NAVAL AVIATION NEWS

RESTRICTED

F3D Escape Chute

Jet Engine Icing

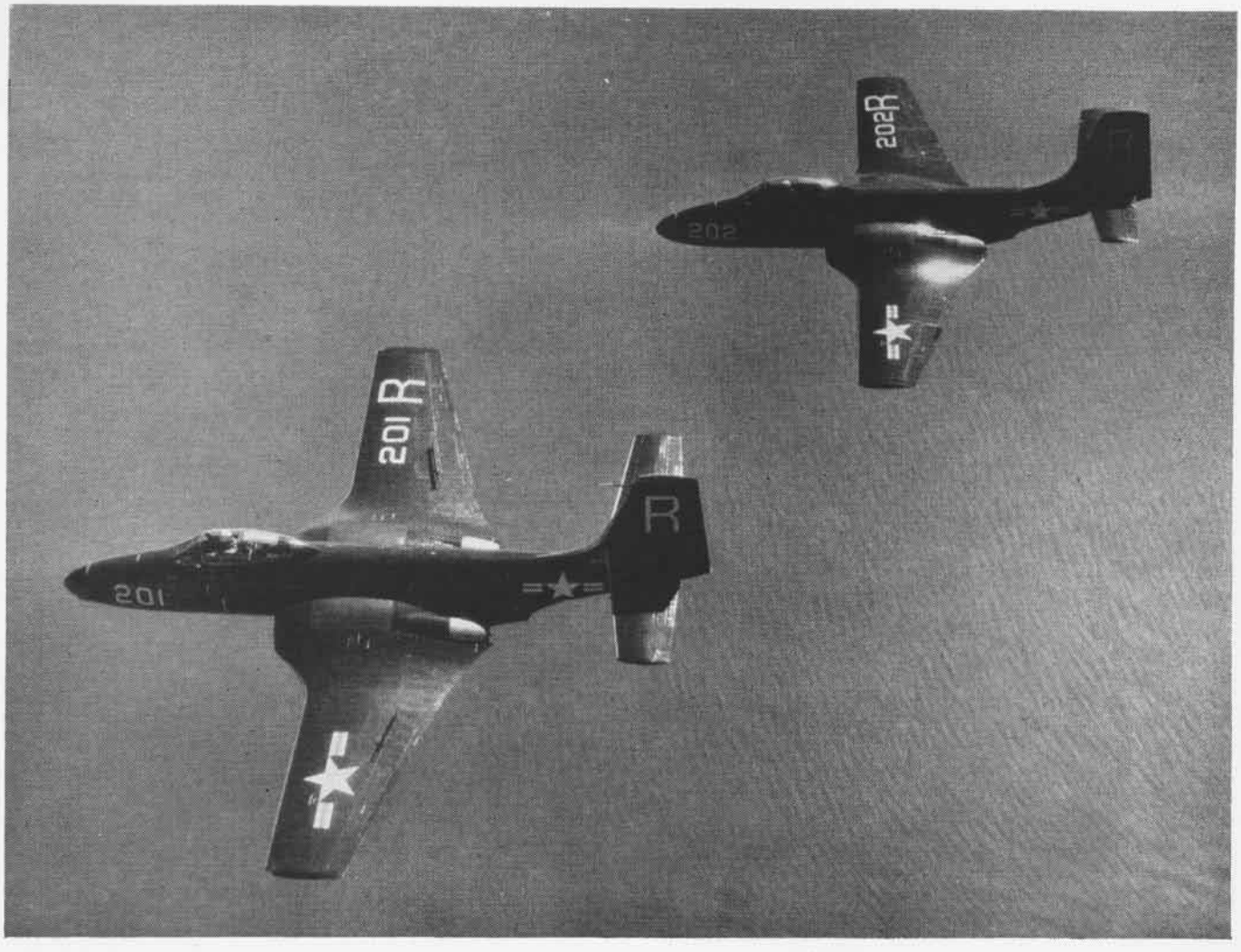
NavAer 00-75R-3

DECEMBER 1949

RESTRICTED

A super deluxe tail-chase by 11 *Corsairs* from the NARTU at Seattle features this spectacular photo, taken when 50 Air Reserve fighters and torpedo bombers put on an aerial salute at dedication of the new Seattle-Tacoma airport. Navy pilots make thousands of flights annually while furthering their training work.

NAVAL AVIATION NEWS



JETTERBUGS MADE

Not Born To The Trade

EVERY time a new plane comes off the production line and goes into service somebody dreams up a yarn the Joes flying them are kinsmen of *Superman.*

"They're different, trigger minded, colossal!"

In the twenties the hotshots flew F4B's.

In the thirties the flyhappies zoomed in F3F's.

During the war, no matter what new plane it was, "special" talent was required to jockey the bucket.

All that propaganda has been knocked into a cocked hat. Actually it's been proved that any normal aviator who passes his flight physical and meets the intelligence requirements is amenable to instruction in any of the present day production aircraft.

No longer do the pilots coming off the line these days have to look beautiful or "sharp." When a vacancy occurs in Jet Training Unit One at Whiting Field at Pensacola, the lucky guy who happens to finish at the moment is fed into the jet hopper.

Likewise, in fleet jet squadrons, the trend is away from special selection. VF-171 at Cecil Field, Jacksonville, flying *Banshees,* was an experience-heavy outfit. But its twin, VF-172, equipped with F2H's some time later, had a normal number of junior officers.

Careful preparation of the pilots in these outfits is paying off. Proficiency is eventually the same despite differences in overall experience.

Training, training, training. It may be a monotonous refrain, but no pilot can ever afford to sit back and say, "I'm fully qualified now," and relax. Mere possession of wings is no symbol of an up-to-scratch pilot.

Any glance at the process of preparing jet jockeys for their profession in the Navy would have to include JTU-1 which takes freshly designated naval aviators and gently introduces them to the whoosh business. Final polish, as applied in a fleet squadron, is typified in the training program of VF-172 for its aviators.

REARMING, GASSING ARE SLAY, CARTER, LT. (JG) PROTHRO, COPELAND

ENS. BRIDES LEARNS EMERGENCY GEAR OPERATION FROM LCDR. DAVIS

THERE is a study in contrast at NAAS WHITING FIELD. At South Field, primary students carefully pick themselves off the runways, gingerly bounce at outlying fields and perform non-radical maneuvers in the air.

Swishing off North Field, however, are TO-1's with newly designated naval aviators at the controls. These planes, the well-known Air Force F-80's, are instruments of the most refined training methods. Their use demonstrates the high quality of pilots being produced by the training command.

JTU-1 was formerly a transitional training squadron (VF-52) located on the West Coast. Now it has become an adjunct of the training command. Its skipper is LCdr. V. P. O'Neill, who commands 20 planes, 21 flight officers, two ground officers and 75 enlisted men. Of the instructors chosen for the squadron, some came from the fleet jet training squadrons VF-52 and VMF-311, the rest from NATC.

SKIPPER OF BANSHEE SQUADRON VF-172 AT CECIL, CDR, V.P. DEPOIX

Jatu One's course is designed to last about four weeks. The first group to matriculate started 10 Sept. They didn't hop into planes immediately but spent 4½ days on the ground learning the ropes before being entrusted with the blow jobs. The days remaining to 5 Oct. were spent flying and absorbing a thorough ground school course.

This ground training is considered of utmost importance because of the high altitudes and speeds encountered. Since the lower atmosphere is used only for taking off and landing, high altitude effects on the human body are discussed and the low pressure oxygen system of the TO-1 is studied.

"G" forces come in for close scrutiny and the pilots get their first introduction to the anti-blackout or "G" suit.

A new realm in aerodynamics is entered, with sound and shock waves, Mach number and compressibility making their appearance. Life saving dope is disseminated on the warning signals and recognition of shock stalls and measures in recovering from them. "Tuck under"—the tendency of a high speed plane to nose down despite up stick forces—is studied as a phenomenon of this strange new world. Up-to-the-minute design in swept back and delta wings and supersonic airfoils is presented.

A LITTLE elementary physics creeps in with the introduction of Newton's third law about action and reaction. Even if they don't understand it, the pilots find that their hot air jobs don't locomote by pushing on the air behind but by maintaining a constant pressure forward. They delve into the intricacies of operation of the J-33-A-23 engine, the hydraulic system and other engineering features of the plane.

"You can't take him with you" is the theme of the JTU students, referring, of course, to the instructor. These TO's aren't the two-seater version which the AF calls the T-33. The students fly by their lonesome from the word go.

Familiarization takes the *Jetterbug* through easy climbing turns in increasing altitudes with each hop, stalls in different conditions, gliding turns with varied power settings, wingovers and chandelles, precision turns and steep turns. The *Fam* stage winds up with four hops of cruise control. (Computers for jet cruise control are described on pp 28-29).

With the *famil* stage completed, the pilot has stopped skittering all over the sky and is ready for some more advanced work. Section and division tactics in formation follow. To get the foreign matter out of his blood, he does a little tail chasing to complete the stage.

Instrument flying is standard except that higher speeds and altitudes are used. Offensive and defensive tactics complete the course. At the end of four weeks, each student has had

25 hours in the air and 75 hours of ground instruction.

Members of the first jet class were: Ens. W. A. Ableson, Lt. (jg) W. A. Scott, Lt. I. B. Oxley, Lt. (jg) J. D. Whitehead, Midn. A. G. Brtis, Midn, R. G. Smith, Midn. R. Leser, Midn. R. E. Aslund, Midn. O. W. Crowl, Midn. J. P. Ritchie, Lt. (jg) G. Ferch, Midn. R. W. Greene, Ens. H. C. Hiatt. They flew 597 accident free hours.

WHILE VF-172 is not the first squadron to operate *Banshees,* its operations represent normal practice in the indoctrination of pilots with average experience in combat tactics in the F2H. Cdr. W. R. "Bill" Leonard's VF-171 pioneered in the type with pilots of wide experience, while Cdr. V. P. "Vince" DePoix of VF-172 has had the job of whipping up a scrappy team of *Jetterbugs* with an average distribution of rank and experience.

For awhile last spring, it was nip and tuck as to who would get the *Banshees* first. VF-172 returned from a cruise to the Mediterranean aboard the *Midway* 4 March. On 6 March they received orders to pick up an F2H at McDonnell plant in St. Louis. Lt. (jg) D. L. Campbell, who happened to have one hour in a *Phantom* was elected. The trip from St. Louis to Cecil Field took 1 hr. 15 min. LCdr. Bill Heavey (now on one year's duty with the Air Force) admitted they didn't know what to do with the big beautiful job. VF-171, which had been cutting its teeth on FH-1's, had expected the F2H's. The mixup was soon corrected, however.

Cdr. DePoix finally got his *Banshees* in May and started the transition. At one point the squadron had FH's, F2H's, F4U's and SNJ's. Life was not dull, nor is it today.

Even wartime days couldn't have seen as much bustling activity as there is in one hangar at Cecil. Maintenance problems in a new type of plane are infinite and varied. Lt. (jg) Campbell, who is maintenance officer, pokes his nose into jet engines and cockpits while his crews swarm over the planes. Work begins at 0700, about the time the northern Florida sun makes its appearance these winter days.

