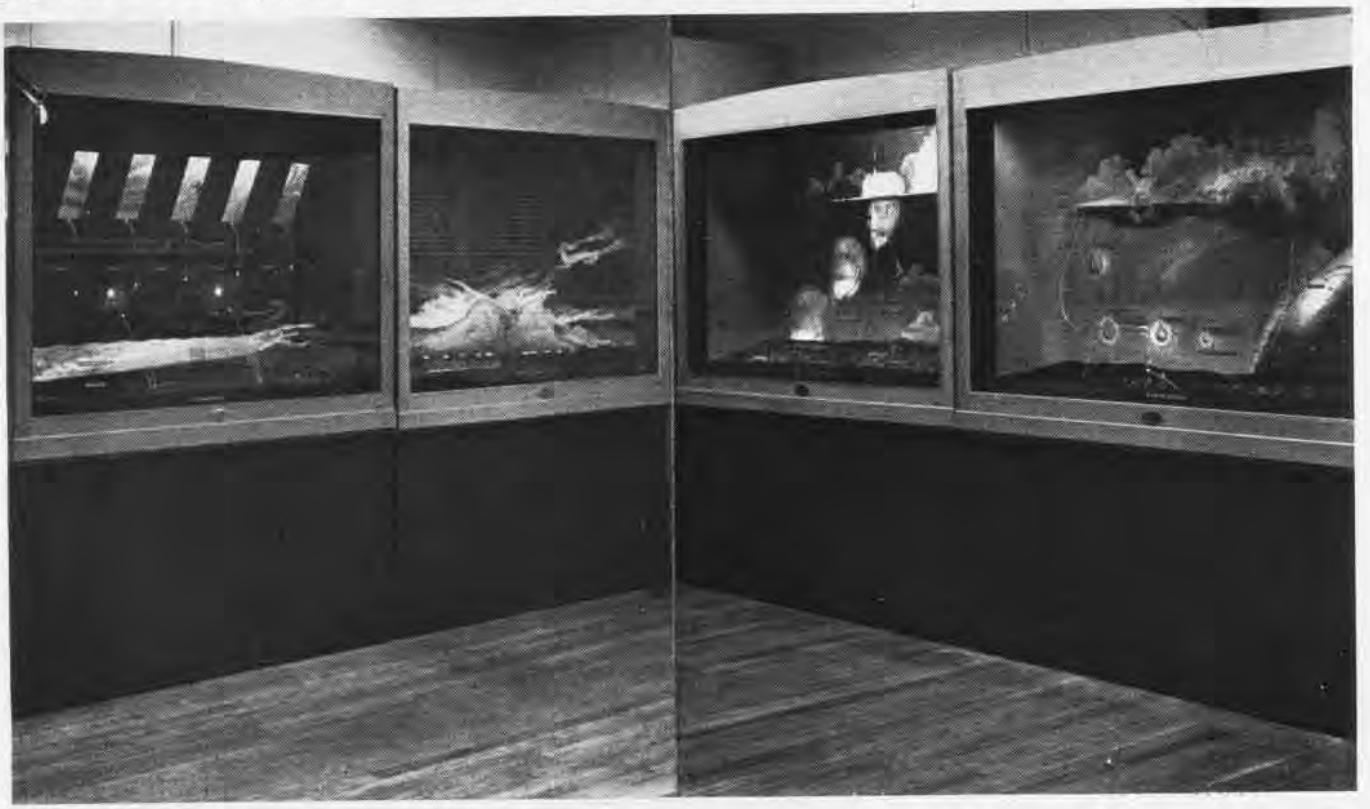
5. The Rain Cycle—The manner by which water is introduced into the air and the mechanism by which it is released in the form of rain or snow are shown. (Upper picture, next page.)

6. Birth of a Cumulus Cloud—The gradual change from turbulent air to cumulonimbus clouds is shown in relation to isolation, evaporation and condensation level height. The progressive steps in the development of a cumulus cloud are clearly shown. (Lower picture, next page.)

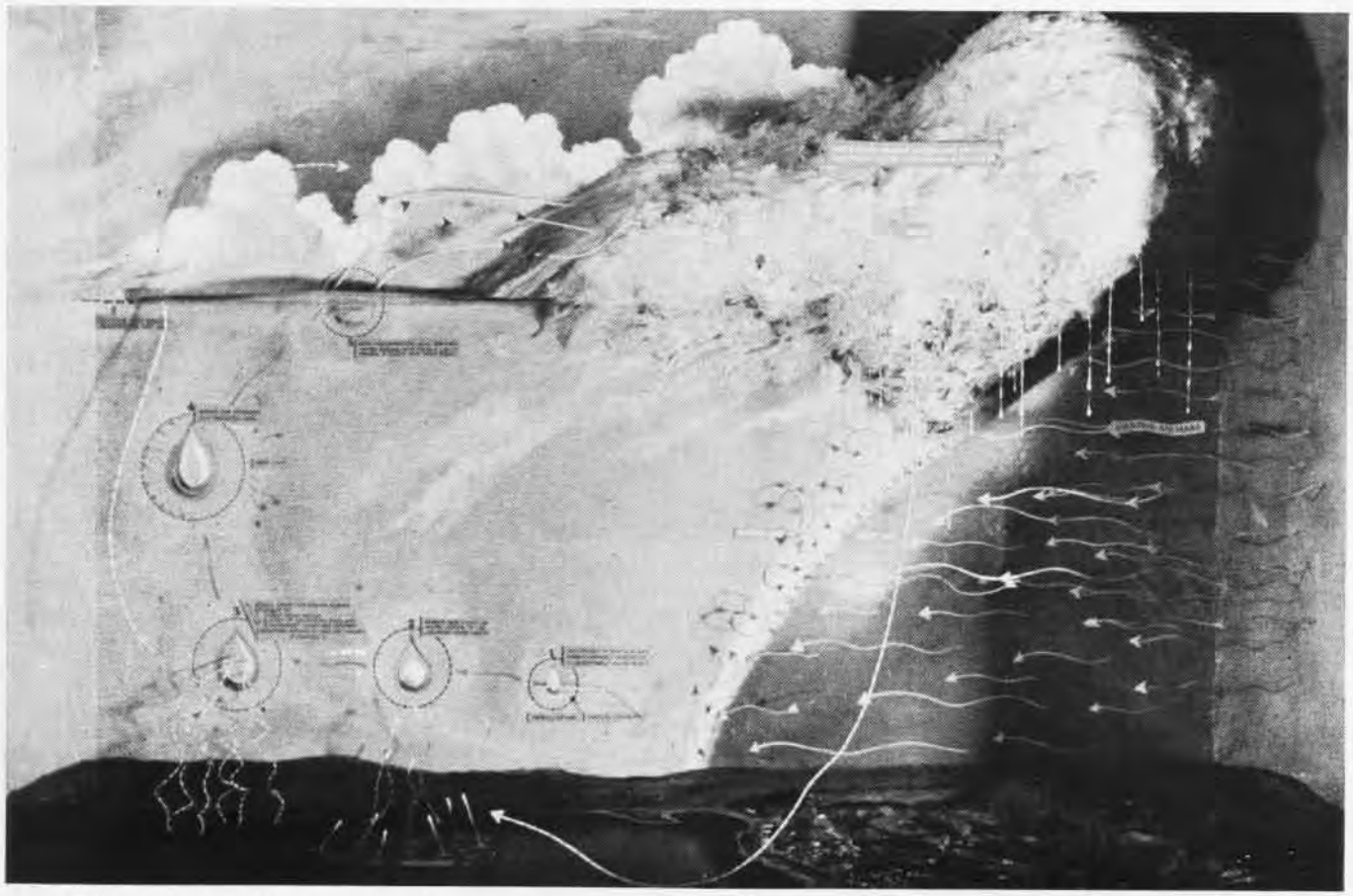
7. Hurricane or Typhoon—The nature, dimensions, appearance of a typical tropical disturbance are illustrated. The various wind and wave values, precipitation areas are shown and the method of "flying the shelf" indicated

Effectiveness of the weather models and their appeal even to laymen not versed in aerology was evidenced by the interest shown in a set used in connection with war bond drives.

Four sets have been constructed, with two more in process. One set will be used at Annapolis, another at the school for Aerographer's Mates, NAS LAKEHURST, New Jersey. The other two have been assigned to Pre-Flight School, Ottumwa, Iowa, and NATT, NAS PENSACOLA. The models were procured through ORI, Special Devices.

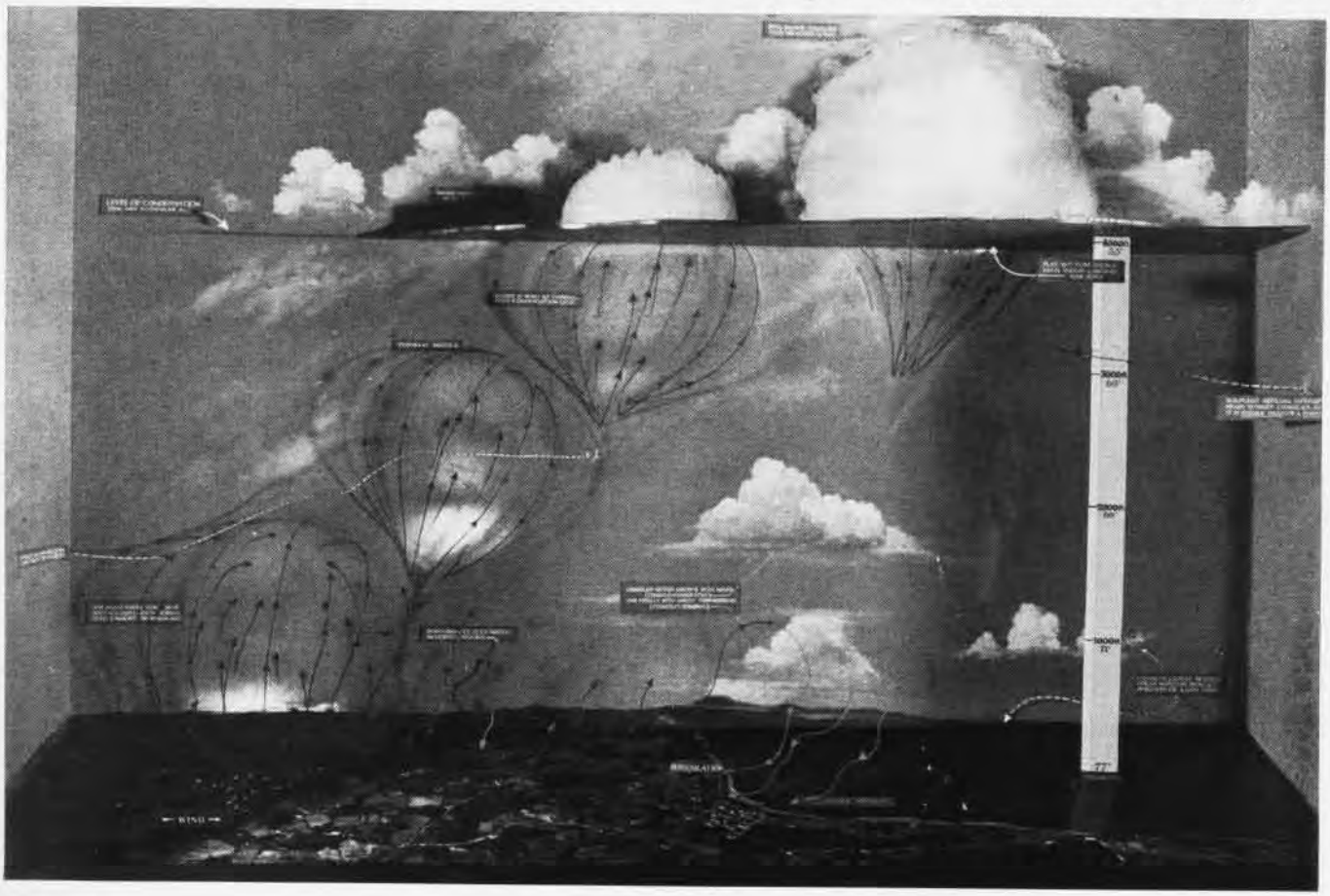


THREE-DIMENSIONAL WEATHER MODELS GIVE STUDENT PILOTS VIVID PICTURE OF ATMOSPHERIC PROBLEMS ENCOUNTERED IN FLYING



Rain cycle begins when warm air gathers vapor over water. Process is made visual in weather model showing masses of vapor saturated air rising toward condensation level

Birth of a cumulus cloud is portrayed in this model. Sun, wind and water take part in development from turbulent air to full grown clouds. Art joins science in teaching



CAMERAMEN CHECK OUT ON BELL AND HOWELL STUDIO PRINTERS

PHOTOGRAPHERS STUDY FONDA CONTINUOUS PROCESSING GEAR

NAVAL SCHOOL TRAINS MOVIE CAMERAMEN

THE EXCELLENT motion picture coverage given all theaters of World War II didn't just happen by accident. To get the job done, Naval Air Technical Training Command turned out large numbers of specially-trained Photographer's Mates.

These men had to be completely familiar with service types of motion picture equipment. They had to be of such temperament as to keep going under the toughest conditions, and their training had to instill in them the "Newsreel Technique" of seeing the story and human interest in everyday and accidental occurrences as well as in their current assignments.

Since the need for movie cameramen was urgent at the beginning of the war and school was not yet established, early training was given with the facilities of March of Time and Movietone News in New York City. Later the Naval School, Motion Picture Camera (Class C) was set up at the Photo Science Laboratory, Anacostia, D. C. where it remained until late in 1944. The present location is at Pensacola.

Athough under the same command, this school is an entirely separate unit from the long established Naval School, Photography. It is a small, well-equipped motion picture production plant, housed in a separate building adjacent to the old Photo School.

Students are taught to operate different types of Navy cameras, and during the training period they receive enough practice to become proficient in their use. Maintenance of equipment care for film under all conditions such as salt sea air, desert heat, and the low temperatures encountered in flying are included in the curriculum.

The men in training are given an opportunity to fly and gain experience shooting from both single and multi-engine aircraft. The Naval photographer must be proficient in the air.

The school teaches use of 16mm and 35mm equipment and methods since both types are used in the Navy, depending upon the requirements of a particular project. In addition to actual camera technique, each man is checked out on the use of the Houston 16mm reversal processing machine, the Fonda 35mm negative-positive developing machine and the Bell and Howell Studio printer.

The policy of the school has been first, to give the student a thorough knowledge of the theories and practices in motion picture photography by means of lectures, and second, to provide the student with adequate material and equipment to put these theories into practice. By developing short screen stories and by transferring these ideas into short finished films, the student learns to think in terms of the finished product.