Out on the spacious mat, the familiar whine of the J-34 Westinghouse engines is heard many times a day as hops prepare for exercises. Before going out on a hop, each pilot is thoroughly briefed. Behind him is a complete ground school course more thorough than that given at JTU-1.

Items peculiar to the F2H are emphasized. Not only are there lectures on the operation and flight characteristics, but a movie puts over these points graphically. The ejection seat and cabin pressurization are given a long look. As a life saver the catapult seat has already proved itself. Lt. "Pappy" Fruin of VF-171 made use of it in a bailout. (NANEWS Nov.)

Other ground training stresses squadron doctrine, use

HANGAR HOUSING F2H'S IS A SCENE OF CONSTANT MAINTENANCE WORK

of ADF equipment and navigation.

A casual visitor to a *Banshee* squadron is impressed with the businesslike manner of the operations. Preflight briefing is thorough and flight discipline is strict. "Now I want all of you to make a cabin pressurization check at 10,000 feet by radio," says the flight leader. "We'll rendezvous at 25,000 feet over the field and that doesn't mean over Jax."

Air work, familiarization through carrier qualification, accounts for 77 hours in the air. VF-172 has trained up to the final CQ and expects to go on a cruise before the first of the year. Gunnery and tactics are its main business. The four 20mm guns spit out 100 rounds a training hop. Flat side runs are made to break in the pilots. Aircraft Fire Control System Mk. VI, Mod. 1 is used and firing range is from 450 to 350 yards. Both towed sleeves and banners are used.

No longer do fighter "peelotes" scramble pell mell into the wild blue yonder. They are organized and orderly.

Jetterbugs are modern businessmen in anti-G suits.

FIRST CLASS AT JET TRAINING UNIT ONE LOOKS OVER LOCKHEED TO-1

STRANGE NEW WORLD; THREE STUDENTS OF FIRST CLASS TRY HELMETS

GRAMPAW PETTIBONE

The Wingless Wonder

At the bottom of the page you will find a picture of an AD-2, with its wings folded. Take a close look, decide whether or not you think that it will fly in this condition?

You don't think so?

Then you'll be interested in the following accident report:

The pilot was cleared by the tower at NAAS CHARLESTOWN to taxi to runway 22 via taxi finger 1 and to hold. After engine turn-up, the AD-2 was cleared for take-off. The pilot taxied out to the take-off position with his wings folded. At this moment a landing signal officer who was working with another group of planes noticed the plane about to take-off, and shouted to his radioman to tell the pilot to spread his wings. The tower operator also called the pilot of the AD-2 just as he commenced his take-off run.

When the pilot did not discontinue his take-off run the tower operator repeated the message about four times and then rang the crash phone. Meanwhile the AD-2 left the ground after a take-off run of 2800 feet and began to gain altitude. The pilot states that he became airborne after a roll which seemed normal and produced no cause for alarm.

The plane appeared to make a right turn to clear the runway, gained between 100 and 200 feet and went into a sharp left bank. The pilot applied corrective measures and it returned to normal flight. The pilot at first thought that he had hit some slipstream as he was then near the area which was being used by the pilots in the FCLP pattern.

Suddenly the plane banked again and this time it would not return to level flight. At this moment the pilot discovered that his wings were not spread! The steep angle of bank apparently stalled the AD-2 and it began to settle as the pilot fought to regain control. The impact with the ground was at a speed of about 135 knots with full power on, wheels and flaps up. The plane hit on the left wing stub and slid about 260 feet before stopping. It burst into flames, but the pilot managed to extricate himself from the wreckage, and suffered only slight burns.

Grampaw Pettibone says:

Well, this is really one for the books. We have a couple of other case histories of pilots who attempted take-offs with their wings folded, but this is the first time I've heard of anyone actually getting into the air. The LSO who had a box seat for this performance says that the AD-2 reached an altitude of about 250 feet. He thinks that the pilot would have been able to come around and make a landing except for the fact that he lacked positive lateral control, and adds that he most certainly owes his life to correct use of the shoulder harness.

If he gets by the Disposition Board that they're convening, I think this pilot ought to start a one man campaign for the use of CHECK-OFF LISTS.

P.S. While we're on the subject of check-off lists it might be a good idea to review the reference which requires their installation and use. The following is quoted from ACL 97-47, paragraph 117:

"TAKE-OFF AND LANDING CHECK-OFF LISTS—

(A) Check-off lists shall be provided in each aircraft for the guidance of the pilot in properly preparing the aircraft for take-off and landing. It is important that the items of these lists be followed carefully and in their given order so as to insure that all steps are performed.

(B) The recommended procedure for take-off and landing is contained in the pilot's handbook for each type of aircraft and in the Bureau of Aeronautics technical publications."

Aircraft accident statistics show that relatively few accidents occur in multi-engined planes as a result of failure to use check-off lists. However, in single-engined planes we have several accidents every week due to this cause.

DON'T RELY ON MEMORY. USE THE PRINTED LIST.

Do we have an AD pilot smart enough to figure out the wing loading for this take-off—assuming a full gas load and no ammo or bombs? If so, I'd like to hear from you.

Dear Grampaw Pettibone:

Recently I had the experience of being senior member of an accident board that investigated the night crash of an F8F-2. This *Bearcat* had swerved off the runway when the starboard gear collapsed and flipped onto its backside in the soft dirt. The accident was the result of an accumulation of errors and slip-shod workmanship which began at the factory, and continued right down the line until the starboard landing gear buckled one night in late August. In this case, it was the result of improper care and feeding of a landing gear trunion pin.

This accident began in a machine shop where the trunion pin was manufacturered. Whoever drilled the hole from the outside surface to the zerk fitting only drilled it part way. This made the greasing of the pin impossible since the zerk fitting merely led up a blind hole. The shop inspector did his share in assisting this accident by passing the faulty pin, and it was eventually installed in a new airplane.

Now anyone who has greased a zerk fittings knows that old grease must come out the other end or the fitting is not receiving lubrication, yet this trunion pin remained in the airplane from the time it was installed at the factory until it was removed after the accident without being detected. That means that innumerable mechanics, beginning with the one at the factory and continuing on through at least four Navy units which at one time or another owned the plane during its 16 months of service and 400.4 hours of flight time had *never performed a correct grease job on that fitting!*

A junior pilot who flew the airplane on its two flights immediately prior to the crash contributed his fair share to the situation by not reporting malfunction in writing on the yellow sheet. *AFTER* the accident had happened, this pilot remembered that on the two previous flights, the starboard gear would lock down only after the airplane was skidded. He had mentioned this to the squadron maintenance chief, but did not consider it important enough to write on the yellow sheet.

The pilot who flew the plane to its doom came in for his share of blame by the fact that he landed without determining that his gears were both fully extended *and locked*. He stoutly main-

tains that he checked the cockpit indicator with his red pen-light on the downwind leg. The accident board believes him, but also believes that he did not actually see the indication of down and locked. It is highly probably that overfamilarity with the airplane caused him to "go through the motions" of his check off list and therefore imagined rather than saw the "down and locked" indication. The board's belief was supported by a successful test of the microswitch and its wiring circuit following the accident.

A great many people who never saw nor heard of this pilot, who fortunately escaped without injury, gave him a jigsaw picture that night. He had but to fit in the last small piece to complete the picture of a mangled F8F-2 on its way to overhaul.

Lieut. ————, USN

Grampaw Pettibone says—

Thanks for this interesting analysis. I looked up this particular accident and I agree with your reasoning 100%. I think the following excerpt from the pilot's statement is also worth reading:

"When the prop struck the soft dirt the plane nosed up and teetered about on its nose for what seemed to be about a full minute. This gave me plenty of time to worry about my noggin and what I was going to do about it when that five (5) tons fell on it. I was not wearing an anti-buffet helmet, but I timed the impact just about right when the plane finally went over on its back; I forced my head toward my lap at this time and I experienced only the effects of the terrific concussion of plane meeting ground.

My only thought then was getting out before the fire started, if there were going to be any. At this time I learned a lesson which should be brought to the cognizance of all F8F pilots. If a pilot of an overturned F8F still has his chute on, unbuckle it and slip out of it *before* releasing the safety-belt and shoulder harness. I did not do this and consequently after I had my head and shoulders out of the cockpit I could not extract myself further except by crawling back into the cockpit to get rid of my chute. Without the help of good strong shoulder straps and harness, believe me, it's difficult to get rid of your chute when you are standing on your head."

Ducks Didn't Duck

The pilot lifted his F9F-3 into the blue from runway 18 at NAS San Diego. He proceeded on course and after two minutes executed a standard rate turn to port at an altitude of 1600 feet. At this time his airspeed was 290 knots. Suddenly two bogies appeared at 12 o'clock level. A couple of ducks were flying in an unauthorized area.

The accident board reports—"The pilot ducked when he saw the ducks, but the ducks didn't duck. Alas, alack, no quack quack."

Get a Whaleboat

The pilot of this TBM was attempting a carrier landing on a particularly dark night. In the previous 14 months he had made two night landings under ideal conditions and six day landings. *This was his first landing on this cruise.*

After three wave offs he was given a cut with the carrier 11 degrees out of the wind. The TBM drifted right after the cut and landed well on the starboard side of the deck engaging the number three wire. The action of the wire threw the nose of the plane to the right, and there was sufficient forward motion to carry the TBM over the side. The plane came to rest in a semi-inverted condition about eight feet below the flight deck. It was held there by the arresting wire and one wheel which was hooked in the armor plate of a starboard gun sponson.

The pilot and passenger were uninjured but they were in a position which must have been uncomfortable to say the least. Hanging by their safety belts and shoulder harnesses, they could see no way in which to get back to the ship. Gasoline was streaming out of a starboard wing tank creating a fire hazard. One can easily imagine that they must have been wondering just what was holding the plane in this position.

The pilot shouted for a whaleboat in case the plane fell into the water. Meanwhile carrier personnel were busy throwing some lines around the plane to make sure that it didn't fall. However, the whaleboat idea seemed to be the best way to get the pilot and crewmen back to safety, so a boat was lowered and brought out to a position about 50 feet astern of the plane. The pilot and crewman dropped out into the water and were quickly picked up.

Grampaw Pettibone says:

Ever hear about the fellow who was taking three kittens over to his girl friend's house in a brand new car? Well, it seems that he ran out of gas some distance from a filling station.

He was afraid the kittens would get some spots on the upholstery, so he decided to take a piece of string and tie them to the bumper while he walked down the road to get some gas. Just as he finished securing them to the front bumper another motorist pulled alongside and asked what the trouble was. The fellow with the kittens said, "Oh, I just ran out of gas."

"Well," the passerby exclaimed, "You don't expect those kittens to tow you do you?"

This was too good an opening to pass up so the fellow replied, "Why not, I've got a whip haven't I?"

In case you're wondering what the connection is, I wonder who had the whip out in this case.

Certainly a lad who has only made eight landings in the previous 14 months and whose only previous night landings were two made under ideal conditions on a previous cruise shouldn't have been sent out on a dark night until he had additional practice under daylight conditions.

"Why not, we've got a whip, haven't we?"

Quick Thinking Saves TBM

The pilot of a TBM-3S was on the port catapult ready for his *first* night carrier launch. When the signal to launch was given, there was a slight acceleration and the plane then appeared to continue under its own power. The pilot sensing the abnormality of the situation, retarded throttle, applied brakes, and turned slightly to starboard. He managed to nose the TBM up and stop just short of the bow.

The catapult registered a "runaway shot." The bridle carried away and was lost over the bow. The cause of the accident therefore cannot be determined, but it is probable that the bridle slipped partially off the shuttle and parted when the catapult was fired.

The pilot received a commendation from Commander Carrier Division Seventeen for his alertness, quick reaction, and prompt and positive action.

Grampaw Pettibone says:

May I add my congratulations? This lad had a split second in which to make the proper decision, and he was right on the ball. I think his quick reaction is especially commendable in view of the fact that this was his first night carrier launch.

Dear Grampaw Pettibone:

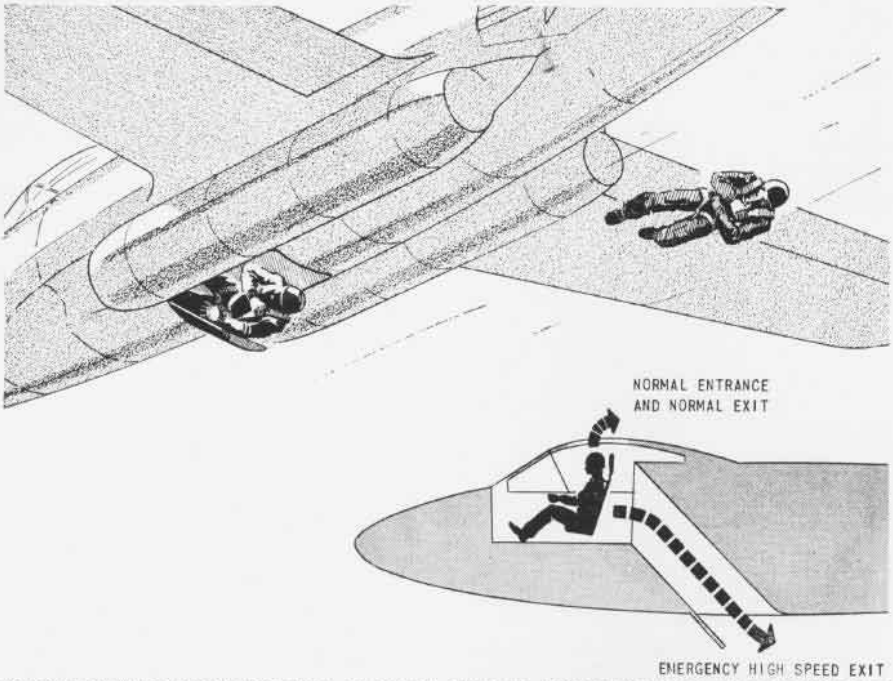
"Grampaw, dear Grampaw, your face
seems so red!
Perhaps you'd be safer at home in your
bed?
Cause landing downwind is not very
bright
Especially when—you do it at night.
But hooray for the brakes on your S.N.J.
They kept you out of Boston Bay."

A Squantum Reader.

Grampaw Pettibone says:

"Dear Squantum Reader, you're *so* right.
From now on I'll stay home at night,
And try to forget that Grampaw P.
Forgot to observe the Squantum tee.
Move over, Dilbert. Yield your place,
For Grampaw wears a redder face."

JET ESCAPE CHUTE TESTS



ARTIST'S DRAWING SHOWS LOCATION OF ESCAPE CHUTE IN SKYKNIGHT WHICH MADE RECENT TESTS

THE NAVY put both its pilot escape chute on the XF3D-1 jet fighter and its new extended skirt nylon parachute to experimental test recently at NAS EL CENTRO and both came off with flying colors.

Both are designed to answer the problem of saving the pilot's life in case his high-speed jet aircraft gets into trouble and he has to bail out. Instead of an ejection seat to catapult him above the plane in an emergency, the F3D pilot has an escape chute leading backward and down, emerging below the fuselage.

In the El Centro tests, experienced parachutists made 22 successful bailouts at speeds varying from 139 to 444 mph. Those at lower speeds utilized standard parachutes, while the faster ones saw the men equipped with the extended skirt type which opens slower and with less shock.

Further tests with dummies were made at speeds up to 496 mph. to test the performance of the parachute. Short static lines were attached to it so that it opened immediately as soon as the dummy emerged below the fuselage. In both tests the new chute was not split and functioned well.

When the parachutists performed the bailout tests, they delayed opening their parachutes for from five to 20 seconds to cut down on the shock at higher airspeeds. Scientists have estimated deceleration on a body emerging from a high speed plane is extremely rapid, dropping from 600 mph. to 120 in five seconds, so that the chutists were going only at ordinary bailout speeds when they opened their parachutes.

To give the escape chute a further test, the jet fighter was put through some tight turns and pullouts to investigate whether a pilot could get into the chute against such forces. The results of these tests indicated that escape is probable up to 3½ G's. In spins the forces were mild (up to 2 G's) and were not sufficient to prevent entry into the chute.

The Navy also secured excellent moving pictures showing the parachutists emerging from the hole in the bottom of the fuselage. Cameras were fixed on the wings inside both outer wing panels and with the aid of mirrors focused on the underside of the fuselage. A camera also was mounted in the cockpit and focused on the escape chute. All three cameras were operated from the trigger button on the control stick.

Parachutes used by the jumpers were of a special type, the pilot parachute being attached to a deployment bag which contained the canopy. On release, the deployment bag was pulled out of the pack, and the shroud lines were fully extended prior to the release of the canopy from the deployment bag. Because of this arrangement, and since openings were delayed by the jumper from 5 to 20 seconds, opening speeds

SEQUENCE OF PICTURES TAKEN FROM CAMERA LOCATED IN WING OF XF3D SHOWS JUMPER AND AUTOMATIC SLIPSTREAM SHIELD AT BOTTOM OF CHUTE

and shocks were minimized.

As the airspeeds were increased beyond 300 mph, one jumper lost his slippers and helmet, another lost his helmet and several flight suits were torn on entry into the airstream. However, the jumpers received no injuries and reported no uncomfortable experiences on leaving the airplane.

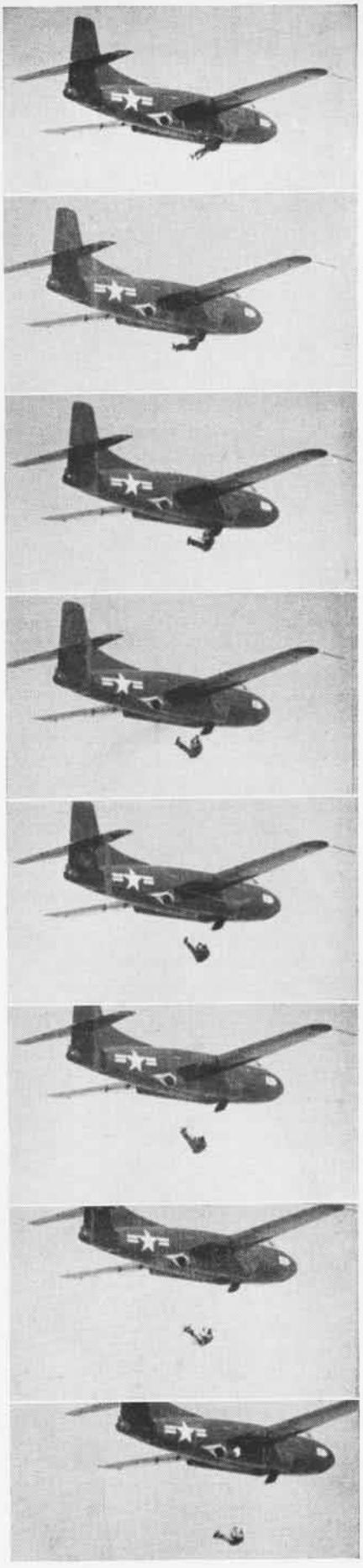
A study of the photographs taken from the wing tip cameras and the accompanying airplane shows that the jumpers on contact with the airstream were jackknifed somewhat and this jackknife effect became slightly more severe at the higher airspeeds. Also, the exit trajectory of the jumpers became progressively closer to the fuselage with increased airspeed. At all times, however, the jumpers fell clear of the airplane and no contact with exhaust gases was experienced.

RESULTS of this bailout experiment will be reassuring to pilots who may have occasion to fly a high-speed plane with a bailout chute instead of ejection seat. Because the F3D is a two-man plane and the two are seated side by side, it was felt use of ejection seats entailed additional design complications. By bailout downward, the pilot avoids the high tail surface or elevators which he almost certainly would hit if he tried a standard bailout at high speeds. Because of close space limitations in single-man jets, an escape chute downward is impractical, so ejection seats have been installed to catapult the pilot upward in his seat high enough to avoid the vertical stabilizer.

The ejection seat, the bailout chute and the high-speed parachute are all developments the Navy has incorporated in its present-day aviation to make it safer for its pilots to fly jet aircraft. As the speed of planes goes up, so also does the effort to develop safety devices and techniques to protect pilots' lives. This program represents the continuing effort by the Airborne Equipment Division of BuAer to provide ready, safe means of emergency escape for any airplane under all flight conditions likely to arise.

Men from the Parachute Experimental Unit at El Centro, who made the jumps, were: Lt. (jg) A. J. Furtek, Ch. Mach. Clarence E. Storm and enlisted men E. W. Biesner, B. M. Ericksen, H. W. Johnson, H. D. Stewart, S. Frazier, and W. H. Woodhouse.

Furtek and Storm recently were catapulted from a JD-1, using the Grumman pilot's ejection seat, at speeds up to 335 mph. In all cases the seat functioned satisfactorily. Since that time, Lt. J. L. Fruin, jet pilot from VF-171, has made an emergency bailout from his stricken F2H using his ejection seat when the plane was diving at a speed of about 600 mph.



PHOTOS SHOW JACK-KNIFING AT 444 MPH SPEED

Radar Jamming May Be Easy

Student Does All Right With It 'Off'

NAAS REAM FIELD—During RCM exercises in which a plane makes runs on a land-based radar, it is customary to judge the jamming by the Navy 4.0 system, 3.9 being considered quite adequate.

During one flight recently, the student sat down before his gear while the instructor went forward. The plane made a turn to come back over the target and as they approached, the ground station kept calling the degree of jamming, starting out at 3.5 and finally reaching 3.8 coverage.

The instructor was pleased. He called back over the intercom to the student and praised, "That was pretty good, a 3.8 on your first run."

"Remarkably so," replied the student, "Especially when you consider I haven't even figured out yet how to turn the gear on. Think what I can do when it's in operation."

Seeing Snakes? Scorpions?

Well, Midshipman Krall Got 'Em All

NAAS SAUFLEY FIELD—This field is no more noted for its insects than any other field around Pensacola, but it had the first flying scorpion known to man. It wasn't exactly a flying scorpion either—no wings or feathers or jets. It just went along with Midshipman R. J. Krall in Plane FM-209.

Can't you picture Midshipman Krall, flying high over Pensacola Bay, suddenly being attacked by this poisonous scorpion? . . . for a minute, he loses control of the plane . . . then, with great presence of mind, he brings it out of a dangerous spiral, spikes the bug with his log book, and returns safely to the field. Can't you see it?