LEARNING HIGH SPEED CAMERA TECHNIQUE

While it is quite probable that a student may never encounter production laboratory work, editing, and sound recording on future assignments, he is taught something about each of these processes so that he may have a better understanding of the whole field.

A graduate of the Naval School, Motion Picture Camera, is not expected to be capable of turning out a finished Hollywood production by his own efforts, but the finest training in motion picture photography has been made available to him. He is able to record all important Naval operations both in time of war and of peace. He has a more varied training than most of those in the field of commercial photography. A student can look forward to a well paid job in industry or perhaps a private business of his own when his tour in the Navy is completed and he has to make a living.

SKILL and proficiency in any art or science starts with an innate ability and interest. The purpose of the school is to give the potential motion picture photographer a thorough familiarity with the tools he will be using and to acquaint him with many of the techniques used in the Navy, as well as in industry. Trainees develop rapidly and in a short time have the skill required of a true motion picture photographer.

Any rated photographer or a graduate of the Naval School, Photography, (Class A) is eligible to attend this school of motion picture photography. The course is of 16 weeks duration, and classes start every four weeks.

NAVY PILOTS SPENT LITTLE TIME IN WATER AFTER DITCHING PLANE

THE NAVY during the war set up the fastest working search and rescue program in history to save its pilots who were forced to ditch or parachute into the ocean. Figures to demonstrate how swiftly its system worked are contained in analysis by BUAER Airborne Equipment section of 749 search and rescue reports.

Thirty percent of the carrier-based

airmen forced to make emergency landings at sea were picked up in less than 15 minutes (*see chart*). Within an hour or less 69.6 percent had been rescued and within 24 hours 98.3 percent were picked up.

Out of the 1229 pilots and aircrewmen rescued and reported on, 95 percent were alive and 5 percent killed. The survey covered reports from December, 1943, after the Japs had been chased out of the Gilberts, until the end of the war. Only reports covering carrier-type aircraft were included. Combat operations accounted for 75.8 percent of the incidents and training operations 24.2 percent. Both day and night flights were included.

Most of the fliers preferred to ride

their planes into the water, 90.5 percent ditching while 9.5 percent bailed out (*see chart*). Reasons given for preferring to ride the planes down instead of hitting the silk include: pilots had more confidence in their planes' ditching ability, and aircraft survival equipment would be lost on a bail-out.

When it came to selecting the airborne equipment most successful in helping in rescues, BUAER found that dye marker was tops (*see chart, right*). Figures show the total number of men saved by use of the marker, as compared to other equipment utilized by them. Mirrors and whistles were used, but the number of rescues due to their use was small.

It is interesting to note that the devices which worked best required little indoctrination as to their proper use. Percentage figures further indicated that a combination of signalling items was more effective and accounted for 15% more rescues than when one signalling device was used. BUAER found that such equipment should be designed to attract the attention of both aircraft and surface craft.

AS THE war progressed, the Navy worked out a system of guard destroyers trailing along behind carriers which were taking on planes. For this reason, surface craft piled up the largest number of rescues, as compared to Dumbo planes and submarines.

Because they had adequate medical facilities, the surface craft could treat men at the critical time immediately after rescue. They could operate under almost all sea conditions, whereas planes could not land on rough water. Aircraft were found effective for rescues when arrival of surface craft was delayed and in or near enemy territory where the latter might have difficulty in penetrating without being shot up.

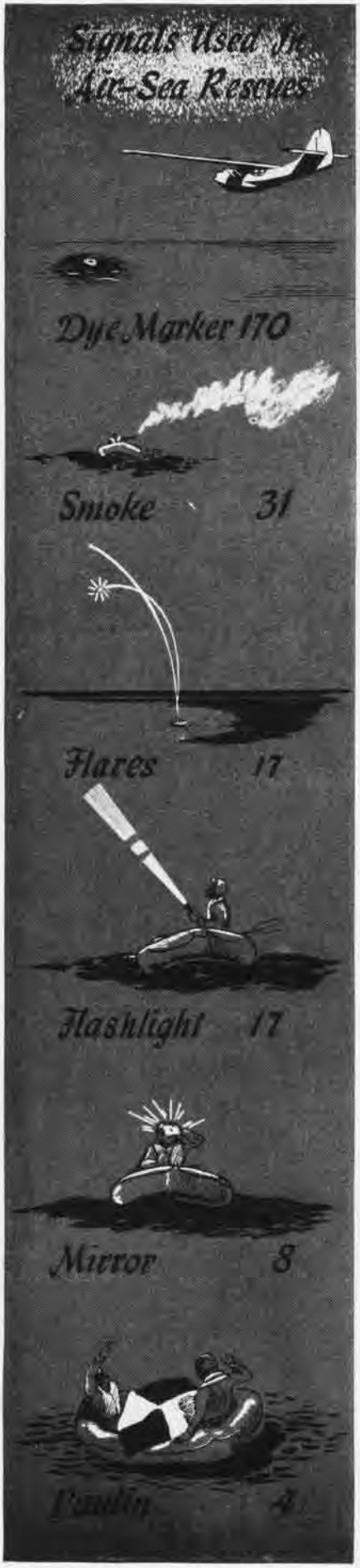
Submarines proved effective in enemy coastal waters and when combat operations required specific lanes of air travel, such as the run from Iwo to Japan.

BUAER's survey showed surface craft, ranging from crash boats to destroyers, picked up 72.5 percent of the men saved. Dumbos and OS2U's picked up 18½%. Subs got 4%.

Survivors who made out the reports said that in 730 incidents 59% used some form of signaling to attract aid, 36% did not need any.

A break-down of the compilation showed that of the total rescued, 419 were fighter pilots, 529 in TBF's and 282 in VSB-type aircraft. Six fighter pilots were killed in ditching or drowned, 41 VTB personnel were killed or drowned and 17 VSB men.

Many other methods of attracting attention were used besides the abovementioned dye market, smoke, flares, flashlights, mirrors or paulins. Three men owed their lives to pistol shots, two caught rescuers' eyes by waving their arms, and one rescue each was credited to radar, oil slick, sonobuoy, or streaming life vest. Newer developments like sonobuoy or corner reflectors were not in use long enough to pile up many rescue reports in the war.



MINIATURE LABS RIDE HIGH FLYING V-2'S

DEADLY GERMAN ROCKETS PROBE PEACEFUL NEW MEXICAN SKIES

SENDING men to study the outer reaches of the stratosphere may be impractical but the Naval Research Laboratory at Washington is using the next best solution. To explore the secrets of the universe hidden outside the earth's protective atmosphere, NRL has constructed miniature laboratories to take the highest ride in history.

Attached to the nose of the German v-2 rockets now being fired by Army Ordnance at White Sands, New Mexico, the miniature laboratories ride in the rocket warheads where deadly explosives formerly were carried.

The v-2, traveling at supersonic speeds surpassing 3500 mph, soars more than 100 miles into the upper atmosphere. From this high-altitude platform the scientists can study by remote control the profound effects of the sun upon the earth's atmosphere.

Inside the special warheads which were designed at NRL, is a myriad of experimental and sampling equipment. Cosmic ray counters, pressure, temperature and other gauges relay their information back to recorders on the ground by means of 22 radio-telemetering channels.

Scientists stationed at many observation posts operate a massive array of equipment to track the rocket's six minute flight and record data that is radioed back to earth.

A small compact spectrograph located near the tip of each warhead analyzes and records the sun's rays upon a special film. The film, permitting 100 exposures, is wound into a chamber of armor piercing steel. In later experiments these chambers may be ejected at the top of each flight.

On 28 June, the first upper atmosphere miniature research laboratory was launched at White Sands. This laboratory was incorporated in the sixth v-2 rocket to be fired and was entirely instrumented by NRL. On this flight the telemetering record indicated that the film was being exposed properly but since efforts to separate the warhead from the body failed, no trace of the spectrograph or film container has been found as yet.

By observing cosmic rays through a special cosmic ray telescope, the scientists are learning more about the atom and the minute particles that make it up—elecrons, protons, and neutrons.

Consisting of heavy lead blocks to sort out "primary" particles from outer space and sensitive counters to detect them, the telescopes send a radio signal each time a particle is detected. These signals are recorded on a moving strip.

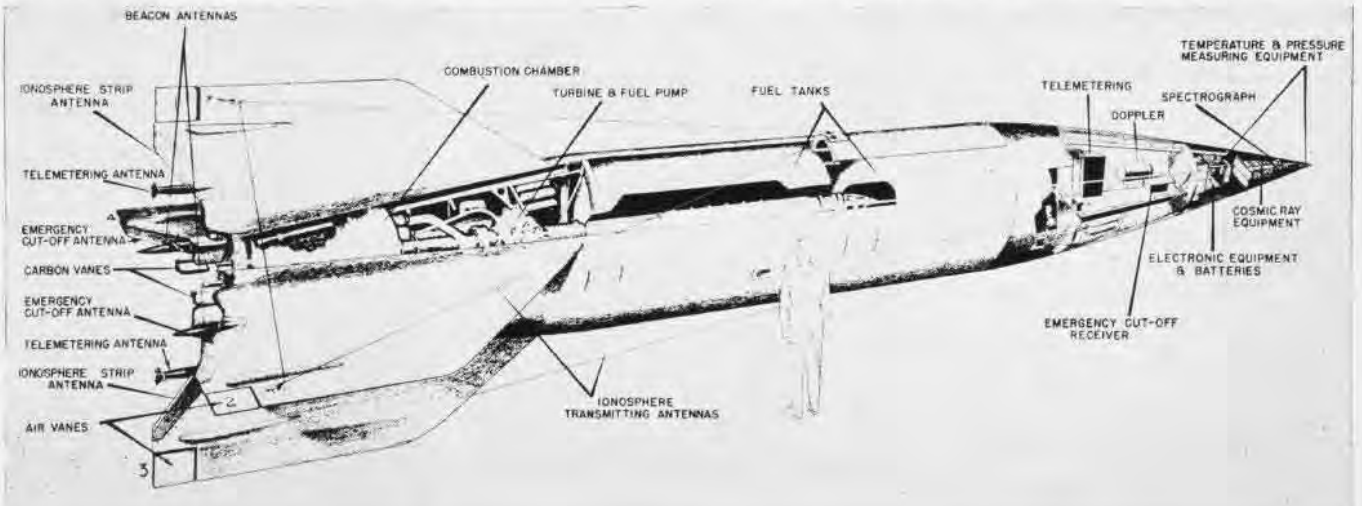


DIAGRAM SHOWS EXTENSIVE INSTRUMENTATION USED IN RECORDING UPPER AIR TESTS; SPECIAL WARHEADS WERE DESIGNED BY NRL

Cosmic rays are a hundred times more powerful than our best atom smashers and can penetrate deep into copper mines and under oceans. The earth's atmosphere forms a protective shield from these rays. Particles which reach the earth are believed to be created in our atmosphere by still more powerful particles or "primaries" from outer space. Many theories have been advanced to explain the origin and nature of primary rays but none have been verified fully.

The study of temperature, pressure, and composition of the upper atmosphere, determination of winds and the extension of meteorological data to greater altitudes is the function of the NRL group on Atmospheric Physics. The 28 June experiment included instruments necessary for measurement of ram pressure at the nose of the rocket and temperatures at various positions on the missile.

Unfortunately, the telemetering performed improperly during the first 90 seconds of flight or through the main part of the atmosphere. One lesson learned was that trailing wire antennas may be used on rocket carriers.

NRL's pioneer work in radio and radar is now being extended to transmission in outer space. The first step in this work is a more exact study of the ionosphere, the electron clouds 50 to 300 miles above the earth which reflect certain radio waves and make possible overseas radio networks.

THROUGH transmitting impulses from the ground and measuring the time required for the echo to return, scientists have estimated the electron density at various heights. They know that the ionosphere is composed of layers.

While the V-2 will explore the relatively low E layer, the distant and more dense F layer will require rockets that go twice and three times as high. The Rocket Sonde Research section of NRL, now collecting fundamental data through research on the V-2, has already laid plans for such rockets.

Headed by NRL, the present V-2 governing panel for upper atmosphere research consists of Johns Hopkins, Princeton, Michigan and Harvard Universities, General Electric Co., and the Army Air Forces and Signal Corps.

Until physical recovery methods can be perfected, scientists are relying solely upon telemetering for the recording of data. Attempts to separate the warhead and after-body have been successful but finding the warhead is a problem because some descended 80 miles away in the desert.

Parachutes are of no avail since they burn off due to friction with the air.

ARMY PHOTOS SHOW V-2 MISSILE READY FOR FIRING TO ALTITUDES OF OVER 100 MILES

FROM GENTLE START, ROCKET ATTAINS 3500 MPH ON SIX-MINUTE TRIP INTO IONOSPHERE

TERRIFIC IMPACT WITH EARTH COMPLICATES JOB OF RECOVERING RESEARCH EQUIPMENT

FLIMSILY-MADE JAP EMILY ON RAMP AT NORFOLK, WHERE IT IS BEING REPAIRED SO THAT IT WILL FLY FOR TECHNICAL STUDY

JAP 'EMILY' SET TO FLY FOR U. S. NAVY

THE BIGGEST job in converting a captured Jap *Emily* into a test plane for the U.S. Navy, a task assigned to NAS NORFOLK, has been to make the hull waterproof so the big four-engined Kawanishi patrol plane would float.

When it arrived on an aircraft carrier's deck last winter, the plane's four 1850 hp. Kasei-22 engines were in good running order, as were the four spare engines and propellers. The Emily's hull, however, was made by the usual countersunk riveting process, with workmanship so poor it would never have passed a U.S. Navy inspection.

Three American enlisted men accompanied the plane to this country to help the Norfolk A&R department overhaul it for tests, scheduled to be held at NAS PATUXENT RIVER. The bulk of technical information on the plane was untranslated from the original Japanese so the overhaul has been done piece-meal under their guidance.

The hull gave the most trouble. Inspection showed the Japs made it waterproof by applying strips of waterproof silk to the exterior, along the riveted areas. Attempts to use our conventional fabric, dope and paint were unsuccessful. Strips of fabrics peeled off after the airplane had been in the water only a few minutes. Reworking the riveted areas was out of the question, as that would have meant virtually rebuilding the bottom.