Well, that's not how it happened at all. The scorpion was inside the snake.

Seems we forgot to mention the snake. After Midshipman Krall landed, airman R. W. Williams found it smashed in the right wing light, both slightly battered (the snake and the light, we mean, not Williams and Krall).

Anyway, Williams discovered that the snake had eaten the scorpion, pre-flight, sort of. What Williams was doing looking for scorpions inside dead snakes, we don't know. Let's just say the snake was pretty well battered and let it go at that.

What's that? How did a battered snake get inside the wing light? Thought you could figure that one out yourself. The bird dropped it there. What bird? Why, the bird Midshipman Krall hit while flying over Pensacola Bay.

Confusing, isn't it? But true!

Greeks Use Helldivers

Naval personnel at Larissa 100 miles north of Athens: Top: Kendrick, Szajnar, Ledington, Schexnayder, Cdr. Sullivan, Asst. naval attache for air; Ramsey, Blackwelder, Schoessler, Jipson, Kusnia. Lower: Black, Caprio, Carpenter, Ryder, Phillips, Cummins, Lucas, Mixon, Runoweicz. These men taught the Greek Air Force how to use their SB2C *Helldivers.*

FORTY-NINE SB2C *Helldivers,* "turned out to pasture" as out of date by the Navy, were sold to the Royal Greek Air Force and helped rout guerrilla bands in northern Greece, according to Navy observers who returned recently from the Mediterranean.

A group of three Navy officers and 17 enlisted men, operating under the U. S. Air Force in Greece, checked out the Greek pilots who were flying combat missions five days after they commenced their first group training in *Helldivers.*

After the Greeks had purchased the planes, they were delivered by the CVE *Sicily* and arrived by 19 August. Up to this time the *Spitfire* and the SNJ were the only types used tactically in the RHAF. Although the *Spitfire* still is employed, the *Helldiver* now is the main striking arm for the Greek Air Force. All *Helldiver* missions are reserved for carefully selected targets of the highest priority because their combat record of heavy damage was so good. Greek successes in the Grammos and Vitsi campaigns were credited heavily to the planes and their Greek pilots flying close support.

King Paul of Greece with Navy men who taught SB2C flying — Schexnayder, Ramsey, Blackwelder pose for picture at Larissa.

Senior officer of the Navy group which checked out the Greeks was Lt. Harry R. Ramsey, with Lts. (jg) R. L. Schexnayder and B. L. Blackwelder as his assistants. Lt. Schexnayder flew one operational SB2C in on the 13th of July, and before he unpacked his bag he had given cockpit checkouts to three Greek pilots who swarmed around his plane as soon as it rolled to a stop.

With only this one plane for checks, the American unit checked out 28 pilots by 6 August. This one airplane flew 170 hours in 22 days, with plane checks being pulled during lunch hours, sometimes using a jeep motor transport kit to keep it flying. When the *Sicily* arrived with the 49 *Helldivers,* 23 of them were catapulted from the ship at anchor.

Passengers in the rear cockpits of two of the planes during this catapulting included Gen. Van Fleet, military advisor to the U. S. Ambassador to Greece, and the top Greek airman of the RHAF. Capt. C. H. Duerfeldt, skipper of the *Sicily* piloted the first *Helldiver* off his carrier.

The reception of the planes by the Greeks was marked with great enthusiasm. The troops in the field would not move until *Helldivers* appeared and were in the air supporting them in actual combat. Before the SB2C's arrived, the RHAF base at Larissa had no uniform taxi signals, no chock marks on the line, no back-to-the-line procedure and no standardization of the most routine procedures on the field. Although language was somewhat of a barrier, the Greek pilots soon adopted Navy signals, techniques and names for plane parts.

King Paul of Greece visited the Navy unit and told them how impressed he was with the plane and the training program. He told officers Ramsey and Schexnayder "This *Helldiver* does everything but fly itself," and later thanked them "for what you are doing for us."

New Photo Movie Released

Tells How Pictures Aid Navy's Cause

NAVY PHOTOG IS VITAL IN PUBLIC RELATIONS

The value of good photographs in promoting good public relations for the Navy is stressed in a new movie just released, "Naval Photography in Public Relations."

The picture, MN-5348-b, explains the need for, and the methods of obtaining, good public relations motion and still pictures. Prints of the picture can be obtained at all training aids sections or libraries and aviation training film libraries. BUAER suggests that all photographic activities obtain a print for group screenings and discussions.

For the *second straight year, NAS San Diego has captured the national skeet championship. Competing against 24 teams from all branches of the armed services, San Diego's team broke 1225 birds out of 1250. A third win next year at Dallas, Texas, will give them permanent possession of the trophy. One round set a national service record with 496 out of 500.*

MARINES FIRE VOLLEY OVER PLANE CRASH SITE

Plaque Honors Dead Marines

Rainier Slopes Hold Crash's Victims

On the slopes of Mt. Rainier, where 32 Marines lost their lives in an R5C crash 10 December 1946, a bronze plaque stands today, dedicated to their memory.

The plaque was placed there on 27 August at dedication ceremonies witnessed by parents and friends of the dead Marines. It overlooks the South Tahoma glacier, site of the plane crash.

The plane disappeared on a flight from San Diego to Seattle. Wreckage was finally found after snow on the mountain melted, to reveal the crashed plane and its victims at the 10,500-foot level of the south slope. Operations to remove the bodies were canceled because of the extreme danger of the terrain.

Parents donated the plaque which was erected on the mountain slopes and presented a gold watch to William J. Butler, assistant chief ranger of the national park, who found the crash victims.

Target Plane Chute Tested

Extended Skirt Type Torn by Rudder

NATTU EL CENTRO—An experimental 28-foot extended-skirt parachute is being tested for use in landing the KD3G-1 pilotless target aircraft and in its first two tests worked well. Human pilots also use 28-foot chutes.

Using the drone at normal gliding speed in the first test, the chute was popped about 200 feet in the air and opened very quickly. On the second test, it worked the same. Oscillation of the plane while using this type chute was negligible.

In the third test, using a KDG-2 target plane, the chute was opened inadvertently at 200 feet and 320 mph speed. The chute suffered considerable damage by tearing as it streamed across the tail surfaces. At high speeds the slow filling time of an extended skirt canopy greatly reduces the opening shock, a fact which makes it valuable for jet plane pilots. Test jumpers have used the chute up to 444 mph with success.

Navy Alters Essex CV's

CONVERSION of three *Essex*-class carriers to handle the heavier and longer range aircraft of naval aviation is now underway at Bremerton and Brooklyn Naval Shipyards.

Ships being converted are the *Essex, Wasp,* and *Oriskany,* the first two battle-tried carriers of the Pacific war and the *Oriskany,* a new carrier which has not yet been commissioned. All three are scheduled to finish conversion by 1951. Navy plans call for the improvement of other *Essex*-class carriers, including those now in the "mothball fleet," as future budgets permit.

Changes in the carriers include:

Deck—Strengthening the structure of their flight deck to take the heavier loads of larger planes. The flight deck of the *Essex*-class carriers is wooden and is not being changed to metal. *Midway*-class CVB's have metal decks.

Elevators—Larger elevators to accommodate the heavier planes with wider wing span are to be installed.

Catapults—More powerful catapults are to be installed to launch the increasingly-heavier fighters and attack planes operating off Navy carriers. The *Essex*-class now have H4B catapults capable of tossing a 13,000-pound plane off the deck at 87 knots. The H8 will launch heavier planes at a higher speed than this, or than the H4-1 catapults on the *Midway*-class carriers. The H4-1 develops 8,000,000 foot-pounds kinetic energy and the H4-B only 4,730,000 pounds.

Arresting gear is being changed on the *Essex* and *Wasp* to bring their capabilities in line with those of the *Oriskany.*

Ready Rooms—Three of the ready rooms for pilots on the *Essex*-class carriers will be moved down below the hangar deck instead of being directly under the flight deck. This will increase pilot comfort and afford better protection for them. To get the pilots laden down with equipment up to the flight deck, an escalator is being installed abreast of the island to carry them. This will provide a single route for pilots to man their planes and prevent confusion with ship's company rushing up the usual access routes to man battle posts.

Armament—Five-inch turrets on the flight decks are being removed and new armament being located on the gallery deck. Turret removal will provide more deck space for parking planes.

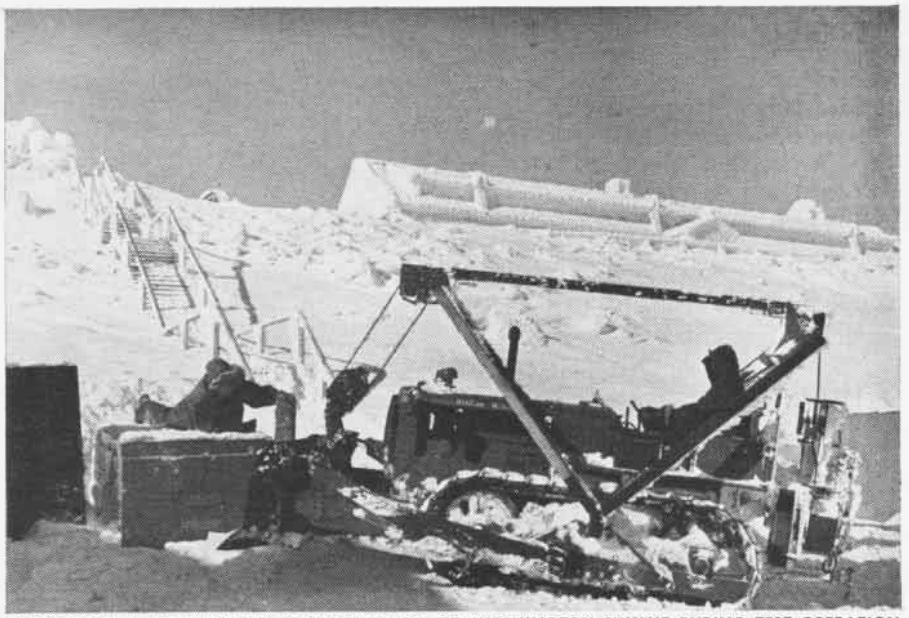
Superstructure—Changes are to be made in the masts to accommodate new radar and other electronic installations.

• NAS BIRMINGHAM—The chief air controlman in the operations and aerology department, annoyed by complaints about people who failed to return pencils after they had filed flight plans, devised a contraption for suspending pencils in the air. Through several eye-screws, spaced in alignment along the bulkhead and the overhead, he drew heavy parachute cord which had a pencil attached to one end and a weight on the other.

Now, when pilots rush to the counter to fill out their forms, they simply reach up for one of these "suspended" pencils. As soon as they release the pencil, it returns to its station" at eye-level over the counter.