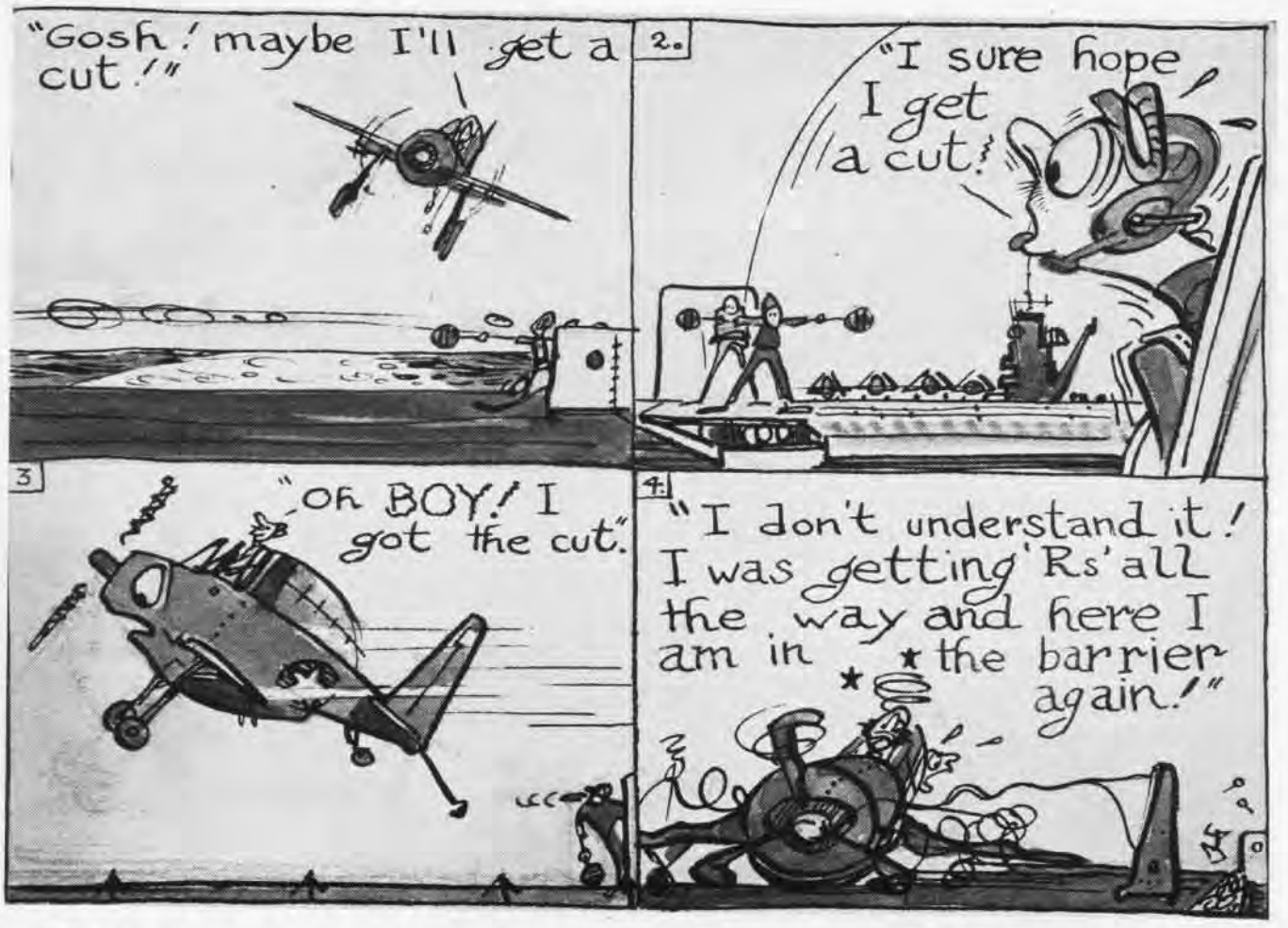
A&R department experimented with balloon-silk strips applied with a special cold-setting polystyrene glue, in an attempt to approximate the Jap method of obtaining watertightness. American aircraft finish lacquers and paints do not seem to adhere well to the Jap surface, for some unknown reason.

The beaching gear, for which no replacement parts were available, were repaired and the fuel system reworked and checked for safety and continuity. Auxiliary hull tanks conforming to the Japanese idea of "self-sealing" were junked as beyond repair. Wing fuel cells remain and will give sufficient capacity for limited flight tests and water trials at Patuxent.

Necessary repairs, rewiring of ignition harness, check and test of all accessories—were made in the shops while engines remained in the plane. They gave satisfactory performance in preliminary run-ins, contrary to expectations. Next steps are evaluation test and weight and balance computations.

ODD JAP BEACHING GEAR WITH FLOAT BALLS HAD TO BE FIXED

AUXILIARY HULL TANKS WERE TOO FAR GONE TO BE REPAIRED



ENSIGN I. FLOATED.

Moral: ***You Complete The Landing After The Cut.***

NO OPERATION at sea provides more dramatic evidence of skill than the perfect carrier landing. In order to achieve this goal in carrier aviation the pilot must use a standard approach and so fly his plane that he can pick up the Landing Signal Officer during the period when the plane is turning toward the ramp. The turn into the groove should be completed approximately one hundred yards (no more) from the ramp.

While in the groove and up to the "cut," the pilot can stay out of trouble by replying promptly and correctly to the Landing Signal Officer's signals relative to altitude, speed, and attitude. After the "cut," the pilot should hold the nose of the plane in the position it is in at the time of the cut. When the nose commences to settle, ease the stick back to cushion the landing, but at the same time keep flying the plane down to the deck.

All this is pointed out and shown to the prospective carrier aviator during simulated practices known as field carrier landing practices. But what these prospective carrier pilots fail to grasp from this simulated practice is that their task is not accomplished when the Landing Signal Officer gives them a "cut" but that the successful completion of the maneuver rests in landing the plane safely on the runway or in the arresting gear after the "cut."

After the "cut," the pilot is on his own and the responsibility for landing the aircraft rests entirely on him. This point cannot be too highly stressed for in a survey of more than 2000 accidents incident to carrier landing operations more than one-half were due wholly or in part to faulty landing technique after the "cut." This faulty carrier landing technique can be further subdivided into two major categories: *1.* diving for the deck (covered in the December, 1945, issue of NANEWS, page 22.) and *2.* holding-off.

The "holding-off" category accounted for approximately 400 accidents in the above-mentioned survey. These were mostly pilot-caused accidents and could have been avoided. Further breakdown of this type accident showed numerous mistakes but the most prevalent were: *1.* taking a slow "cut," and *2.* hauling back on the stick and holding it back. The following typical case histories are presented in hopes that the lessons learned will keep you out of the barriers.

Case 1.—A TBM pilot made a normal carrier approach, received a "cut" from the Landing Signal Officer, but held off and floated down the deck into the barriers. The Accident Board made the following comment: "The pilot and he alone can land the plane after receiving the "cut." The LSO will get the plane in the best position possible and give the "cut" signal and then he must leave it up to the pilot."

It all boils down to this: the pilot must comply with the "cut" signal without delay and then COMPLETE LANDING THE PLANE.

(Training Film (MN-5090)—Technique for Carrier Landings and Take-Offs and Flight Safety Movie (MN 4353 i) —After the "Cut"—deal with this problem and are essential in the educational program for prospective carrier aviators).

Midway Finds Snow Biggest Foe on Its Cruise in Arctic

Snow and snow squalls present the greatest problem to carrier operations in the far North. Forecasting them is continuous and difficult and requires constant study of weather conditions, according to aerologists on the U.S.S. *Midway* during *Operation Frostbite*. The expedition was carried out in the waters of the Labrador Sea and Davis Strait during the period 6 - 22 March, 1946.

Object of the operation was to test cold weather equipment and train naval personnel in carrier plane and ship operation under that condition. Cold weather clothing and foul weather gear of all types were thoroughly tested on this arctic cruise. The problem of weather in relation to aircraft carrier operations received special study. Future cold weather operations will benefit greatly from the vast amount of information gathered during this successful mission.

The Labrador Sea is subject to a diversity of weather conditions. Situations typical of temperate, sub-arctic, and arctic zones occur with rapid changes, under the influence of several modifying factors.

The Gulf Stream tributary. Modified by the warm Gulf Stream, temperatures over the Labrador Sea are 10 to 20 degrees higher than coastal temperatures, 20 to 30 degrees higher than those of the interior of Labrador.

Sea fetch and air approach over the sea. An off-shore wind generally prevails over the Labrador Sea. For the period of the operations, the prevailing wind was north with a slight westerly component, averaging Beaufort Force 5 to 6 as compared with the average Force 2 to 3 over land.

Associated with sea fetch from the Atlantic, the wind ruffles the sea; it assists in warming the land, sea and air. Conversely, when northerly, it cools the land, sea and air, but it does not quiet the sea unless there is a short fetch. In this respect, the combination of wind and sea, both approximately from the same direction, north to northeast, caused the roughest weather experienced — damaging the hangar doors to the side elevator, 13 March 1946. It is not uncommon for winds of 40 to 60 knots and high seas to accompany the passage of an ordinary low pressure system through the Labrador Sea.

Northerly winds over this area are cold, dry, and unstable. On contact with the water, condensation is for all practical purposes instantaneous resulting in snow showers. If the northerly winds are sharp and vigorous, secondary cold fronts resembling squall-lines develop, accompanied by snow squalls. Some of these squalls extend for 100 or 200 miles, usually in a northeast-southwest orientation across the Labrador Sea.

Snow in these squalls is graupel, which consists of small white soft hail and differs from ordinary hail in that it lacks the hard clear ice deposit on its circumference. A squall-line will travel eastward over the water surface as fast as 35 to 45 knots and presents a major forecast problem.

Mountain Effect and the Greenland Katabatic. From the vast and high central plateau of Greenland, the Katabatic wind (a downward flow of air from mountain or hill slopes) blasts its way to the Greenland west coast, channeled through narrow fjords, as wind through a tunnel, reaching velocities over 100 knots in some instances and warming up as it descends. These winds may extend out to sea for many miles. But the wind was not encountered at all during this period, though on several occasions Greenland was 70 to 100 miles distant. However, in close proximity to Greenland, 17 March 1946, clear skies and moderate temperatures prevailed, attributed to the Katabatic then reported along the west coast.

Ice fields stretch from about the 46th parallel, northwest along the coast of Labrador and Baffin Island, thence eastward along the 65th parallel to Greenland. The depth of the ice fields along the Labrador coast was found to average about 150 miles. In the immediate vicinity of the ice fields, the air and sea temperatures decrease rapidly, as much as 10 degrees in sea temperature, 20 degrees in air temperature. Seas are less heavy close to ice fields and to leeward of land.

A ship can maneuver to take advantage of good weather or to avoid bad weather. Fueling operations were successful in this respect on 17 March 1946. Even so, average weather conditions showed greater cloudiness, lower ceilings, and poorer visibilities at sea than over land stations in the vicinity.

Little or no frost is experienced aboard ship due to the ship's speed, except in a following or cross wind; then only in extreme cases. If the ship is anchored, the frost will be just as great as on the adjacent shore. The same applies to some extent to snow; if the ship is headed into the wind, only leading edges are affected. Greatest snow depth for the *Frostbite* operation, two to four inches of snow on the flight deck, occurred with the following wind on 8 to 9 March 1946.

SNOW-COVERED PLANES ON MIDWAY FLIGHT DECK WARM UP READY FOR OPERATIONS

TECHNICALLY SPEAKING

USE OF OLD TIRES FOR BEACHING SEAPLANES SAVES SQUADRON TIME AND MANPOWER

OLD TIRES HELP BEACH TRAINING SEAPLANES

NAS Corpus Christi—Confronted with the problem of beaching and recovering small seaplanes used for training purposes, Squadron 18-B developed a recovery mat from aircraft tires and tubes which saves both time and money.

Throwing sand bags in the water just off the seawall was tried first. The planes were run up on the sand bags and recovered with a crane. This method proved unsatisfactory because it took more than 50 man-hours a week to fill sand bags to replace those washed away by water action.

The squadron then started having the planes make a normal approach to the seaplane ramps and recovery was made by a beaching crew. This also proved inadequate because it slowed down operations. It took 11 men about five minutes to beach each plane.

The method developed by Lt. Nicholas Calderon, using the recovery mat, requires only one minute's work by four men, a considerable saving of time and manpower. The method used for recovery is as follows: The pilot taxis toward the mat, then gets his taxi signals from the beachmaster and runs the plane up on the mat. The pilot cuts his engine and is hoisted up on the seawall by the crane, the beaching gear then being placed on the plane while it is still suspended from the crane. It is lowered and rolled away to the line.

Another advantage of the mat is that it minimizes chances of damage to the aircraft. It does less damage to the main floats of the planes than the sand bag method and is farther away from any solid objects than the beaching or sand bag method. There is ample room for recovering the plane without damage in case the plane should break loose from the mat.

The mat was constructed from tires and tubes obtained from salvage department. They were lashed together with 2″ line also secured there. No expenditure of naval funds was made for this project.

The mat was placed in position and anchored with two patent type fluke anchors on the seaward end and secured at the inboard end with 3″ line tied to a bit on the seawall. This line has two 500 lb. concrete blocks swinging on it to hold down the inboard end but still allows it to be flexible when the mat is hit with sufficient force.

Foul Weather Damaged Ailerons

CASU 5—Two F6F-5 aircraft received for inspection and commissioning had been subjected to a severe typhoon, and it was found that the aileron control supports station 199 and 209 3/8 were badly damaged.

The upper support brackets, P/N 24113-2, were cracked completely across the channels, while the attached supporting studs, P/N 26315, had sheared off.

On the lower supporting brackets the supporting studs, P/N 26317-3, were bent out of alignment.

▶ ***BuAer Comment*—It is recommended that all F6F-5 type aircraft subject to severe weather conditions be inspected closely for failures at the aileron control supports.**

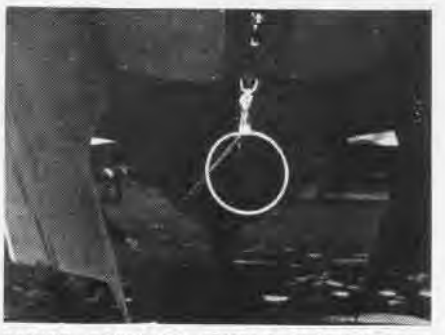
F8F-1 Target Release Approved

VR-20—The pictured towing attachment for the F8F-1 was put in use by this fighter squadron. The fixture has been successfully tested and approved for towing either banner or sleeve type targets in fixed gunnery practice.

The targets can be released from the Mk 51 bomb rack either electrically or manually.

▶ ***BuAer Comment*—The towing attachment provides a simple, efficient method of attaching and releasing the tow line. The device makes use of existing bomb rack hooks and as a result the target can be released by operating the bomb release controls. The wear usually taken by the attaching ring is, in this case, transferred to the towing line due to the sharp bend in the cable as it passes through the attachment. This condition, however, is not considered serious.**

BuAer Armament Division has initiated action to provide a target release for F8F airplanes, but until such time as this release becomes available in quantity, the method suggested provides a simple, inexpensive release for this type of target.