When the *Navy flew an aerial parade for the American Legion convention in Philadelphia, VF-92 and its Bearcats formed an anchor and flew over the parade when President Truman arrived. Later they made high speed passes and column rolls over Broad street and the parade reviewing stands. Pilots who participated, above, were: Ens. W. C. Garvin, Ens. F. P. Koval, Lt. J. C. Davison, LCdr. M. A. Berns, skipper; LCdr. J. W. Fair, Lt. (jg) W. J. Beardsley, Lt. (jg) G. R. Froyd. Rear: Lt. (jg) R. B. Satterfield, Lt. R. B. Harrison, Ens. R. K. Smyth, Lt. (jg) W. E. Bassett, Ens. C. H. Brown, Lt. (jg) B. R. LaPlante and LCdr. T. N. Coppedge, Jr. Plane availability was 100% all during the convention time.*

How to Lick Jet Engine Ice



TRACTORS PULL JET ENGINE PARTS AROUND ON MT. WASHINGTON SUMMIT DURING TEST OPERATION

THREE YEARS of battling 100-mile an hour gales atop lofty Mt. Washington and wrestling heavy equipment to its summit, sometimes by muscle and sleds, have brought the Navy the answer to many questions about jet engine icing.

That dangerous by-product of high altitude or flying in freezing temperatures—engine ice—is much easier to study on a mountain-top test laboratory than on a plane in flight. So the Navy, together with the Air Force and commercial activities, took jet engines to the 6,300-foot summit. Results of these wintertime tests are summarized in TN 18-49, just issued by Bureau of Aeronautics.

The reason engine icing is so dangerous to jet engines is that the formations collect on the entrance vanes and rotor blades of the power plant. *They close off the openings so that less and less air can get in to the turbine blades.* The combustion chamber and tailpipe temperatures rise, and sooner or later real trouble with a capital T strikes.

Navy and Air Force test engineers at Mt. Washington found that axial flow turbojet engines iced up far worse than centrifugal flow types. The latter type, it found, are relatively "safe" for flight in limited icing conditions. Engines in the category are the J-33 and J-42 types installed in the F9F, TO-1, AJ-1 and P4M airplanes.

While it is possible to ice a centrifugal flow engine on the test stand, the icing conditions must be extremely severe. Therefore, in the case of the F9F and TO-1, without wing anti-icing protection, wing icing will be a much more serious problem than engine icing and will be the limiting factor governing flight of such aircraft in icing conditions. The AJ and P4M aircraft use their jet engines as boosters—in their case severe and prolonged icing conditions may preclude the use of the booster jets but primary power of the main engines will still be available for continued flight.

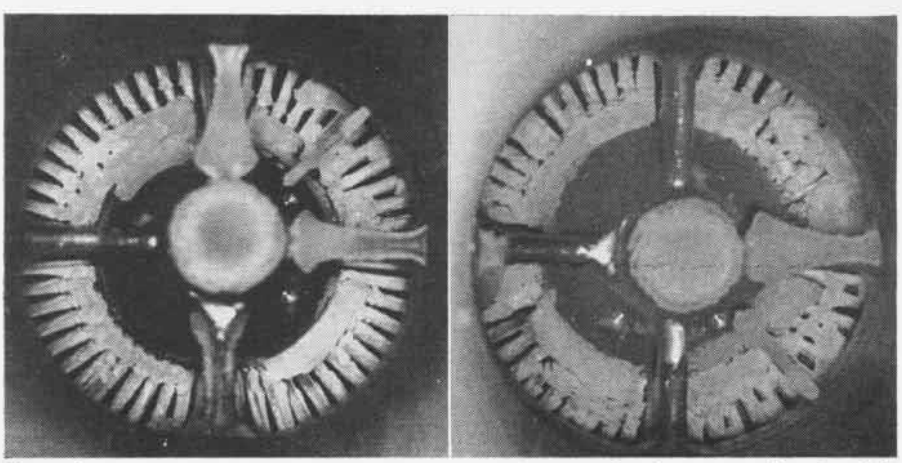
On the other hand, axial flow turbojets—those long, lean newcomers in the powerplant field—are seriously affected by the same atmospheric conditions that cause engine icing. Ice on the inlet guide vanes cuts the air flow, reducing thrust and boosting temperatures. Turbine failure comes next.

The Mt. Washington tests established the fact that *the rate of engine icing generally is in proportion to the air flow, which in turn is controlled by engine RPM. Thus, to cut icing, reduce the engine RPM.*

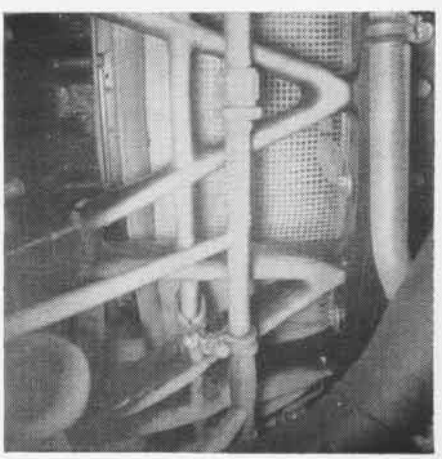
It was found that engine icing in a given atmospheric icing intensity is relatively constant up to a moderate air speed (about 250 knots true). At higher air speeds, the rate of engine icing increases rapidly as speed goes up. This is explained by the fact that your engine ices up almost directly in proportion to the liquid water content of the air passing through the engine.

AT LOW air speeds, air is sucked into the inlet duct. At high air speeds, it is rammed into the inlet. During the suction process there is little change in the concentration of liquid water in the inlet duct over that of the atmosphere. At higher speeds, when the air is rammed into the engine inlet, most of the water droplets suspended in the atmosphere ahead of the inlet go through the inlet duct while the air may sluice around it.

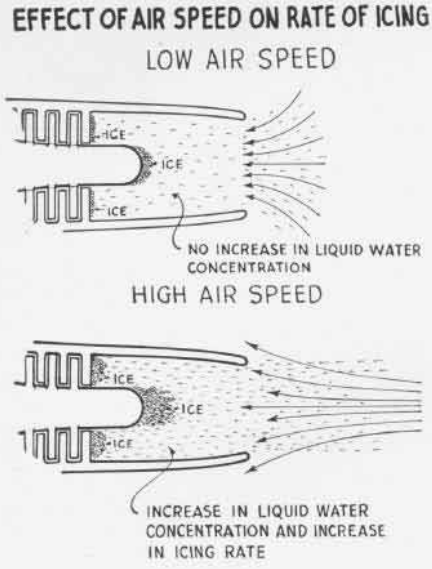
Therefore, a reduction of air speed below 250 knots true air speed will



These two pictures show icing on entrance vanes of J-30 engine from FH-1 after 5 and 9 minutes of running; note heavy encrustation has all but closed air openings in second photo



J-33 centrifugal flow screen after 23 minutes of running shows a slight formation of ice

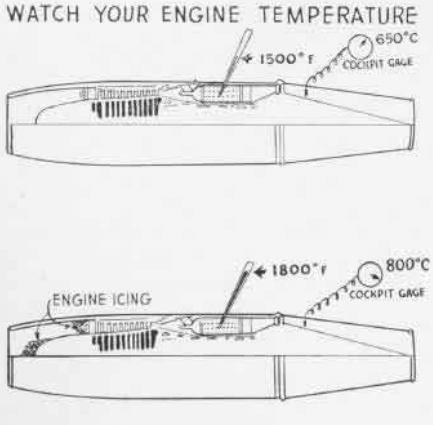


reduce icing. This is about 150 knots IAS at 30,000 feet and borders upon the minimum practical air speed for flight. However, icing rarely will be encountered above 30,000 feet.

Except for the suction icing phenomenon, which rarely will be experienced in flight, jet engine icing will occur only under the same conditions as wing icing and in similar proportion to wing icing for a given atmospheric icing condition. *Thus, as a general rule, there will be little danger from jet engine icing in flight unless visible wing icing or corresponding external aircraft icing is observed.*

The ratio of engine icing to wing icing will vary considerably, so the amount of ice you can see on the leading edge may deceive you. Wing icing depends on the amount of liquid water in the air and the size of the water droplets. Engine icing is dependent primarily upon the water concentration and almost independent of the droplet size.

Small drops follow the air flow around a wing leading edge or any surface with a large radius of curvature. Larger drops cannot change direction so swiftly and tend to strike the leading edge of the air foil. *Therefore, engine icing rate will be constant but wing icing will be lighter for small droplets than for large.* Also, wings ice up greater at the outer sections because of the smaller radius of the leading edge. Tail surface leading edges, for example, are a more reliable indication of icing than inboard wing leading edges.



Don't figure on flying your jet so fast the ram temperature of the air will be so high as to melt any engine or wing ice. In isolated instances where jets have flown in icing and actually encountered wing ice at speeds up to 400 knots, an extremely serious form of icing and near loss of airplane control resulted. In each of these instances, the centrifugal flow engine was involved and no engine icing was noted.

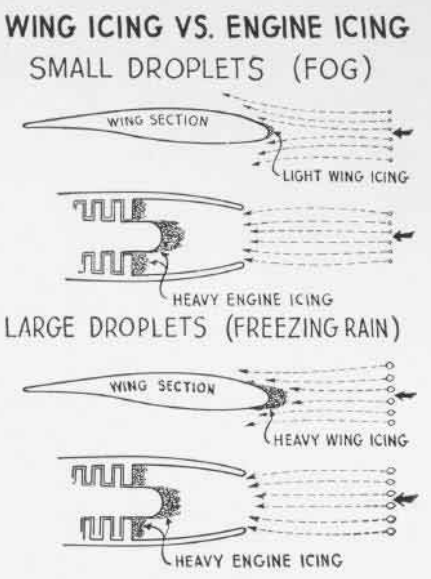
Jet engine icing should not be treated with fear, but rather should be approached with respect and understanding of its cause and effects. It has been emphasized that jet engine icing is closely associated with wing icing and in most cases cannot occur without the pilot's knowing it. Visual observation of wing icing, or ice formation on any external part of the plane, is an indication of accompanying jet engine icing. A close watch of turbine tail pipe temperature should be maintained when this condition exists. *The best thing to do is get out of the icing area.*

STUDIES OF icing in clouds have shown that in stratus (layer type) clouds, the actual icing region is seldom more than 3,000 feet in depth with 1,000 feet the more usual. For cumulus-type cloud formations, the depth of icing is considerable but the horizontal dimension of the icing area is seldom greater than three statute miles (about one minute at 150 knots).

NACA in measuring icing in cumulus clouds rarely was able to remain in the icing condition for more than a minute in straight line flight. Icing in a cumulus cloud is greater than in stratus clouds. In any event, a speedy jet should be able to fly out of the danger zone before it gets too badly iced up. The general rule should be: *Change altitude in layer cloud icing and vary course to avoid cumulus cloud icing.* Only a fool would fly into a cumulus with its turbulent inner air currents, anyway, if he possibly could avoid it.

No jet engines now in service are provided with thermal heating to defeat intake vane icing; however, future engines including the T-40, J-40 and J-46 and the latest version of the J-34 will be equipped for continuous operation in icing conditions.

Based on findings at the Mt. Washington jet engine test hangar, here are recommended operating procedures for current axial flow engines, when icing is encountered or imminent:



1. Avoid atmospheric icing wherever operational requirements permit. This does not imply that flights cannot be made when local icing conditions are forecast. Judgment and appropriate discretion should apply in each instance.

2. Operate with caution during take-off in fog or into low clouds when the temperature is at or slightly above freezing. This is probably the only condition in which a jet engine will ice without some degree of wing icing.

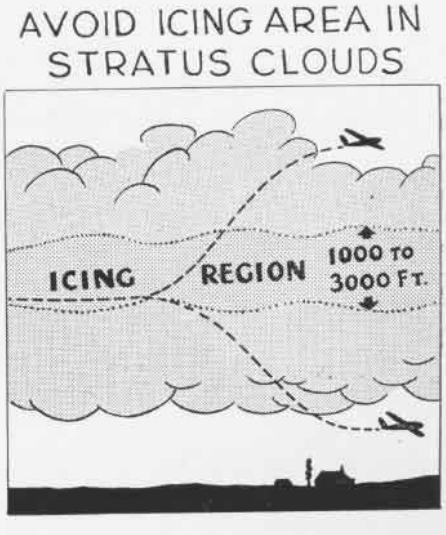
3. If icing is encountered, immediate corrective action should be taken to:

a. Maintain close watch of tail pipe temperature.

b. Reduce engine RPM as practical.

c. Reduce air speed. 250 knots or less is recommended. Do not reduce air speed by flaps or other drag means at the expense of maintaining high engine RPM. At low airspeeds, do not be misled by light wing icing. Engine icing is just as high at moderate air speeds where wing icing would be much greater. Because reduced air speed means reduced airplane range, prolonged operation in icing should be done with caution.

4. Change altitude rapidly by climb or descent in layer clouds. Vary course to avoid cumulus clouds.



CVB LAUNCHED P2V SETS RECORD

HAY, AD2; MASON, AD1; LOVETT, AO1; LT. (JG) COX, CDR. ASHWORTH, BERGSTROM, LCDR MORRISON

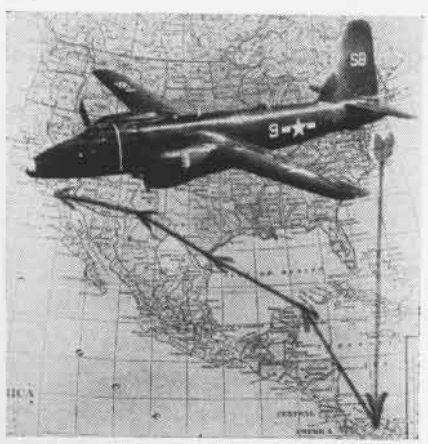
LAUNCHED from the CVB *Midway* operating off Norfolk, a P2V *Neptune* set a long distance record by flying to Panama and San Diego nonstop.

The 4880 miles logged by the plane commanded by Cdr. Frederick L. Ashworth in the 25 hr. 40 minutes flight is believed never to have been duplicated by a carrier-launched aircraft.

With a crew of seven aboard, the *Neptune* took off at 1120, flew south over the Bahamas and Cuba to Panama, turned northwest to the tip of Yucatan, flew over Corpus Christi, and proceeded over El Paso to San Diego, arriving at 0958. There were 300 gallons of fuel remaining at the end of the flight. The crew was welcomed by VAdm. Thomas L. Sprague, ComAirPac.

Cdr. Ashworth is executive officer of Composite Squadron Five based at Moffett field. His copilot was LCdr. G. S. Morrison and the navigator was Lt. (jg) L. A. Cox. The three rotated in the cockpit seats and snatched some sleep.

Iron man of the flight was Chief Radioman L. M. Bergstrom who remained at his position throughout the flight.



P2V TOOK OFF MIDWAY, FOLLOWED ABOVE TRACK

Crew members were John Hay, AD2, Warren Mason, AD1, and I. E. Lovett, AO1.

This was not the first cross country carrier-launched flight. Planes of VC-5 have made numerous take-offs from the *Midway, Roosevelt* and *Coral Sea.*

Many Girls Would Be Queen

Alameda's Wail Brings Plenty of Aid

NAS ALAMEDA—Having trouble getting girls to enter your beauty contests? Then borrow a page from this station's newspaper, *The Carrier.*

Unable to get enough entries in its contest for a beauty queen for Aircraft Pacific's football team, the paper's story was carried nationwide on press association wires and the Phoenix, Arizona, Chamber of Commerce stepped in.

The Arizonans offered to export one of their beauties to be *Miss Hellcat,* pointing out that the current Miss America was an Arizona product. Not to be outdone, Long Beach publicity bureau offered to supply "plenty of pretty kittens" for the contest and sent along photos of the girls it would like to enter. It offered to transport the girls via rocket, balloon, or ordinary jet.

Humorous letters also were received, but the one that drew the most attention was from a 62-year-old grandmother who had 21 grandchildren. She wanted to be "Queen." It all caused a lot of fun and great copy for local papers. The AirPac football crowds taxed the seating capacity of the football field, thanks to the publicity.

● MCAS EL TORO—Hungry men, these Marines. A day's turnout from the station bakery includes 2,400 cookies, 550 loaves of bread and 2,100 coffee cakes. All for 2,300 men.

Up the *ladder from the NAS Los Alamitos pool—LCdrs. F. G. Mulvihil, VA-63-A CO, and Roger Chambers, VF-64-A, assist Beverly Thompson, professional model from TWA*

NAVAL AIR AIDS IN EVACUATION

NAVY AND Air Force squadrons operating as the Military Air Transport Service were handed a new job recently—evacuating military hospital cases all over the world, a job formerly done largely by hospital ships and trains.

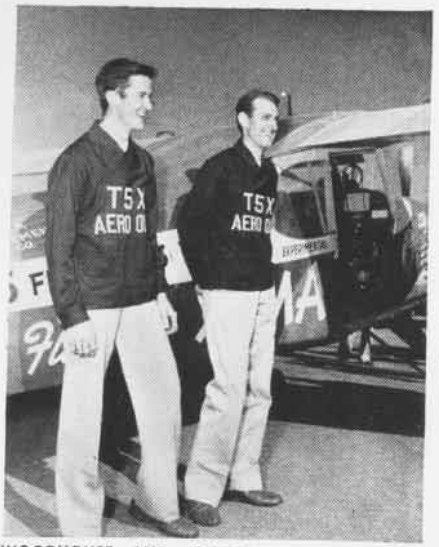
Air evacuation reached a peak during late months of the Pacific war when it proved its worth both from a medical and moral standpoint. Reasons given for the peacetime switch from ships and trains to planes included conservation of scarce medical personnel, consolidation of medical facilities, savings of en route and duty time lost, and morale.

During October 300 mainland-bound patients were flown from the European theater by C-54's and the new Lockheed *Constellation* C-121's. The Pacific theater load is expected to run about 240 a month. Alaska and Caribbean theater evacuations run around 30 to 50 persons.

The Army will lay up its two hospital ships, the *Comfort* and *Hope,* as well as the hospital train used in the United States to distribute patients to government hospitals. It was found 21 times more medical personnel were required for ship-train evacuation than by air. Both Air Force and Navy flight nurses are trained at AFB Randolph, Texas.

During the war Naval Air Transport Service evacuated 86,000 patients from 1942 to 1945 in nearly 6,000 flights. Marine Corps aircraft added another 16,000 patients to that total. At present, R5D's carry 34 litters and the R4D's 18 to 24. MATS' new *Stratofreighters* will carry 83.

The Navy has two hospital ships in active service, the *Consolation* and *Repose.* Both furnish hospital service for the Atlantic and Pacific fleets and are not evacuation ships as are the Army transports. The *Repose* is slated to be inactivated sometime this fiscal year.



WOODHOUSE AND JONGEWARD BY AERONCA

Two Reserves Set New Mark

Record Endurance in Flight Made

NAS Los Alamitos—Two naval reservists, members of AVUA #1 at Phoenix, Ariz., are the holders of the world's endurance record for aircraft—46 days 20 hours and 18 minutes. They are Ens. R. F. (Woody) Woodhouse and Lt. (jg) W. P. Jongward.

After their long flight was ended a crowd of 15,000 persons greeted the fliers as they landed at Yuma. Eight *Hellcats* from Los Alamitos flew an aerial honor guard for the two men. Among the first to congratulate them were Dick Riedel and Bill Barris of Fullerton, Calif., the former titleholders, who flew 1008 hours last spring.

A burned-out magneto brought the decision of Woodhouse and Jongward to land. The flight was sponsored by the Yuma junior chamber of commerce. It took the two men's *Aeronca* 9,000 gallons of gasoline to fly 75,600 miles. They took turns piloting, in four-hour shifts. Their plane was refueled every eight hours, the pilots flying low over a Buick convertible traveling 75 mph. Fuel and food was handed up to the plane as it flew 10 feet from the ground.

Pilot Info File Published

Condensed 'Word' in Handy Book

A new book, the *Navy Pilot's Information File,* has been produced by the Aviation Training Division of CNO and will be issued to all Regular and Reserve pilots.

Fifteen thousand of the books are being procured. A year in preparation by a group headed by J. William Welsh, former Navy pilot, the *File* has provision for revised pages to be inserted by the pilots from time to time.

It condenses the primary things which a pilot must know and is of a size that makes it easy to carry with him in the plane. Sections of the *File* deal with flight safety, flying regulations and rules, clearances, maneuvers, physiology of flight, aerology, instrument navigation and communications, and emergencies and emergency equipment.

It is profusely illustrated with pictures, cartoons and charts to make it readable. BuAer has assigned it order number NavAer 00-80-T-33.

Mars Loses Engine Over Sea

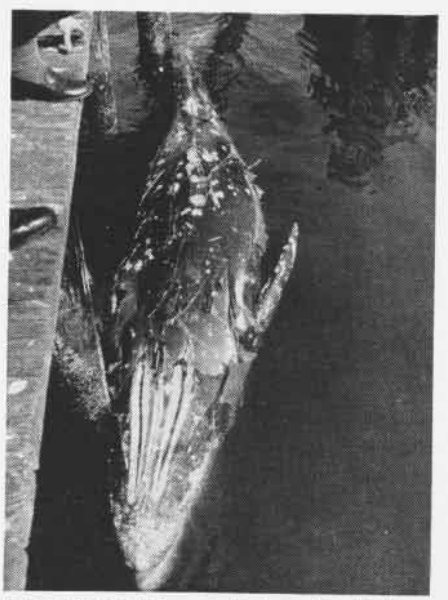
Flies 440 Miles to Hawaii on Three

VR-2, Alameda—Three-engine operation when one of the engines fell off the *Philippine Mars* 440 miles off Oahu brought the plane in safely, thanks to the piloting of Lt. W. L. Garrett.

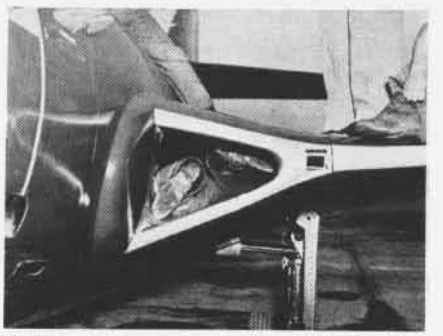
Without warning, a terrific vibration set up in the #1 engine en route to Honolulu from Alameda. Within three or four seconds the R-3350 engine was wrenched from its mountings and dropped into the ocean.

As the engine tore loose from the nacelle, sparks ignited the wing panel, drenched with gasoline from ruptured fuel lines. CO_2 units extinguished the flames but the nacelle caused severe buffeting.