DEVICE PROVIDES SIMPLE SLEEVE DROP

Vibrator Helps Instrument Test

VMF(N)-533—False and sluggish meter readings have been eliminated from test equipment in the radio-radar department of this squadron. A technician borrowed an idea from jet propelled aircraft and installed a vibrator on the meter panel of the radio altimeter bench test set.

This was accomplished by mounting a small 24 volt blower motor to the top of the test panel by means of a semi-flexible metal bracket. Turned on by a switch mounted on the panel, the motor transmits enough motion to the test panel to keep indicators loose and free moving.

The motion eliminates the need for constant tapping to insure true readings, but is not severe enough to injure the meters. The device has proved valuable in the testing and calibration of radio altimeters and could easily be applied to other bench test equipment.

▸ *BuAer Comment*—**It is common laboratory practice in testing aircraft instruments, to attach a small electric buzzer to the test panel. The buzzer produces a light vibration which frees the instrument pointers from normal stickiness caused by internal friction.**

Hook Facilitates Prop Moving

NAS ALAMEDA—A civilian employee in A&R at this station developed a crane hook attachment for fork lifts which has greatly improved transportation service.

The attachment is quite simple, consisting of a crane hook supported by a structural channel. The channel sits on top of the fork and is held in place by straps which are welded to it. Since the hook can be easily detached, it does not interfere with using the lift in the conventional manner. The hook is carried on the lift when it is not in use.

FORK LIFT HOOK PICKS UP A PROPELLER

The original use of the hook was to provide a convenient method of moving propellers inside A&R Department. Many other uses have since been found until now the device is in almost constant use.

The idea was developed through the Navy Employees' Beneficial Suggestion Program.

A&R Cost Accounting Functions

NAS NORFOLK—The improved system of cost accounting for A&R departments has been in operation now for several months here as at other stations. During the war, man-hour accounting had been reduced by order of BUAER and BUSANDA to a simplified payroll certification of civilian employees' time.

This method was adequate for disbursing purposes but gave no production control information. It did not, for example, consider the man-hours expended by the large number of enlisted personnel assigned to assembly and repair shops. A complete picture of costs is the goal of the revised system.

The already-realized benefits of the new plan can be summarized as follows:

1. Supervisors are made "man-hour conscious." 2. Higher echelons of management have an accurate gauge against which to evaluate supervisors' requests for additional personnel or facilities. *3.* It is possible to determine the actual man-hours required to do a given job. (This information will, as soon as possible, be developed into a series of "production norms" for planning purposes.) *4.* Top management has a much clearer picture of the distribution of labor by jobs and the exact details of man-hour expenditures, thereby gaining accurate information as to the total personnel requirements, measured against projected workloads.

Material costs, both NSF and APA, with respect to individual jobs, will be furnished along with labor costs. Management will know accurately whether given jobs are economical or uneconomical, and can furnish BUAER dollars and cents information on the subject. Estimates for funds can be made more closely in terms of expected workload, and better economies in operation can be expected.

When final objectives are achieved, the cost accounting system will furnish the following production control factors, considered necessary for efficient plant operation: *1.* Actual total cost, in money, to the Navy—not merely to the A&R department—of performing a given job; 2. direct labor, indirect labor, and overhead costs involved in operating the A&R department; *3.* individual shop operating costs; *4.* plant maintenance costs, especially on questions of "repair or replace"; *5.* month to month comparative and relative internal operating efficiencies; *6.* vital production control data for accurate planning and scheduling.

JD Nose Jacks Are Coordinated

Because the existing jack-pad for raising the nose of the JD-1 was located on the bottom of the nose offset to the port side and tended to sway to starboard when the plane was raised, two tripod hydraulic jacks have been coordinated by VJ-4 to work as one unit to lift the JD.

Simplifying the method where two separate jacks have to be used, the VJ-4 men, who, incidentally, helped in prototyping the JD-1, connected two jacks to one pump and got the desired results with minimum of energy. Both reservoirs and pumps were removed as a unit from the jack assemblies. The pump was removed from the reservoir to be enlarged and cut in two, approximately four inches from the top. A piece of chrome-molybdenum sheeting (spec. X4130–.064) 13″ x 17″ was used to enlarge the reservoir from 15″ to 25″ in length. The pump was then reinstalled.

The pipe plug was removed from the "T" fitting at the pump outlet and an elbow (AN822-8) was installed. A piece of flexible medium high-pressure hydraulic hose size 8, approximately 14′ in length was used to connect both of the jacks. A detachable hose coupling (AN 792-8) was installed at each end of the hose. Quick disconnects were inserted to connect or break the line connecting both jacks.

Reservoir mounting lugs may be removed from the jack and welded to one of the legs of the jack to hold the reworked reservoir as illustrated below.

TWIN MODEL JACKS AID IN LIFTING PLANE

Reaction Below Splits Asphalt

NAS DIEGO—Eruptions in the asphaltic concrete landing mat, varying in size from about 6″ in diameter and ½″ high to 18″ diameter and 2″ high, have occurred in a localized strip of pavement 250′ long and 125′ wide. This section of the landing mat was completed 18 months ago over a fill compacted with salt water. At an earlier date the area apparently was used as a dump for scrap aircraft materials. The mat is constructed with 4″ of emulsified asphalt covered by 3″ of asphaltic concrete.

Investigation of the eruptions showed, in every case, a few pieces of oxidized scrap aluminum at least 6″ below the base of the emulsified asphalt. The conclusion reached by the Public Works Officer is that the scraps of aluminum have reacted with the salt water, forming hydrogen.

At normal temperature and pressure one ounce of aluminum reacting with water and sodium chloride will produce approximately one cubic foot of hydrogen. An increase in temperature of about 30° F would increase the reaction by about 50%. The hydrogen may have found its way into cracks on hot days, remained there, and, on building up more pressure, penetrated further during succeeding hot days until it burst out at the surface.

▸ ***BuDocks Comment*—Aluminum reacts with H_2O to form $Al(OH)_3$, insoluble, and nascent hydrogen. The nascent hydrogen reacts with $Al(OH)_3$ to form $AlCl_3$, which is soluble. This uses but a small fraction of the nascent hydrogen. The remainder, left out of the reaction, builds up pressure, disrupting the surface. Other metals, iron particularly, have been observed to blow out asphalt surfacing. No type of surfacing can withstand such decomposition. Compaction of the subgrade has little to do with it. The gas cannot escape downward, toward the earth's center, so it blows off the seal at the top.**

Vent Improves Value of Tester

One thousand pocket-size demand oxygen mask leaktesters, BUAER Model M-117, were procured and distributed to aviation equipment and survival officers through the equipment and survival officers' schools.

All these testers are considered satisfactory for field testing to detect poorly-fitted masks. The usefulness of the pocket-type volumetric mask leaktesters can be increased by the addition of a breathing vent. Addition of the breathing vent in the leaktester enables more accurate testing by decreasing the breath-holding time, lessens psychological and physical disturbance to the subject, and makes possible quicker and better checks of the subjects' breath-holding before the leak test is made. Further, mask adjustments may be made between tests without removing the tester from the mask hose.

HOSE OF MASK PLUGS IN THE CONNECTOR

SEALING WAX HOLDS CONNECTOR IN PLACE

The physical modification of the BUAER Model M-117 oxygen mask leaktester consists of securing an AN6002-1A demand mask to regulator tube external connection assembly into the existing molded external connector hole. First, the clothing clip is removed from the barrel of the connector, and then a ⅜″ diameter hole is drilled centered 13/16″ from the cover end of the connector. The connector is then cemented in place as shown in the illustration, with sealing wax,—Federal Specification JJ-W-151 or other suitable cement—to make a leak-tight joint.

When testing the fit of an oxygen mask with the breathing vent adaptor, the mask hose is plugged into the connector (see photo), and as many leak tests as necessary may be made. At the time of actual breath-holding, the thumb or forefinger is held over the hole. If mask adjustments are necessary, the tester may remain plugged in and allowed to hang from the mask hose tube. The subject is able to breathe comfortably while the mask adjustments are being made.

The breathing vent increases the convenience of the tester in that several tests can be performed in the time formerly required for one test. The time of breath-holding is decreased because the subject is free to breathe through the vent except for the time when the vent hole is closed.

HOW DO YOU GET YOUR GASOLINE?

THE MECH steps on the wing of your plane with the gas hose, attaches the grounding wire (we hope) and fuel pours into your tanks.

Where did the gas come from. As Little Abner would say, "It comes from petroleum as any fool can plainly see—see?" True enough, but it travelled a long hard road from its happy home in the oil fields to you. First it went through refining, and for your avgas that meant refining the living hell out of the crude petroleum, and then the addition of various items, such as tetra-ethyl lead, to increase its anti-knock properties and inhibitor to increase its resistance to deterioration by heat, etc.

° ° °

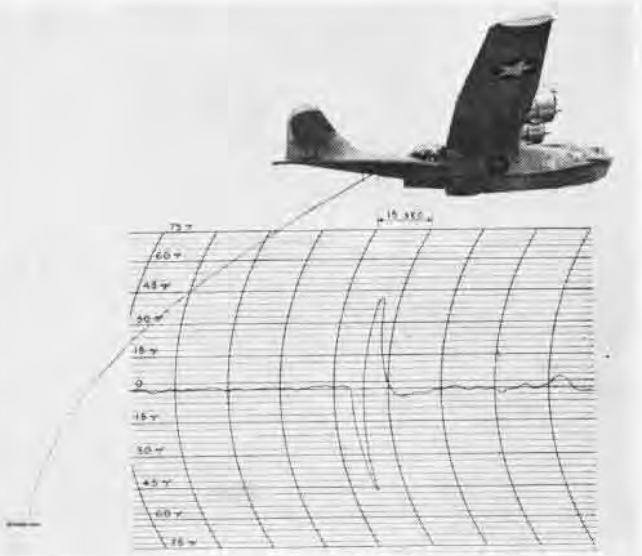
Once in the oil company's tanks, said avgas becomes the object of the scrutiny of a raft of people who are primarily interested in three things: *1.* Is this gas A number one in all respects so that the guy who is relying on it to pull him across a large wet ocean or over top of those rock-stuffed clouds has no worries on the score of his fuel? *2.* How much of this avgas do we need and when and where? *3.* What is the price?

BUAER is watchdog on quality of your avgas, ably assisted and abetted by BUSHIPS inspection service. If there is any question about the quality of the gas, the screams emanating from Power Plant Division of BUAER can be heard for four counties around. BUSHIPS inspection maintains the policy that if the gas isn't perfect, it is totally unacceptable and that is that!

° ° °

The problem of how much gas is needed and when and where keeps a large number of brows continuously furrowed. BUAER makes the budget estimates for the whole year's supply. Field commanders submit short-term estimates to Area Petroleum Officers who, in turn, correlate requirements and forward them to the Army-Navy Petroleum Board (an agency of Joint Chiefs of Staff). The Board works with BUSANDA, which buys the gas as requested. After it is bought, Army-Navy Petroleum Board again picks up the ball and arranges for the gas to be shipped wherever it is needed. BUSANDA and BUAER both are involved in the price of the gas for BuAer must pay for it out of funds appropriated by Congress and believe it or not but those funds are tailored to a gnat's eyebrow these days.

That, in brief, is how you get your gas. There is more than meets the eye.



A blip registers on the recorder as a PBY equipped with a magnetic airborne detector flies over remains of a sunken tanker.

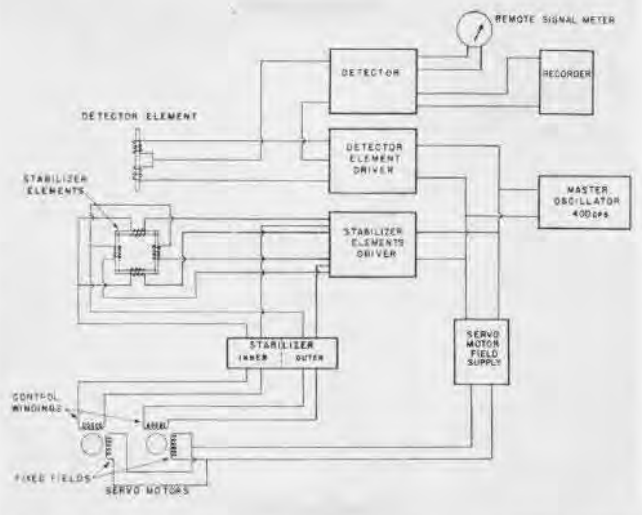
MINERALS AND OIL FOUND BY AIRBORNE DETECTORS

THE NEED for new mineral deposits has resulted in the reconversion of the magnetic airborne detector into an aerial divining rod.

Used chiefly in the war as a means of locating submarines, sunken wrecks and lost torpedoes, the AN/ASQ equipment operates to detect changes in the earth's magnetic field caused by the presence of metal.

Planes now flying over vast expanses of inaccessible territory map the geological characteristics of promising areas with the aid of SHORAN, a radio mapping device, and special cameras.

Over 40,000 square miles of the United States and Alaska have already been surveyed. The airborne detector, in addition to giving a rapid preliminary survey, has been found to give more accurate appraisals than the conventional magnetic methods being used by ground parties.



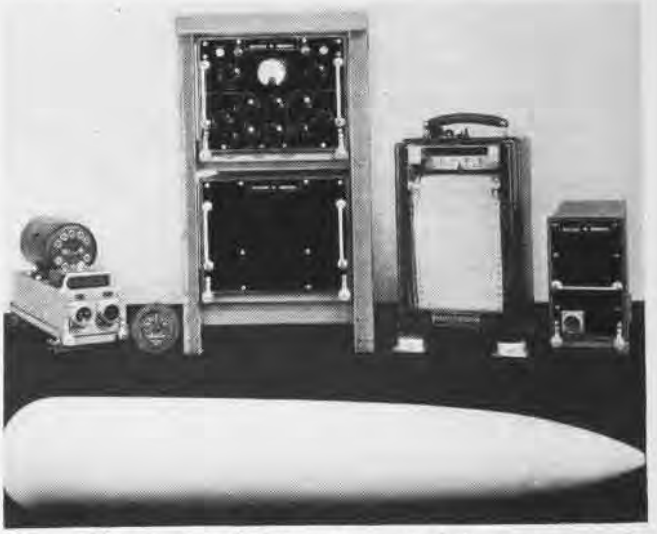
A simplified diagram shows the arrangement of AN/ASQ components. The detector and stabilizer elements compose flux gates.

The Navy Ordnance Laboratory, the Office of Na Petroleum Reserve, and the Geological Survey have been continually improving the device during the past two years. The exploration of extensive areas in Alaska and off the coast of the Gulf of Mexico in a search for possible new sources of oil, were made with a system of instruments that correlate and record magnetic data obtained.