Emergency measures and ditching preparations were made, with the crew and 40 passengers donning life jackets, but with the airspeed reduced to 125 knots the JRM flew normally except for severe vibration. With a Pan American *Stratocruiser* and B-17 from the Hawaii air-sea rescue unit flying escort, Lt. Garrett continued to Honolulu, landing safely. Exact cause of the engine loss probably will never be known, though it is thought one of the propeller blades broke or was thrown entirely.



A new-type *"submarine" docked itself alongside pier Hypo at NAS San Diego recently, attracting hordes of sight-seers. It turned out to be a gray whale, 25' long and recently defunct. A Coast Guard harbor patrol towed it out to sea where it was given the deep six.*



Making *repairs on the engine of the F9F Panther is not quite so easy as on a standard aircraft engine. These photos from MCAS Cherry Point show a VMF-115 mech squeezing into the air scoop to check on the accessories section of the centrifugal-flow jet engine deep in the bowels of the plane. Marines report they can do this with the engine turning up slowly but it is not recommended procedure for the fogey-hunters.*

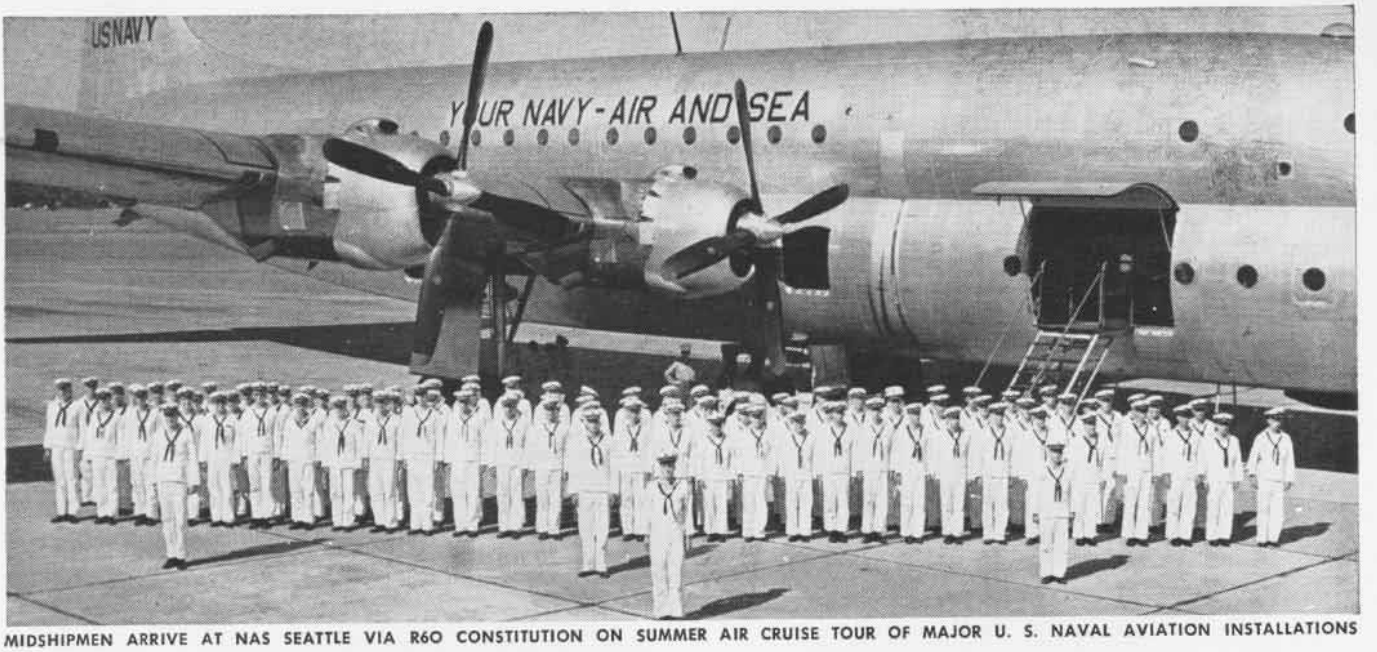
Bearcat Outclimbs Mustang

Navy Plane Out-Performs AF's F-51

NAAS Whiting Field—The F8F *Bearcat* demonstrated its superiority to the F-51, regarded as the best propellered plane in World War II, in a competition here, informal of course.

The test consisted of a climb to 10,000 feet from a standing start, with a dog fight after reaching 10,000 feet. Both planes started from a full power turn-up on the runway. After becoming airborne, the F8F pulled away from the F-51, outclimbed it to the peak altitude by 2,000 feet, and then made a run on the *Mustang.*

The *Bearcat* had the advantage at all times, staying well above the F-51. The Air Force pilot was a "sharp character" and if both planes had been F-51's, his opponent probably would have been "shot" down. However, that was not the case, and about the only way the F-51 could get away from the F8F was to dive with full throttle. The *Bearcat* was from VF-131, commanded by Cdr. H. S. Bottomley, Jr. Navy men have always maintained the F8F was best.



MIDSHIPMEN ARRIVE AT NAS SEATTLE VIA R6O CONSTITUTION ON SUMMER AIR CRUISE TOUR OF MAJOR U. S. NAVAL AVIATION INSTALLATIONS

MIDSHIPMAN AIR CRUISES

SOMETHING new has been added to the training program of midshipmen at the U. S. Naval Academy—"Air Cruises." Summer cruises aboard ships of the Navy have always been a part of the curriculum at the Academy, but this past summer, for the first time, the future officers took to the air as well.

On the air cruises, midshipmen of the second class were flown by naval aircraft to many of the major naval air installations throughout the continental United States in order to gain broad insight into naval aviation and to become acquainted with its latest experimental and operational developments.

Under the auspices of the Department of Aviation at the Naval Academy, four air cruises were scheduled during the summer, each one accommodating approximately 200 midshipmen and lasting for two to three weeks.

Planes used to transport the midshipmen were furnished by Fleet Logistic Support Wings, and included the huge JRM seaplane *Caroline Mars,* the giant new R6O landplane *Constitution,* and standard Navy transport R5D's. Pilots and crews of the planes were from squadrons VR-44, VR-2 and VR-1.

Each cruise was arranged as a tour of the United States, with NAS PATUXENT serving as the starting point. The *Mars* transported the entire group of 200 from Annapolis to Patuxent at the start of each cruise and back to Annapolis when the trip was completed.

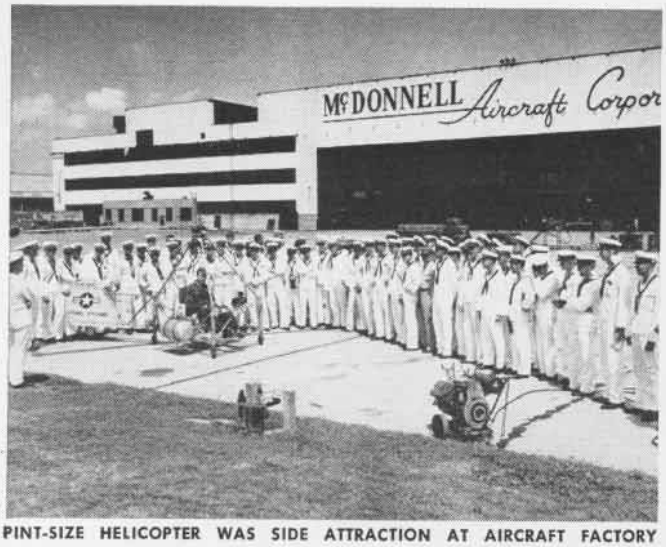
From Patuxent, where the midshipmen separated into two groups, the *Mars* flew a south and westerly course on a tour of East Coast and Gulf Coast ports, while the *Constitution,* flying north, west, and south, toured inland and West Coast stations. The two groups met at Pensacola, the focal point of each cruise, where midshipmen groups exchanged aircraft to complete the remainder of the cruise culminating at Patuxent.

In this way each midshipman flew approximately half his cruise in landplanes and the other half in seaplanes. To present the greatest variety and most comprehensive coverage of the United States, the itinerary of each cruise was varied, Pensacola being the only stop common to each type aircraft.

At Pensacola all midshipmen received a four-day indoctrinational tour of the great Naval Training Center, where they gained insight into the schedule for preparing the Navy's future pilots. Here, too, midshipmen volunteered for regu-

RAINY DAY START FROM ANNAPOLIS FOR FIRST LAP TO NAS PATUXENT ABOARD CAROLINE MARS

PINWHEEL RIDE ENDS ON USS BURTON ISLAND



PINT-SIZE HELICOPTER WAS SIDE ATTRACTION AT AIRCRAFT FACTORY

NAVAL ORDNANCE FACTORY, FOREST PARK, FOUND AN EAGER AUDIENCE

larly scheduled training hops in SNJ aircraft with designated naval aviators. Another place of particular value was the Naval Air Technical Training Center at Memphis, Tenn., where all enlisted men in aviation ratings are trained. The numerous working mock-ups of all types of Naval planes and the fine facilities for instructing mechanics and technicians made a lasting impression on the midshipmen.

THE OTHER stations visited included Floyd Bennett Field, N. Y.; Quonset Point, R. I.; Jacksonville and Miami, Fla.; Corpus Christi, Texas; San Diego and Moffett Field, Calif.; Denver, Col.; Glenview, Ill.; St. Louis, Mo.; New Orleans, La.; Seattle, Wash.; Grosse Ile, Mich.; Minneapolis, Minn.; Olathe, Kan.; and Cleveland, Ohio.

At Floyd Bennett, tours of the Grumman plant and the Navy's Sands Point Special Devices Center were arranged, while Quonset Point provided a fleet operating base in full swing. At Corpus Christi, midshipmen saw the operation of the Naval Air Advanced Training Command where aviators get their more specialized training after finishing basic at Pensacola.

The McDonnell jet aircraft factory was visited at St. Louis, while Grosse Ile offered views of automobile plants and other points of interest in the Detroit area.

INCLUDED at Glenview were tours which covered the torpedo factory at Forest Park, Ill., the CIC school at Glenview, and the Great Lakes Naval Training station outside Chicago.

Moffett Field held great interest for the midshipmen, with the NACA wind tunnel and the fleet base at San Francisco to be visited. From Moffett, also, shuttle trips were run to the Naval Air Ordnance Test Center at Inyokern and the Guided Missile Center at Point Mugu to see the latest rocket and guided missile developments.

More aircraft factory tours for different groups were presented at the Chance Vought plant in Dallas, the Boeing plant at Seattle, and the Consolidated-Vultee aircraft factory in San Diego. Seattle and San Diego also offered many other activities of interest at their large installations.

The stop-off at Jacksonville featured another fleet aircraft base, along with major overhaul and repair facilities, behind-the-scenes, but basic phases of aviation.