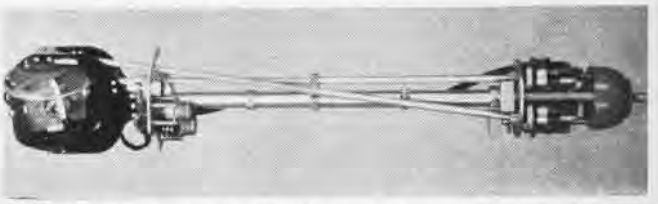
Last summer scientists from a single aerial survey party were able to map new areas at the rate of over 1000 square miles a day.

At present operations are underway for a complete survey of Naval Petroleum Reserve No. 4 in Alaska.

Although petroleum has no magnetic properties, possible places of oil accumulation can be determined by the surrounding rock formations. A recorded pattern for possible oil deposit narrows the areas that land parties must evaluate.



Assembly of principal ASQ equipment includes two power units, remote signal meter, main control panel, recorder, and detector.



Universal detector head with covering removed shows flux gate in its gimbal mechanism, with orienting motor unit in aft end.

The AN/ASQ equipment was originally developed by the Navy Ordnance Laboratory in conjunction with the Bell Telephone Laboratories. Other magnetometers were carried during the war as submarine locaters, but the NOL-Bell device is the only one put to peacetime usage.

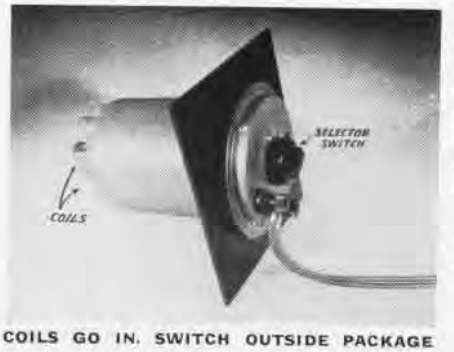
Planes similar to those used by the Navy and equipped with the detector gear have been obtained by the Department of Interior for further study of national resources.

The instrument may be of further importance in studying offshore geological structures by oceanographers and geologists. This information would be of great value to Coast and Geodetic Survey in preparing accurate and complete magnetic maps for world-wide navigational purposes.

The magnetic air detector uses field-sensitive fluxgates aligned with the earth's magnetic field. Any other metallic object with magnetic properties causes a change of flux in the instrument and is recorded in the plane.

The fluxgates consist of three similar coils on lucite spools mounted perpendicular to each other. The middle coil, held parallel to the earth's field by the two perpendicular coils, is the detector by which the signals are obtained.

HYGROMETER POWER AND INDICATOR UNIT



COILS GO IN, SWITCH OUTSIDE PACKAGE

Device Useful In Preservation

In line with extensive experimentation for improved methods in preservation, NAVAL AIR EXPERIMENT STATION, PHILADELPHIA, reports progress on an electric hygrometer to determine the relative humidity within sealed packages.

Adequate preservation of many aeronautical parts and equipment in shipment and storage depends on maintaining dehydrated conditions within sealed shipping containers. Moisture permeability of many of the so-called water-vapor barriers commonly used to enclose equipment and dehydrated agents causes the dehydrated conditions within packages to become progressively less, as moisture enters and the dehydrating agent inside approaches saturation.

To protect parts packaged and in storage, the partially spent dehydrating agent must be replaced before the relative humidity of the contained atmosphere reaches 30%, the point near which a cobalt chloride impregnated indicator card changes color. Using these cards within sealed packages often requires that the packages be opened to find out if the relative humidity is too high to assure further protection.

Opening of packages subsequently found to be safe would be unnecessary if some means were devised to determine the relative humidity within the packages without opening them. The electric hygrometer is designed to fill this need.

The device operates on the principle that if a tube of some non-conducting material, such as polystyrene, is spirally wound with bifilar coils of wire, which are not in contact with one another, and the coils are coated with a lacquer containing an absorbent substance, such as lithium chloride, the electric conductance between the windings increases considerably when the relative humidity of the surrounding air increases.

This is due to the fact that water is absorbed by the hygroscopic salt, resulting in its ionization and thereby producing a conducting medium. If these coils are carefully constructed and calibrated, it is possible to produce a unit which, when operated with a suitable electric circuit can be used to determine the relative humidity of an enclosed volume with considerable accuracy.

In its present form the hygrometer has eight coils, each sensitive throughout a limited range of relative humidity. These are inserted in an eight-point selector switch, which in turn is mounted in the wall of the container. The power supply is plugged in and the humidity determined by turning the selector switch progressively from coil number one until a coil is selected which covers the approximate range.

The reading in microamperes is converted to relative humidity by a calibration curve. A progress report on the instrument states that one coil can be made suitably to cover the range from 25% to 50% relative humidity. It is considered feasible also to attach an automatic switch and recording instrument to the electric hygrometer so that relative humidity readings within large containers in long time storage can be taken automatically.

An expensive instrument with the complexity of the electric hygrometer cannot be used economically on small dehydrated packages at the present time, but work is being undertaken to reduce the coils and simplify the instrument's operation.

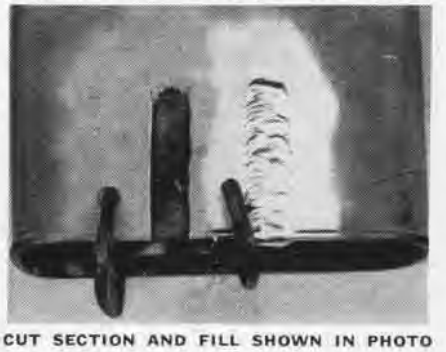
Holes Redrilled in Air Adapters

NAS MOFFETT FIELD—Welding shop employees have developed a new method of repairing the worn mounting holes of the carburetor air adapter of the R5D. Excessive wear occurs in the carburetor air adapter mounting holes for the anti-icing manifold, causing the holes to become badly worn and damaged.

Previously the holes were drilled and reamed to .046 and a special screw was manufactured for the oversized hole in place of the original countersunk head screw.

The method used at present to repair the adapter is accomplished by cutting a section of the adapter wall, filling in the cut using heli-arc weld, grinding the surfaces to the correct contour and then redrilling the holes to original size by use of a jig, thus allowing the use of the original parts and standardizing the work continuity. The finished product is then cleaned and primed with zinc chromate primer.

Adapters with cracks existing were heretofore rejected and sent to salvage in accordance with maintenance instructions. After three trials with the heli-arc weld process, approximately 100% of the magnesium castings have been salvaged to date.



CUT SECTION AND FILL SHOWN IN PHOTO

Converted Lift Handles Engines

NAS SAN DIEGO—A model LT 56 Towmotor fork lift stacker has been converted by personnel of the Engine Overhaul Division, A&R Department, so that it will transport engines in the engine stands. This was accomplished by lengthening the forks and installing a gooseneck with an eye, on top of the stacker mast.

When the stand and engine are to be moved, the stacker forks are run under the cross bars of the engine stand. When the stand and engine are raised, the engine propeller shaft goes through the eye in the gooseneck.

"L" shaped fittings are welded to the inboard ends of the forks and fit over the engine stand cross bars to prevent the load from bouncing. This method of moving engines and stands intact from Final Assembly to Test Stands saves considerable time per engine as one stacker operator can handle the operation. It's quite a load, as photo shows.

STACKER CARRIES ENGINES WITH STANDS

ONE OF WORLD'S LARGEST FLYING BOATS TAKES OFF FOR WEST PACIFIC DESTINATION

MARS WILL FLY NAVY PACIFIC ISLAND ROUTES

WITHIN eight hours of its landing at NAS HONOLULU with a record pay load of 35,000 pounds, the Naval Air Transport Service's huge *Hawaii Mars* was unloaded, cleaned, and set up as a hospital ship with 100 evacuation cases from Aiea Hospital aboard to be flown to Alameda, California.

A total of 120 persons including six medical attendants, a crew of twelve, and other passengers made this the largest number of persons ever carried in aircraft on a flight of such long duration.

This was the third world's record smashed by the *Mars* in 48 hours.

The *Hawaii Mars* was the third of the JRM-1 transports to be built for VR-2. The *Marianas Mars* and the *Marshall Mars* have been in operation now for several months and the *Philippine Mars* completes the squadron.

The new flying boats will be concentrated on the main line runs to the Philippines and Western Pacific areas. Cruising at 165 miles per hour at 10,000 feet they are now operating on a three-a-week schedule to Honolulu. Manila service started recently.

The latest *Mars*, bigger and faster than her prototype, the *Martin Mars*, is a veritable warehouse with large cargo spaces and cargo doors large enough to load with ease a 20-ton tank.

The plane has been designed in accordance with the latest transport considerations and on data from actual performance of the original *Hawaii Mars* which crashed a year ago in Chesapeake Bay.

The four engines are mounted on welded steel tubular structures, so designed that engine and mount may be removed as a unit from the nacelles. Access is provided to the interior of each nacelle in flight, as crew members can crawl through the wing.

The two complete decks extending almost the whole length of the plane can hold cargo equivalent to that of four R5Ds. Watertight bulkheads below the lower deck divide the hull into six integral fuel tanks.

The total fuel capacity is 13,220 gallons without allowance for expansion. Tanks can be filled individually from a centrally-located fueling compartment that is fume tight.

Pilot and co-pilot have all flight instruments and controls, throttle and propeller instruments, manifold pressure gauges and tachometers, but all other controls and gauges, including those for auxiliary plants, are located at the flight engineer's station in the pressurized flight deck compartment.

Passengers are accommodated in reclining chairs forward and aft. A total of 133 fully equipped troops can be carried in canvas bench-type seats which can be converted into 27 bunks.

The JRM operation west of Honolulu hit its first hard luck during the latter part of June and the early part of July. The *Hawaiian Mars* experienced failure of number four engine at Saipan on June 27. A new engine plus maintenance personnel were loaded aboard the *Marshalls Mars* which departed Alameda on June 28.

This plane arrived in Majuro just in time to be delayed by the restriction placed on aircraft operation in the Marshalls Area during the atomic test. After these restrictions were lifted, the *Marshalls Mars* departed from Majuro and finally arrived in Saipan in time to ride out on the water the effects of a nearby typhoon.

For three days both the *Marshalls* and the *Hawaiian Mars* were riding at anchor, awaiting abatement of the storm, in order to unload the new engine and make the engine change. During this period, the mooring on the JRM U-Dock proved to be inadequate, and the dock broke loose. The dock has since been re-secured and the moorings strengthened.

The Saipan ordeal apparently was only the first chapter in the "JRM Saga of Troubles." Upon arrival at Majuro, the Kajuro U-Dock was found half submerged and out of commission as a result of high winds. It was finally placed back into commission with manual operation only. Upon departure from Majuro the *Marshalls Mars* found itself loaded with an unpalatable mixture of gas and water. This mixture was exchanged for fuel after return to Majuro.

From this point on everything went well until arrival at Alameda when it was found that number one engine required change.

The *Philippine Mars* on its maiden ocean flight flew a party of newspapermen from Alameda to Honolulu. Using 12 JATO bottles, the big JRM got off the water at Alameda in less than half the usual take-off run.

Battery Bracket Changed in F4U

VMSS-24—A limited supply of preferred batteries and a recurring incidence of battery failure has provoked the engineering section of this unit to adapt the battery brackets on F4U-4 aircraft to accommodate alternate, well-stocked batteries.

Short on Type 24 volt AN-3151 batteries and plentifully supplied with Type 24 volt AN-3150 models, engineers constructed a special bracket for installation of the latter type by putting a new bracket under the present battery rack rails.

The two extra leads are then taped and secured firmly to the forward end of the existing battery rack rails.

AVIATION SCIENCE MARCHES ON

Now that the war is over and the Aviation Navy has time to put its scientific brains to work to solve knotty problems, some startling innovations have come out. Printed below are two ideas showing the effect of the atomic age upon thinking around air stations.

Mad Hatter Fix For Fade-Outs

NAS Pensacola—You don't get lost during working hours in the Aircraft Maintenance Facilities Unit, Squadron VN-5M, NAAS Barin Field—at least not more than once. If a man is called for and can't be located, the Unit comes to his aid, furnishing headgear that would put most of Hedda Hopper's creations to shame.

And he wears it until some other individual is found in the same status. This sharpens the eyes of the man wearing the hat to such an extent that he becomes a detective committee of one to catch some other unlucky member of the unit who may have doped off.

The hat is very luminous, its bright silver making it easily seen for surprising distances. In addition, it has several unique and useful accessories as shown in photo below:

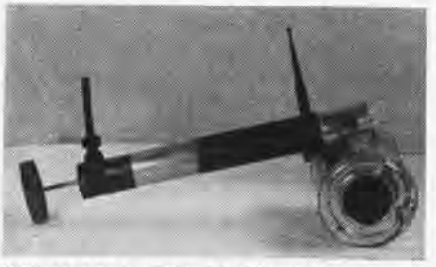
1. A radar screen, enabling the Unit to make contact day or night.
2. Masthead and running lights, not only making night identification easy but assuring onlookers that he is coming or going.
3. A bell which is of great value in case he is completely surrounded by fog and a satisfactory warning to other traffic should he become a derelict and hence a menace to navigation.
4. A radio homing loop so that he can come in on the beam should he become completely disoriented.
5. Signal flags, identifying him as a member of Squadron VN-5M. (The name spelled out will be readily recognized.)
6. A *Baker* flag on the mainmast which he is required to hoist when taking on ammunition.

The Ancient Mariner had his albatross; the AMF Unit has its Hat. Both carry a lot of weight. The Unit head states jubilantly, "It works!"

CHIC CHAPEAU CURBS OSTRICH QUALITIES

You Can't Get Ahead of CASU-5

NAS San Diego—When atomic warfare involves the man in the street, CASU-5 will be ready. Intensive research by HOWDOD (Hand Operated Weapon, Department of Development) has progressed to the point where details of an experimental model of the Mk XIX½ double-acting, anti-recoil, self-diffusing atomizer can be revealed to the service at large.



THIS DEADLY 'GUN' IS QUICK AND DIRTY

The accompanying photo shows the weapon in the free-swiveling portable form, without auxiliary drop tank. It will be noted that the device incorporates the forward-firing jet principle. The illustration is presented with the actuating mechanism at the end of the power (ejection) stroke.

The ring sight is provided to permit extreme accuracy with two classes of targets; i.e., fast airborne and slow surface targets. Full choke operation on the nozzle produces a smaller pattern which is used in conjunction with the inner (small diameter) ring sight.

Tests are now being conducted to determine: 1. optimum bore sight datum 2. personnel hazards 3. safety precautions 4. rearming procedure 5. tactical employment 6. countermeasures which may be developed.

HOWDOD will appreciate recommendations from other activities interested in this device.

▸ *BuAer Comment*—Most operators dispense with the ring and post sight by relying on large pattern size to make the kill. It is recommended that DDT in oil be used as the missile. Armament believes the modern method is to employ aircraft to spray the area. No plunger action is required from Naval personnel on the ground as the enemy is destroyed wholesale.

RACKS ON LEFT HOLD ASSEMBLED ROCKETS

Rocket Trailer Speeds Loading

NAS Jacksonville—To meet local operating conditions, VSB-ATU♯1 has modified a Mk 3, Mod 1 bomb trailer to make a combination work shop and stowage rack for 2.25″ rockets. It is highly desirable to have mobile rocket equipment to enable rocket crews to move rapidly to that section of the parking area to be used for loading operations.

The trailer has four doors hinged at the top so that when raised to open position they form shelters for crewmen using the bed of the trailer as a work bench. Rockets are assembled on the bed of the trailer, on the right in the photograph, and stowed in the rack to the left, ready for use. The rack will accommodate 120 SCAR rockets.

The trailer is 13½′ long, stands 7′ high, with the body part 4′ in height. It is 5′ wide and the doors measure 6′x34″. The trailer is being used successfully by ATU-1 to speed up rocket loading operations.

Leakage Quelled in Regulators

In an attempt to answer the ever increasing problem of leakage which the advent of high pressure systems induce, recent experimentation by Naval Air Experimental Station, Philadelphia, has included tests on all types of newly-designed hydraulic equipment.

One such test was performed on a new model pressure regulator unloading valve which has been designed for 3000 PSI systems. This particular sample has been and is being subjected to a series of tests which include a seven-day hot oil immersion, leakage and operating pressure range test, –60°F. low temperature and 160°F. high temperature, life, and proof and burst pressure tests. Purpose of the tests is to analyze the performance of the sample valve under simulated extreme conditions.

Navy approval is given only after the specified performance requirements are met. By such meticulous checking, the Navy insures that safe equipment consistent with weight and design limitations is used in its operating aircraft.

SERVICE Test
INTERIM REPORT DIGEST

This digest covers the 15 August Interim Report of Service Test, NATC PATUXENT, and does not necessarily reflect BUAER policy.

F8F-1 (120 Hours' Test)

Hydraulic System. Grumman fix of mounting the unloader valve horizontally instead of vertically on the distribution panel and shock mounting the distribution panel to the firewall was installed during this interim. System has operated satisfactorily for 35 hours during which time landing gear has been cycled 95 times and airplane operated with the flaps down for a three hour period.

Hydraulic Actuating Cylinders. These cylinders continue to give satisfactory service and now have 114.7 hours and 229 cycles of operation. Right hand landing gear actuating cylinder was removed, disassembled and inspected. Piston's "O" ring was found to have circumferential scratches. Both wheel pocket door actuating cylinders were removed, disassembled, and inspected. "O" ring seals on both cylinders had circumferential scratches, and there were gouged areas where seal contacts cylinder wall. Since condition of these seals is attributed to excessive heat, Grumman is providing cooling air to these cylinders.

Exhaust System. First failure occurred on #345 assembly Grumman P/N 55327 after 85.5 hours. A 1½" crack was found in the reinforcement web at junction of the two cylinder pipes. Same assembly failed at cylinder mounting flange in a previous installation and was modified by contractor with welded fishmouth reinforcements at the mounting flange. Assembly is still subject to stresses causing failure.

Exhaust Studs. After a flight during which combat power was used for eight minutes, the engine was inspected and five exhaust studs P/N 92720 were found broken, one in #5, two in #17, and one in #18 cylinders. In addition one stud in the Solar Seamed P&W extension #18 also was broken. This system has been carefully checked after each flight using high powers, and was initially correctly installed using Boots Rolltop nuts #N 15524 on the cylinder studs and the specified torque values on the exhaust clamp bolts. Each exhaust stack has a chafed area ⅛" on either side of the clamp, indicating a movement of the stack within the clamp whenever high power is used. This movement could have imposed an undue strain resulting in failure of these exhaust studs under combat power.

Equipment. The gyro inverter type FSSC88-1 4250 P/N LEL-10563E failed after 89 hours of service. Investigation showed insufficient AC voltage supply from the inverter. This voltage could not be adjusted to give enough out-put with the rotating field resistor. Bench test revealed that two of the phases gave only one-half, and the third one-tenth of the required out-put, indicating an undetermined internal failure.

F4U-4B

MK 9 Mod 2 Rocket Launcher. Launching plates have failed, material breaking around the pawl. It is believed that the pawl does not retract completely when the firing circuit is energized. The rocket lug jams on the pawl, causing the lug to tip and exert force on the launching plate.

Cannon Installation. After a total of 20,364 rounds had been fired, the first set of 20 mm, M3 (T31), cannons were replaced. Firing runs on the second set of cannons are being made under the following conditions: burst length—6 seconds, number of bursts per run—3, cooling interval between bursts—1 second, cooling interval between runs—3 minutes.

After approximately 14,000 rounds were fired, it was found that old type gas vent plugs with .069" vents were in use on these guns. The vent plugs were replaced with new type having .081" vents. Change has produced better gun operation. Rate of fire was increased, and the many stoppages due to loss of tension on the feed mechanism were minimized. With the old type vent plug, recoil was insufficient to rewind the feed.

There were two more failures of the rear buffer lock plunger as described in the last report.

Two defective feed mechanisms were replaced in addition to the new set of four used with the new cannons.

When the first cannons were replaced, all four were found to have cracks in the receiver body originating at the slats for side solenoids.

During this interim there were two failures of the cannon plugs to the trigger solenoids. When the plugs are screwed in hand tight, gun vibration backs them out. When they are tightened with pliers to the point that they will not back off, stresses are imposed which cause them to break when subjected to vibration. A cannon plug using detents rather than threads is indicated as a solution to the difficulty.

Increased rate of fire and longer bursts are producing more failures of component parts of the guns. Firing pins, driving springs, gas bracket plug lock washers, breech block locks, gas cylinder guide lock washers require frequent replacement for this reason. Failure of the various lock washers allows the locked part to back out and fail itself. A routine replacement schedule for these parts is indicated.

Many of the stoppages for which causes were previously undetermined are now believed to have been caused by faulty ammunition. A ground firing test produced eight dud rounds in eight firing attempts.

Outer Wing Panel. The F4U-4B has been restricted from firing 5" HVAR in accordance with BUAER dispatch 192313. No. 5" rocket motors have been used in this product to date and no signs of structural failures have been found.

Case Ejection Chutes. Chutes have failed on four occasions, apparently because of an error in design or assembly. The stainless steel sheeting used on the lower side where the least strain occurs is .035" in thickness, while the metal on the upper side of the chute where empty cases hit with considerable force is only .025" thick. The upper wall of the chute has in every case belled out and broken along the line of spot welding. The break, in each case, started at the top near the gun. A satisfactory fix has been to replace the upper side of the chute with .040" stainless steel.

Rear Gun Bay Doors. Doors are being bent down at the trailing edge to the point where the door chafed the leading edge of the outboard flaps. More careful reloading procedures should avoid this.

Wing Surface. Fabric wing surface makes loading of heavy ammunition boxes more difficult, since the corners of the ammunition boxes easily puncture the fabric. Metal skin in this area would be desirable.

Fabric Fairing. Muzzle blast has caused fraying of the fabric fairing where metal gun fairing assembly joins starboard wing. This is apparently due to use of inferior pigmented dope on this wing, since the entire blue surface coat was peeled away leaving only the white clear-doped surface. The port wing shows no ill effects from muzzle blast.

Wiring Damaged. Electric wiring to cannon solenoids is unprotected and becomes crushed and severed during removal of guns. The gunbay is the only convenient place for ordnancemen to stand while servicing guns, so inadvertent trampling of open wiring results. A more protected route is being proposed for rewiring.

NAS LAKEHURST—After 47 planes had failed to locate a missing JRB in the Okefenokee swamp in Florida, BlimpRon 12 sent out a dirigible and in 1.85 hours the wreckage of the missing plane was found 90 miles from the detachment base. The wreck was discovered despite low and near-solid overcast and poor visibility. A loudspeaker on the K-88 directed state police searching through the swamplands.

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Procurement of Parts for AD-1

Approximately 950 items were purchased from Douglas Aircraft Company to support the AD-1 (formerly BTD-1). Spares were purchased under the "B," "C," "D" List system as outlined in ACL 76-46. Twenty-eight "B" Lists consisting of a range of 392 operational spares required for life-of-type for about 10 planes, and 14 "C" Lists consisting of 523 items of "bits and pieces" for life-of-type overhaul are scheduled. Odd items or odd quantities will be shipped in "D" Lists.

ASO will allocate "B" and "D" List material to the specialized supply points, probably NAS NORFOLK and SAN DIEGO, and the ASA OAKLAND and NASD NORFOLK. There will be no "A" Lists. Operational spares required to fill Section "B" Allowance Lists will be drawn from the shelf stocks provided through "B" Lists. "C" Lists are to be allocated to the specialized overhaul points, probably NAS NORFOLK and SAN DIEGO.

A Combined Aircraft Parts Catalog and Maintenance Parts Breakdown is being developed for the AD-1 as an experiment, and will be distributed when the first aircraft are delivered. It will contain, in addition to features usually found in the Illustrated Parts Catalog and Maintenance Parts Breakdown, the following information: 1. Source Code (Ref. ACL 128—44). 2. Stock No. (if procured or previously stocked in the Aviation Supply System), 3. Quantity per "B," "C," "D" list. Standard AN, AC, NAF, and NAS items will not be stock numbered in this publication. (See ASO Catalog.)

The bomb ejector assembly, P/N5256285, is the same as the bomb ejector assembly used on the AM-1. In determining the quantity of bomb ejector assemblies necessary to support the AD-1, the recovery of used or damaged assemblies was a strong factor in arriving at the quantity purchased, and consequently "bits and pieces" for overhaul were procured. Therefore, all activities are requested to turn into supply activities as prospective Class 265 material defective or damaged bomb ejector assemblies for repair by A&R activities.

List of Instrument Spare Parts

The Class 88 Instrument Spare Parts Section, published in January 1944, is obsolete and should be removed from the ASO catalog. This section received very limited distribution and was directed principally to major supply activities and A&R shops established by BUAER as instrument repair points. BUAER Aircraft Instrument Bulletin 1-45 covers the policies affecting repair and overhaul of aircraft instruments. In addition BUAER publishes instrument bulletins which list by manufacturer the instruments for which spare parts will be supplied through ASO. In the future ASO will not publish a catalog on instrument "bits and pieces" required by instrument repair shops, because there are only a few such shops. Adequate lists of items authorized and available will be furnished in the form of "Manufacturers Instruments Parts Interchangeability and Requirements Estimating Work Sheets." Such lists for Pioneer, Speery, Kollsman, and General Electric are in process of revision and preparation.

Pliofilm Packaging Unacceptable

Pliofilm is not considered satisfactory as a packaging material for Method II packs, Specification AN-P-13. Therefore, all containers fabricated from any type or lamination of pliofilm are not acceptable and should be replaced at next inspection with moisture impervious containers as covered by ANA Bulletin 162F of 3 April 1946.

The use of pliofilm for Method II packs, AN-P-13, *is* contrary to contractual requirements, except for contracts dated prior to 2 October 1945, the date on which the moisture vapor transmission (MVT) rate was lowered from .25 to .20 (Specification AN-B-20-1). Contracts which permit the use of pliofilm should be amended immediately to require compliance with the current issue of Specification AN-B-20.

All current bulk pliofilm stocks and stock containers fabricated from pliofilm are unsatisfactory and should be reported to ASO for disposition.

The listing of "Pliofilm Synthetic Resin Adhesive" on the ANA Bulletin 289b is in error, since the moisture vapor transmission rate does not meet the requirements of Specification AN-B-20. Bulletin 289b will be withdrawn from distribution and a corrected bulletin will be issued.

Disposition of Damaged Material

Requests for disposition of damaged material are being received by BUAER and ASO without sufficient information to properly identify and evaluate such material. Activities reporting material for disposition should furnish the stock or part number, complete nomenclature, plane or engine type if applicable, manufacturer, and any other description of the item that will enable the disposal activity readily to identify such material for expeditious handling.

Hose Stocks to Be in Bulk Form

ASO will stock the following types of AN hose assemblies in breakdown or component from instead of in the form of complete hose assemblies with fittings attached: AN 853 high pressure hose assembly, AN 6264 medium high pressure hose assembly, AN 6265 medium high pressure hose assembly. (This was put into effect previously for low pressure hose in April 1945 and covered in Aviation Equipage TSB #4 of 28 April 1945.)

The hose used in AN 863, now designated a high pressure hose assembly, is the same as and interchangeable with the hose used in AN 6264 and AN 6265 medium high pressure hose assemblies. These assemblies all are designed for use in a 1500 psi hydraulic system. Stocks of AN 863 hose assemblies are still available in the supply system and these should be exhausted before bulk hose and fittings in breakdown form are issued.

Interchangeability List Schedule

The following schedules have been established for the completion and distribution of Interchangeability Lists on the manufacturers named:

Wright Engines—Engines, 16 May 1946; Pratt & Whitney—Engines, 16 June 1946; Continental Engines, 26 June 1946; Lycoming Engines, 10 July 1946; Hamilton Propellers, 26 July 1946; Curtiss Propellers, 26 July 1946.

Winterization Oil Dilution Kits

Oil dilution kits, required for the winterization program on carrier type aircraft, are either available in the supply system, under procurement from contractors, or being manufactured at NAS SAN DIEGO.

Stock numbers or part numbers of oil dilution kits for different plane types are as follows: F6F-5, Bulletin No. 85; F7F, R82-K-F7F-Bul. 6; TBM-3, SA7563J; F4U-4, VS-43861; FR-1, 28-5109449; SB2C, R-82-K-614280. Requests for these kits are to be submitted through normal supply channels.

Shipment Order Copy Eliminated

The practice of requiring shipping and receiving activities to return stamped copies of BUAER shipment orders to the Bureau has been discontinued. The stamps reading "Return this copy to BUAER upon completion of shipment" or ". . . upon receipt of shipment," and calling for shipping data, will no longer be used.

Annapolis Grads Learn of A&R

NAS NORFOLK—At the request of the Post Graduate School of the Naval Academy, this station's A&R department has established a course of practical instruction for aeronautical engineering post-graduate students.

It is expected that several groups of officers, numbering about 20 in a group, will be sent to NAS NORFOLK for study of A&R work. A syllabus has been set up emphasizing practical aspects of operating a Class "A" aviation overhaul facility.

Subjects covered include A&R organization and administration, planning and scheduling, engineering as performed by A&R's, functions of shops, and personnel management. Most of the students' time will be devoted to visits to shops, observing actual jobs.

MAINTENANCE PERSONNEL, SERVICING OWN AIRCRAFT, WILL TAKE MORE PRIDE IN WORK

In addition to the basic service squadron, the system provides for non-commissioned augmenting units for CV and VP aviation. These small satellite units, organized under parent FASRON's at their home ports, are standard packages of personnel which can be assigned to meet varying requirements. They are always attached to and a part of a regular numbered FASRON.

The CV FASRON has five types of augmenting units: CVB, CV, CVL, CVE and Night Devron. Those serving VP squadrons have only one type of augmenting unit. Due to its individual characteristics, VO will have no such unit.

FASRON's, along with their augmenting units, are deployed by Fleet Commanders in a manner similar to the deployment of Fleet squadrons. Accordingly, an augmenting unit deployed in a different geographic location from its parent FASRON would be similar to three planes of a squadron deployed in some different geographic area.

BETTER MAINTENANCE REQUIRED BY I. A. P.

TEMPORARY inability of Naval A&R's to meet overhaul requirements will require maximum efforts by all maintenance facilities to insure the success of the post-war Integrated Aeronautics Program.

Maintenance has become a key factor in the IAP since, by ACL No. 125-46, service life of aircraft between overhauls has been extended by six months. This move was made to ease the load on A&R's which must overhaul large numbers of operational and storage aircraft.

Recently streamlined by a special informal board appointed by CNO, the new IAP is being initiated by means of planning directives. Adoption of the Fleet Air Service Squadron (FASRON) under this program puts the responsibility for maintenance back into the squadrons.

Capable of quick expansion in emergencies, the FASRON's replace all CASU's, CASU(F)'s, PATSU's, HEDRON's, SOSU's and CASD's. It is a compromise between the wartime streamlined systems and the pre-war, self-sustaining systems.

Special type shop services and tests which cannot be handled by fleet units are the primary concern of the new units. The FASRON is exactly what its name implies—a commissioned unit having the same status as a squadron which provides logistic support for fleet aviation units.

Adoption of the FASRON system increases efficient use of personnel by moving enlisted personnel from CV's, AV's and AVP's to air groups and squadrons. During peacetime, ships operate for limited periods with their assigned air groups and squadrons.

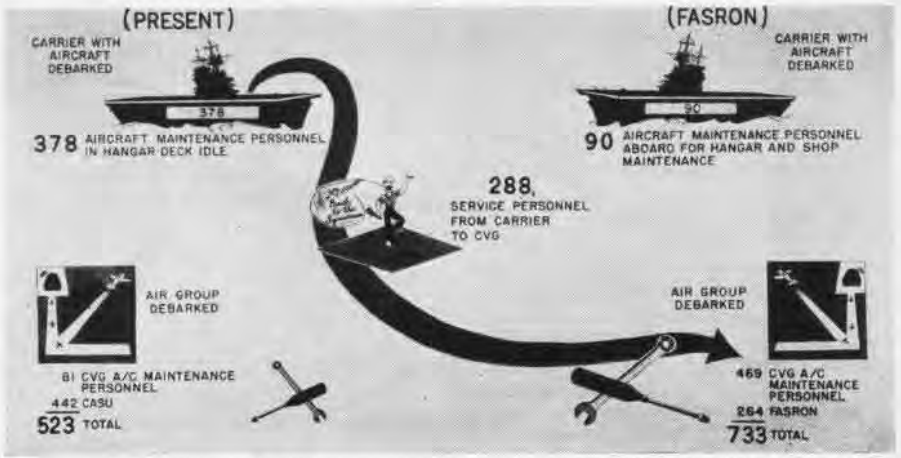
In the interim periods when aircraft are debarked, the new system decreases the number of personnel who remain aboard to an absolute minimum. Squadron personnel service aircraft both ashore and aboard. This is readily apparent in the chart below.

There is a FASRON for each major type of naval air function—CV, VP and VO. CV types are numbered from 1 to 100, VP units from 101 to 200 and the VO type numbers from 201 to 300.

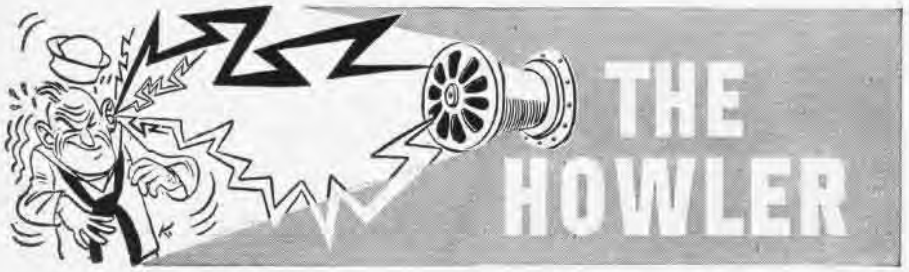
In the peacetime Navy, personnel ceilings are fixed, making personnel economy a major planning factor. The FASRON was chosen because it meets the demands of mobility and personnel economy.

Besides providing more efficient maintenance and "esprit de corps," the new system offers an opportunity for diversified training. Squadron commanders can utilize a greater variety of personnel for training in gunnery, radio, radar and other phases.

As the IAP gets under way, pilot officers will receive greater training in their squadron assignments. During the war this phase was neglected as, under the streamlined system, pilots were busy maintaining flight proficiency.



FASRON SYSTEM PUTS MAINTENANCE PERSONNEL BACK INTO SQUADRONS AND AIR GROUPS



PBM-5 Rudder Control Rod. An isolated case of failure of P/N 162B2489, rudder control rod, has been reported. The contractor, after investigating stripping of the threads from forward male fitting at point of attachment to the REB 3N bearing, states that no conclusive reason for the failure can be reached. In a torque test of the threads on a new part it was found that excessive tightening of the rod end will cause the stud to twist off before the threads strip. A stress analysis indicates that the threads are the strongest part of the complete assembly, and that the basic design of the part is good.

Close examination of the failed part reveals the possibility that the rod end threads were corroded enough to strip the threads on the rod end stud if the rod end were forced on with a wrench. It is possible that the threads were damaged in service when removing and installing the surface for repairs, or incorporation of changes.

Since all of the assemblies have been manufactured and most of them delivered, the only possible remedial action is visual inspection of each airplane. It would probably take 1½ man hours per airplane to remove the lock pins and unscrew the rod ends to inspect for corroded and/or damaged threads.

BUAER concurs in the contractor's recommendation regarding visual inspection. The contractor has not discussed the possibility of loose mating threaded surfaces. In conducting an inspection of this assembly, the possibility of the stud being threaded undersize should be considered. After the lock pin has been removed, the rod end should be checked for excessive looseness when backed off one turn. Any evidence of a condition which might lead to additional failures should be reported.

PBM-5 Rudder Fabric Failure. An RUDM reporting fabric failure on inboard side of starboard rudder of several PBM-5 aircraft brought comment from the contractor that in the photo accompanying the report the airfoil slat assembly, P/N 162B20301, appeared to be missing. Removal of this part causes increased turbulence and may result in fabric trouble.

The contractor attributed the failures to deterioration of dope and fabric, a condition accelerated by turbulence.

Commenting on the reporting activity's recommendation that a protective tape be secured to the ribs before covering, the contractor's opinion is that the failures are not due to fabric wear at the capstring flange due to chafing, inasmuch as there is sufficient radius on the hold strips and the rib flange to prevent this. The trouble, according to the contractor, can be eliminated by maintaining fabric surfaces in accordance with standard practices. Redoping of the fabric should be more frequent.

BUAER comment emphasizes the warning to service units that the airfoil slat assembly should not be removed.

YG Ring Aids in China Navigation

HEDRON 32—Upon the arrival of the Marines in North China it was discovered that available charts and maps were lacking in accuracy and detail. This constituted a definite threat to navigation over unfamiliar terrain and called for extreme efficiency in all radio aids and navigational facilities.

To supplement and improve on the then increased importance of the YG-ZB gear, the radio department of Marine Aircraft Group 32 designed a ring to fit over the face of the remote-indicating compass of the TBM.

The ring is made of aluminum with the letters heard on the ZB stamped on each 30-degree heading.

The reciprocal headings are indicated by the letters, however, and not the headings the base is using to send the signal. Consequently all the pilot needs to do is listen for the signal, point the compass needle at the letter heard, and fly home.

This ring may be adapted to any aircraft equipped with a remote-indicating or radio compass.

OLD TYPE ZB CARD

NEW ZB RING INSTALLED

IMPROVISED ZB YOKE FACILITATES HOMING

China Dust Ups Oil Consumption

VMF-218—The R2800-18W engine installed in this squadron's F4U4 airplanes reaches an oil consumption of five to seven gallons per hour in less than 200 hours of operation. Frequent engine changes are necessary.

Since North China is exceedingly dusty and air intake dust filters are not available, oil is being changed at the 30 hour period in an effort to lengthen the operating time of the engine. However, this may not be the sole cause of excessive oil consumption.

Recent trouble has been encountered when the take-off doors, located in the intercooler entrance duct, stick in the closed position. In one instance both doors had been pulled loose.

▶ ***BuAer Comment*—Filters are being furnished to China squadrons by ASO. BuAer is obtaining a Service Bulletin from the contractor on the installation of filters in F4U-4 aircraft. This should be issued shortly. This excessive oil consumption is due entirely to existing dust conditions.**

PUBLICATIONS

The following Aviation Circular Letters, Technical Notes and Technical Orders have been issued since 1 August 1946. Copies are available on request to Publications Division, Bureau of Aeronautics.

AVIATION CIRCULAR LETTERS

150-45A *(Joint Letter) Disposition and Handling of Salvaged, Exchanged, and Returned Aeronautical Material including Aviation Ordnance Equipment.*
116-46 *TBM-3S Aircraft Model Designation; Establishment of.*
117-46 *Instrument Flight Rules, Weather Clearances.*
118-46 *TBM-3U Model Designation; establishment of.*
119-46 *(Confidential) XP5Y-1 Model Designation; establishment of.*
120-46 *Nomenclature for Aviation Armament Equipment under the Cognizance of the Bureau of Aeronautics.*
121-46 *Aeronautical Information, Continental United States.*
122-46 *PBM-5S Model Designation; establishment of.*
123-46 *PB4Y-2S Model Designation; establishment of.*
124-46 *KDZC-1 Pilotless Aircraft Model Designation, Establishment of.*
125-46 *Usage of Service Aircraft.*
126-46 *(Confidential) XAJ-1 Aircraft Model Designation; establishment of.*
127-46 *Acrobatics.*
128-46 *Flight Demonstration Teams—Detail of Naval Aviator to Accompany.*

TECHNICAL NOTES

22-46 *Over-Aye Dry Charged Aircraft Storage Batteries.*

TECHNICAL ORDERS

25-46 *Model SNB-1 Series Airplanes Restrictions to be Observed in Operation.*
26-46 *Model HOS-1 Helicopters Restrictions to be Observed in Operation.*
27-46 *Model JRM-1 Airplanes Restrictions to be Observed in Operation.*
28-46 *Aircraft Power Plants; Peacetime Policy Concerning Use of Combat Power Ratings*

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

AN ANALYSIS of some of the casualties and malfunctions of aviation ordnance equipment during World War II and corrective action taken by Bureau of Ordnance has been made. In many instances, the action taken was a direct result of performance reports from the fleet and short activities, and the Bureau wishes to reemphasize the value of such reports and encourage the continuance of submission of RUDAOE's from all activities. The following summary of reports received by this Bureau and the corrective action taken is disseminated for informational purposes:

20mm, AN-M2 and M3

Bolt. Early model bolts of the M2 gun had a very thin wall along the top, especially in the sharp angle, where upper shoulders are cut away to clear ejector claws. This condition caused cracks and breakage along the top, which were prevented and corrected by filleting the square corners, after which no further reports of this type of trouble were received.

The bolt face frequently was found recessed around the firing pin hole from action of the bolt striking the primer. This lowered sealing qualities of the chamber, caused by part of the gases generated by the explosion being forced back through the recessed firing pin hole, with a resultant drop in efficiency of the gun and muzzle velocity. By face hardening the face of the bolt, this condition was corrected satisfactorily.

Firing Pin. First model firing pins had small diameter tips which broke often, because of the brabbing action of surfaces of the primer around the tip when the firing pin was inserted. By enlarging the tip diameter, this condition was corrected. Firing of long bursts has in the past caused a number of failures of this part. It is believed that long bursts heat the tip of the firing pin to such a high temperature that upon being air-cooled, the grain structure of the tip of the firing pin is changed. This change causes the metal to become brittle, thereby inducing breakage.

In order to alleviate this trouble, the specifications of the firing pin have been changed a number of times. The present pin is greatly improved over earlier models, but even so it will not stand up over much more than 200-round bursts. As firing such long bursts is done only in test centers, it is not considered necessary to have the firing pin meet a more rigid requirement. Formerly, the top of the pin was flat, which caused it to gouge the bolt as it was worked back and forth. By rounding off the top, this was prevented. Also, all sharp angles were rounded off and square corners filleted to give the pin additional strength.

Rear Buffer Lock Plunger and Pin. Both the rear buffer lock plunger and rear buffer lock plunger pin had been fracturing with increasing frequency, causing misalignment of the rear buffer assembly and resulting in gun stoppages. This misalignment made removal of the rear buffer quite difficult. The rear buffer lock pin seemed to be failing in shear while the rear buffer lock plunger appeared to be a fatigue failure. Specifications of these two parts have been changed, strengthening them a great deal, but it is felt that most of this trouble could be avoided if personnel would make sure that the plunger is fully retracted before attempting to remove the rear buffer assembly.

Electric Triggers. The electric trigger AN-M1 caused some trouble because of mechanical binding between the solenoid plunger and brass sleeve and between the plunger and the solenoid mounting plate. This condition was obviated by machining the surfaces of the plunger more finely and improving the brass sleeve. The electric trigger M4 is now replacing the electric trigger AN-M1 on all 20mm. guns.

The constant backing off and fracturing of the cannon plug on the electric trigger M4 has caused, and is still causing, considerable difficulty. In the usual case the gun vibration encountered in normal gun firing causes the cannon plug to back off, breaking the hot lead connection, thereby making it impossible for the solenoid to function and the gun to fire. All Electric Triggers M4 bearing Serial No. 267 and above have a brass electric connector instead of the aluminum connector which was installed in triggers bearing Serial No. 266 and below.

There has been considerable research into the best method of staking the brass connector into the solenoid body and the most recent revision calls for a shrink fit at this connection. Recently, the Naval Air Test Center, Patuxent River, reported that this trouble caused stoppages at the rate of one per 1,000 rounds fired. Defining the cause as the lack of a latch, to prevent the locking collar on the plug from backing off because of vibration during firing, they have designed a snug-fitting latch which has eliminated this trouble completely to date. Drawings of this latch and pertinent data are now in the research sections of both BuOrd and the Army for evaluation.

Extractors. Early extractors used coiled springs which, because they did not give a great enough reaction, have been replaced by strut-type springs, which have worked satisfactorily to the present. Some reports state that this strut-type spring sets up harmonics in the extractor at high rates of fire, but this has not definitely been proved and the matter is still under investigation.

At first, gouged cartridge flanges were encountered because the extractor claws, being too high, dug into the cartridge flange. After the extractor claws were shortened, this difficulty was eliminated. Also, during extraction the action was sometimes slow, with frequent jams, because the ejector pushed the cartridge over the sharp claws of the extractor and sharp edges of the extractor dug into the cartridge and held it or slowed down its exit from the gun. By rounding off the sharp radii of the claws, extraction was speeded up and gun stoppages from this cause eliminated. The curve between the claws was also increased, which, in conjunction with the rounded-off radii, con-

Succeeds List of August 1, 1946 — *1 September 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	282	8-14-46	247	7-11-46
F7F	32	5-23-46	37	7-11-46
F8F	21	6-24-46	16	6-20-46
FR	19	7-2-46	33	8-2-46
F2G	0	0	3	6-26-46
J2F	23	3-14-46	32	8-12-46
JRF	12	3-15-46	12	7-12-46
JRB-SNB	52	7-19-46	27	3-20-46
PV	189	8-2-46	191	3-20-46
PBM	169	4-4-46	192	7-23-46
PBY	147	6-26-46	190	7-11-46
PB4Y	236	8-22-46	197	6-26-46
R5C	85	8-14-46	157	12-18-45
R4D	60	7-11-46	50	8-8-46
R5D	93	7-25-46	145	6-26-45
RY	92	7-19-46	38	6-4-46
SB2C-SBF-SBW	245	8-8-46	168	7-31-46
SC	105	8-16-46	51	4-10-46
SNJ	39	8-2-46	31	7-17-46
TBF-TBM	222	8-12-46	249	7-23-46
TDD	3	7-3-46	0	0

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

siderably helped the cartridge to roll out of the extractor when acted upon by the ejector.

Slides. The first model slides were designed with six lightning holes, three at the top of each end, but it was found that cracks and breaks were occurring between these holes and the inertia block recess, and between the inertia block recess and the key recess in the front and the breechblock recess in the rear. By eliminating one lightning hole in the front and shortening the inertia block recess in the rear, most of this trouble has been stopped.

In the front of the inertia block recesses were formerly a pin and spring which helped absorb the shock of the inertia blocks' striking the front of the recesses. This absorption of the shock by the pins and springs acted contrary to the purpose of the inertia blocks. If the inertia blocks were allowed to strike flush with the front of the recesses, they prevented rebound of the slides more effectively than when pins and springs were used.

Sears. The early sears caused considerable trouble due to the inability of the sear to withstand the highly localized stress concentration encountered in ordinary operation. Usually both prongs of the sear forks would be broken off, because of a weakness in the juncture between the forks and the sear body proper. By filleting this juncture, the sear was strengthened and the trouble eliminated. No trouble with the new sear was encountered, but as there was no marking on the new sear to distinguish it from the old, quite a few breakages and stoppages occurred due to the inability of personnel to differentiate between the two. By having the supply depots sort out the old sear from the new, this condition was corrected.

Gas Cylinder Guide Lock Washer. Fracturing of the gas cylinder guide lock washers has been, and still is, a common occurrence. When these washers fail, they allow the gas cylinder guide to back out, relaxing the tension on the gas cylinder sleeve spring. Consequently the gas cylinder sleeve does not return to battery and the breech block assembly fails to unlock, thus stopping the gun.

Most of the trouble had been traced to fatigue cracks and improper heat treatment, so conferences were held with the manufacturer in an effort to correct the trouble. As a result, the manufacturing specifications were changed to increase the over-all diameter of the washer from 1" to 1-1/16" and to use spring steel, with hardness of Rockwell C43-48, in the manufacture of the washers thereafter. Thickness of the washer was also increased, but even with all of these improvements the same trouble is still encountered.

Recently, NATC Patuxent River, after much similar trouble, designed a four-sided washer, ¼" thick and 1-1/16" wide, which fits snugly over the gas cylinder sleeve guide. This washer has eliminated all troubles for them to date and at present BuOrd and the Army are examining it for possible future use.

Breechblock Lock. Most of the reported trouble with this part has been due to cracks or breakage after 200-round bursts. Firing of 200-round bursts, however, is not normal, except in test centers. Usually the part broke just forward of the locking cam, along the rear, bevelled surface or along the lower rear cammed surfaces. After filleting the sharp angle formed by the locking cam, most of the breakage along these surfaces was avoided.

Specifications have been changed a number of times in an effort to increase the strength of the part, and the present type of lock usually lasts as long as the life of the gun, if fired normally. The present breechblock lock is expected to fail at around 3,000 rounds, which is in proportion to the wear sustained by other parts of the gun at this time, and maintenance activities have the responsibility of replacing these parts when cracks, defects, or breakage is noted. An ample supply of spare parts is kept on hand to meet this contingency.

Gas Cylinder Vent Plug. The gas cylinder vent plug has been reported to be blowing out because of the elongation of the plug. This elongation occurs when the plug is heated to such an extreme temperature by gases during long bursts that it expands. Taking the path of least resistance, it literally rises out of its screw hole by about ½". The lock washer can prevent the vent plug from unscrewing, but, as it has been stated in RUDAOE's, it cannot prevent elongation and consequent dislocation of the plug.

By altering the size of the vent hole, the amount of gas going to the gas cylinder has been regulated, but nothing has been done to counter elongation. It seems that the only way to prevent this is either to make the plug of stronger metal or to limit bursts to under 200 rounds. As in the case of the breechblock lock, this part stands up well under normal conditions and has a normal life expectancy in relation to the other parts of the gun, but trouble of this sort is continually encountered when long bursts are fired.

Navy Procures New Linking Machines

Recently the Navy procured a quantity of T-27 (M-16) 20mm. powered linker and delinker machines. These machines were developed by Army Ordnance and it is expected that they will eventually replace all present powered 20mm. link loading machines.

The machine is light in weight and portable, and is easily converted from a linker to a delinker or vice versa. Belt of ammunition can be linked from either right hand or left hand feeds at rates of from 85 to 185 rounds per minute. Delinking of ammunition belted from either right hand or left hand feed may be done at rates of from 85 to 280 rounds a minute.

PHOTO SHOWS MACHINE SET FOR DELINKING

Operating gears of the machines are well shielded so as to prevent accidents to operating personnel, and to prevent foreign objects from damaging the machine. A mechanical overload release clutch is connected to the drive to prevent damage to the machine or the ammunition in case of a jam.

Power is provided by a ¼ hp., 1725 rpm., 115-volt, 60-cycle single phase motor, with a capacitor start and starting switch. A hand crank is also provided in case of electrical power or motor failure.

Conclusions of tests conducted by the Naval Proving Ground, Dahlgren on this machine are as follows:

1. That the belting rate when using the machine is adequate.
2. That the delinking rate is adequate.
3. That the 20mm. automatic guns M2 and M3 and their respective feed mechanisms function satisfactorily when using ammunition belted with the machine.
4. That conversion from a linker to a delinker or vice versa is easily accomplished.
5. That the safety features of this machine are adequate.
6. That the current requirement is sufficiently small when operating the machine.
7. That the range of voltage necessary for proper operation is sufficiently wide.

Other conclusions drawn were that the maximum belting rate under power was 185 rounds a minute; that the maximum belting rate by hand was 90 rounds a minute; and that the maximum delinking rate was 280 rounds a minute. The time necessary to convert from linker to delinker by two men was found to be approximately seven minutes, and the time necessary to convert from delinker to linker by two men was found to be approximately eight minutes. The overall weight of this machine is 300 pounds.

Use of the machine at present is restricted to large activities handling considerable amounts of 20mm. ammunition. When present stocks of other types of 20mm. link loading machines are depleted, it is expected that the M-16 powered linker and delinker will become the standard 20mm. link loading machine.

Water Fails to Explode Bombs

NAS Norfolk—The ordnance department of the station recently conducted tests on the latest "water discriminating" nose fuze, in accordance with a BuOrd directive, to determine whether they would fail to detonate upon impact with water.

Eighteen tests were made with this fuze in the nose of a 500 lb. GP bomb. In all cases the fuze functioned properly. No detonations occurred upon water impact. All bombs were dropped having a tail fuze for self-destruction.

LETTERS

SIRS:

The U.S.S. *Franklin's* ship book, *"Big Ben the Flat-top—The Story of the U.S.S. Franklin"* is now being printed and distribution will be made as soon as covers are available, not later than 1 November. Delivery had been scheduled for an earlier date. Former members of the *Franklin* crew and members of Air Group Thirteen should not miss this book—though we regret that Air Group Five is not as well written up as we would have wished, because of lack of material and the circumstances of 19 March, 1945.

There are many action photographs, and a complete story of the ship from the day her keel was laid, through every combat action, and a detailed description of her final fight, 60 miles off Kyushu, from which she returned with 704 officers and men aboard. The book may be ordered from the publisher, Albert Love Enterprises, 1060 Capitol Ave., Atlanta, Ga., price 5.00, postpaid.

LT. MARVIN K. BOWMAN
U.S.S. *Franklin*

SIRS:

Concerning the Naval Air Reserve Training Program, have any arrangements been made with the Commandant USCG whereby recently discharged U.S. Coast Guard aviators (former aviation cadets) can obtain this training?

DWIGHT O. WYCKOFF
CGAS Port Angeles, Wash.

¶ If you have a naval aviator's certificate you can go out to the nearest reserve air station, in your case Seattle, and fly under the program.

SIRS:

Ensign D. D. Powell, an enthusiastic model hobbyist attached to this field, has created further realism in his hobby by designing and building a catapult from which to launch his planes.

Powered by an ingenious system of rubber bands, the 36" catapult is his own design and not patterned after any particular type. It has proved successful in several tests and may be adapted to catapult gasoline-powered models.

Ens. Powell is now working on a jet-powered model, planning to combine it with a catapult powered by another propulsive force for some real action.

FRENCH WAMPLER, JR.
COMMANDING OFFICER
NAAS BARIN FIELD

SIRS:

Reading your May issue of NAVAL AVIATION NEWS, I came across an article on training recruits in the combat aircrew training program.

What I would like to know is how I may get back into the program? I've been through "A" Ordnance school, Radar (four weeks), Primary and Advanced gunnery schools, and PBM operational training unit at Banana River, Florida.

When the pilot cut came, a lot of us were dropped from crews from lack of pilots. I was then shipped to the "Lakes" for discharge where I shipped over for two more years.

Any information you could give me to help me get back in a squadron again or even in training so I would be eligible for a squadron would be greatly appreciated.

F. J. SLYFIELD, S 1/c(*AOM*)
NAS SAND POINT

¶ Forward your request for duty in a squadron to BUPERS via official channels. If you are qualified in accordance with BUPERS Circular Letter No. 75-46, you are eligible to be redesignated a combat aircrewman.

SIRS:

For outstanding merit in standing a four-hour watch, the purpose of which was to locate an unanchored olive-green, orange striped buoy containing mail for the officers and men of the U.S.S. *Antietam* (CV-36), 10 Ensigns of Air Group 89 were recently awarded the following citation:

"Whereas the ten Ensigns assigned as mail buoy watch officers did, on 8 February 1946, diligently and well, and with great personal loss of face, scan ceaselessly the seething Strait of San Bernardino, against overwhelming odds and in the face of curious and prejudiced spectators, and in unflagging effort to discover the elusive green and orange mail buoy; therefore, be it known to all men, that because of gullibility above and beyond the normal and credulity, out of proportion to the best traditions of the postal service, they are hereby awarded the order of the Goat of Luzon, carrying with it the irrevocable privilege of winding the anchor watch daily."

DAVEY JONES,
—Postmaster General

¶ It is hoped that other activities will join in the current membership drive.

The Cover Deadly in war, the V-2 now has a peacetime mission. From the Army base at White Sands, New Mex., it soars over 100 miles into the stratosphere. Navy scientists make miniature labs which ride in V-2 warhead.

CONTENTS

ANSWERS TO QUIZZES

● GRAMPAW'S QUIZ (p. 6)

1. A propeller.
2. To increase the acuity of night vision. Ref: Technical Order ≅54-44.
3. Make yourself stay in formation and check your attitude by a quick glance at your instruments. Probably affected by vertigo. Ref: Technical Note ≅61-42.
4. Aircraft on the left shall give way. Ref: CAR, part 60-103.
5. The cut and the wave-off.

● NAVIGATION QUIZ (p. 10)

1. Wind dir.: 294° T; Vel. 29K.
2. Cus.: 235° T; G.S.: 153 K.

● BEST ANSWERS (p. 11)

1-D, 2-A, 3-B, 5-A, 6-D, 7-B.

● RECOGNITION QUIZ
(Inside Back Cover)

1—Midway, CVB-41 2—Richelieu (Fr.) BB 3—Gordi Class DD (Russian) 4—Fargo class CL 5—Independence class CVL 6—Appalachian class AGC

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1

2

★★★ RECOGNITION QUIZ ★★★

3

JAP RECOGNITION DRILL PULLED SHIP PICTURES OUT OF THE BOX. CAN YOU NAME THESE VESSELS

THE FILING box pictured above holds a Japanese collection of 750 U.S. ship model photos, covering 38 different types of vessels, a regular Pandora's box of potential troubles in case recognition fails. Accurate, speedy identification is a good antidote for such troubles. The Japs boned up on their recognition. Do you? Don't let barnacles grow on your ship spotting ability. Here are six U.S. and foreign vessels to sharpen your eyes and memory. How many do you know?

4

5

6

SQUADRON INSIGNIA

THE FEROCITY and speed of a boxing tiger striking at the enemy is symbolized in the squadron insignia of VMF-224, second fighter squadron to go into action at Guadalcanal in the dark days of 1942. Led by Major Robert Galer with 13 Japs to his credit, the squadron ranks 9th in Marine Corps aviation in kills with 119 enemy planes. An intricate design is that of the newly-formed Pilotless Aircraft Unit at NAS Mojave. A blow-torch wielding imp ignites the rocket engine while another keeps tab on it by radio control, with stop watch in hand.

VMF-224

VBF-3

PAU

VT-58