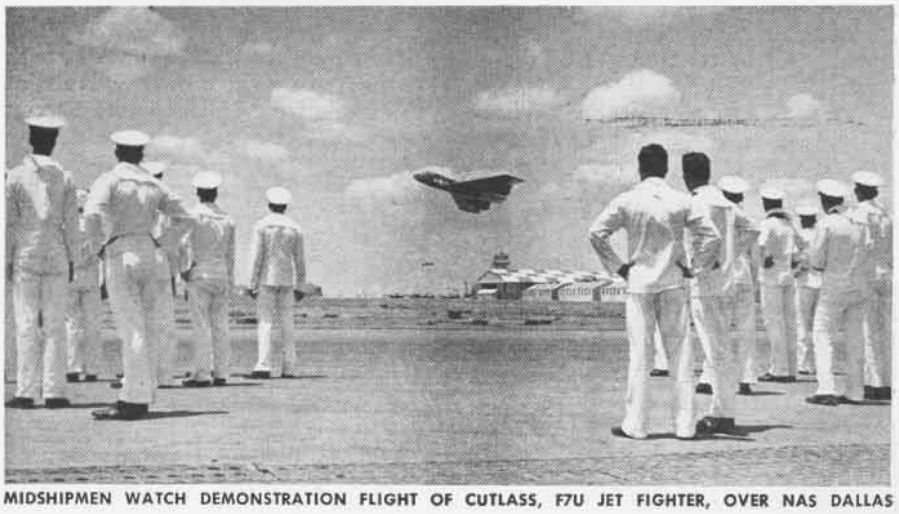
Reserve flying was observed at many of the stations, including Miami, Denver, and Olathe. Second classmen on the third air cruise were especially fortunate in being able to watch the National Air Races during a three-day stay in Cleveland.

At all stops the midshipmen were entertained most hospitably by both naval and civilian personnel, many dances and other social events being the order of the day. An outstanding occasion was the Aquatennial Celebration at Minneapolis where the fifty gorgeous "Queens" were escorted by midshipmen.

New Orleans, with its celebrated French Quarter, provided much in historical interest.

THE AIR cruises have increased the naval aviation background of the midshipmen and also have served to give them a rather complete geographic presentation of the United States. In addition, the tours put the Navy and naval aviation in the public eye by allowing midshipmen in numbers to visit places they have heretofore reached only individually. Each midshipman logged from 20 to 35 hours in the air and covered about 3500 to 5500 miles of territory.

This first series of air cruises proved to be a complete success, thanks to the efforts of the personnel of Fleet Logistic Support Wings, all the stations visited, and the many civilian groups who cooperated in receiving the travelers so graciously. Those who took the trips have been extremely enthusiastic, and it is hoped that, in the future, air cruises will become an established part of the summer aviation training program for all midshipmen.



MIDSHIPMEN WATCH DEMONSTRATION FLIGHT OF CUTLASS, F7U JET FIGHTER, OVER NAS DALLAS

AMPHIBIANS OF WORLD

AMONG other things, the year 1913 was notable in naval aviation history for the debut of the amphibian to the field of naval aircraft design. This first effort by Curtiss was designated the *Bat Boat* or *OWL* (Over Water-Land) and was powered by a 90 hp engine.

Since that time the evolution of the amphibian, as well as the flying boat, has seen many innovations, with its current layout being more or less contingent upon the conditions under which it is to operate. That these features in general detract from their aerodynamic performance when the type is put beside a comparable landplane is accepted as part of the price paid by the designer to achieve his ends. Nevertheless, there is something to be said in favor of this compromise, for the amphibian is able to do, with reasonable efficiency, the job of being a flying-boat and a landplane at the same time.

In flight certain of the U. S. amphibians can present a problem in recognition, for these types, such as the PBY-6A's and the PBM-5A's, are identical in configuration to their aquatic counterparts. The fact that all new production of these types is amphibious and that amphibians are in general much smaller than flying-boats should alleviate the problem somewhat.

PBM-5A MARINER—This patrol-bomber, cargo-transport is the world's largest operational twin-engined amphibian. During the latter part of the war *Mariners* gradually replaced the older *Catalinas,* and, as patrol flying-boats, performed a function somewhat analogous to that of the cruiser.

With their great cruising endurance it was not at all uncommon for *Mariners* to maintain patrols for periods as long as 24 hours without returning to base. Of course the endurance of the PBM-5A is somewhat less because the hull redesign and amphibian gear adds 4,000 pounds to the total weight of the aircraft.

Two 2,100 hp Pratt and Whitney R-2800 engines are fitted in mountings at the extremities of the wing's center section. The cruising speed of the Martin PBM-5A is 118 knots at 1,500 feet. An additional boost in power for take-off can be obtained through the use of JATO.

BRITISH SEAGULL UNIQUE AMONG AMPHIBIANS WITH FOLDING WINGS, COUNTER-ROTATING PROPS

The hull of the amphibian is of the conventional PBM two-step design with the addition of a tricycle landing gear of which the main wheels fold into the sides of the hull and the nose wheel into the underside of the nose. Prime recognition features are its gull wing, of 118 foot span, and its twin canted fins and rudders.

UF-1 ALBATROSS—The *Albatross,* latest of the Grumman amphibians, is a multi-purpose aircraft equipped for search and rescue, transport and training duties. For rescue operations a "dutch-type" door split horizontally is provided in the side of the hull. The bottom half remains closed to provide greater freeboard in rough weather; the upper half folds down outwardly, counter fashion.

A crew member, secured to this surface by safety belt, can haul persons aboard from the water. To facilitate the loading of freight a hatch is built into the roof of the hull. It seats 17 comfortably and has a comparatively long range. In conjunction with the Navy, the Air Force has procured a number of these aircraft and they have designated them SA-16A's. The *Albatross* is powered by two 1,425 hp Wright Cyclone engines and has an estimated cruising speed of 165 knots at 1,500 feet.

A tricycle landing gear is fitted with the main wheels retracting upward into the side of the hull and the nose wheel retracting completely into the underside of the two-step hull. Its tapering wing has a span of 80 feet with fixed solid strut wing floats attached 11 feet from the wing tips.

SUPERMARINE SEAGULL—The British *Seagull* amphibian was designed for the Royal Navy to replace the venerable *Walrus* and pre-war *Sea Otter* for a multiplicity of general utility duties, including search and rescue, transport, training, reconnaissance and spotting. Fully stressed for carrier operations, the *Seagull* has a unique feature in the form of a variable-incidence wing, with interconnected full-span leading-edge slots and slotted flaps.

For take-off the wing can be set at the

ITALIAN PIAGGIO IS ONE OF THAT NATION'S FIRST POSTWAR PLANES

NEWEST AMERICAN AMPHIBIAN IS GRUMMAN'S UF-1; USAF BUYING MANY

FAMED MARTIN MARINER ON WHEELS WELL KNOWN TO OBSERVERS IN U. S.

BRITISH SEALAND DESIGNED FOR USE ON SMALL LAKES OR AIRFIELDS

optimum angle and in level flight may be adjusted to reduce hull drag. This folding wing amphibian has an incidence range of 2½ degrees to 12½ degrees and a wing span of 52 feet. Recently at the Farnborough air show the latest model was on display. Various improvements, notably the redesign of the central superstructure and the addition of a third fin have been incorporated; the photo shown is of an earlier two-fin model.

Power is provided by a single 2,500 hp Rolls-Royce *Griffon* in-line engine with water/methanol injection. Two Rotal three-blade contra-rotating propellers are fitted, and when operating at an economical power setting, a cruising speed of 120 knots at 2,000 feet can be maintained. A two-wheel retractable type landing gear is employed with the tail wheel attached to the after end of the single-step hull. The landing gear may be removed and the aircraft operated as a flying-boat.

SHORT SEALAND—The British *Sealand* is a small twin-engined amphibian with accommodation for from five to eight passengers. Design work and construction was carried out at Belfast and it was the first Short Brothers prototype to be built there. Its ability to operate from lakes and small airfields permits wide utilization of this versatile aircraft. For these general duties British West Indian Airways have recently ordered three *Sealands* for their West Indian services.

The *Sealand* made its initial flight on January 22, 1948 and has since flown in several versions equipped with various engines of similar hp. It is presently being fitted with two 345 hp D. H. *Gypsy Queen* 70 in-line engines, which provide a cruising speed of approximately 160 knots at 7,750 feet. The hull is a two-step type all metal structure fitted with a two-wheel retractable landing gear. Interchangeable wing-tip floats are attached to the 59-foot wing by cantilever struts. The *Sealand* has currently been on a demonstration tour of Scandinavian countries.

PIAGGIO P.136—Italy's Piaggio P.136 gull-wing, twin-engined amphibian is one of the cleanest recently designed aircraft of its type on the continent. Built and designed by Piaggio & Company, Genoa, a firm which has been constructing aircraft and engines since 1916, the five-place Piaggio is said to exhibit a standard of design and workmanship up to mark of contemporary U. S. models, Between the years 1916 to 1943 Piaggio built many thousands of airplanes and seaplanes, of its own design and under license. Since the war a limited aeronautical activity has been resumed.

The Italian amphibian has a two-step all-metal hull with side floats attached to the wing by single streamline struts. A two-wheel landing gear retracts into side pockets located well above the waterline of the hull. An oversized door on each side of the hull permits easy entrance and exit to both rear and front seats. A sea anchor which can be handled by the pilot from the port windscreen, is stowed in a compartment on the top-side of the nose.

Future production models will be equipped with a transparent cabin roof instead of the present closed-in version. Two pusher-engines are mounted at the extremities of the center section and from a head-on view the air intakes, with large grilles to prevent the entry of birds and other miscellaneous objects, present a jet-like appearance. Standard installation consists of two 215 hp Franklin engines which provide an estimated cruising speed of 135 knots at sea level. The wing span is 43.4 feet.

NORSK FLYINDUSTRIA/S FINNMARK—The Norwegian *Finnmark*, an all-metal ski/wheel amphibian flying-boat, has been designed for the special climatic conditions prevailing in northern and Arctic regions. Designed to conform with U. S. C.A.A. requirement, it will also satisfy special Canadian and Scandinavian requirements with respect to the combined wheel and ski amphibian landing gear. In this connection the landing gear can be removed easily, thereby changing the aircraft into an ordinary flying-boat with sponsons. If desired, the sponsons can be removed, thus enabling the aircraft to be operated as a conventional flying-boat with attachable wing tip floats.

The version shown here is with sponsons. A two-step type hull is incorporated with accommodations for a crew of two and up to twelve passengers. Flight tests with two 600 hp Pratt & Whitney *Wasp* engines were made during September of this year. The engines are mounted at the elbow of the gull wing and provide a cruising speed of approximately 145 knots. Wing span is 55.7 feet.

SCAN 30—The French Societe de Construction Aero-Naval (S.C.A.N.) has brought out a twin-engined amphibian, the SCAN 30, which is a license-built Grumman *Widgeon* J4F. It has been reported that the French-built *Widgeon* is being developed for the French Navy as a coastal patrol, search and rescue, and light personnel transport. There are several versions of the SCAN 30, including an ambulance version. Unlike the J4F, which is fitted with two 200 hp Ranger in-line engines, the SCAN 30 is equipped with two 220 hp Argus Vee in-line engines.

NORWEGIAN FINNMARK BUILT TO FLY IN COLD CLIMES, CAN USE SKIS

FRENCH SCAN 30 IS A GRUMMAN J4F BUILT FOR MANY USES BY NAVY

PLANES THAT LOOK SOMETHING LIKE THIS MAY ONE DAY BE FLYING AT SPEEDS OF 1500 MPH IF THE PREDICTIONS MADE BY NACA COME TRUE

AVIATION PROGNOSTICATION

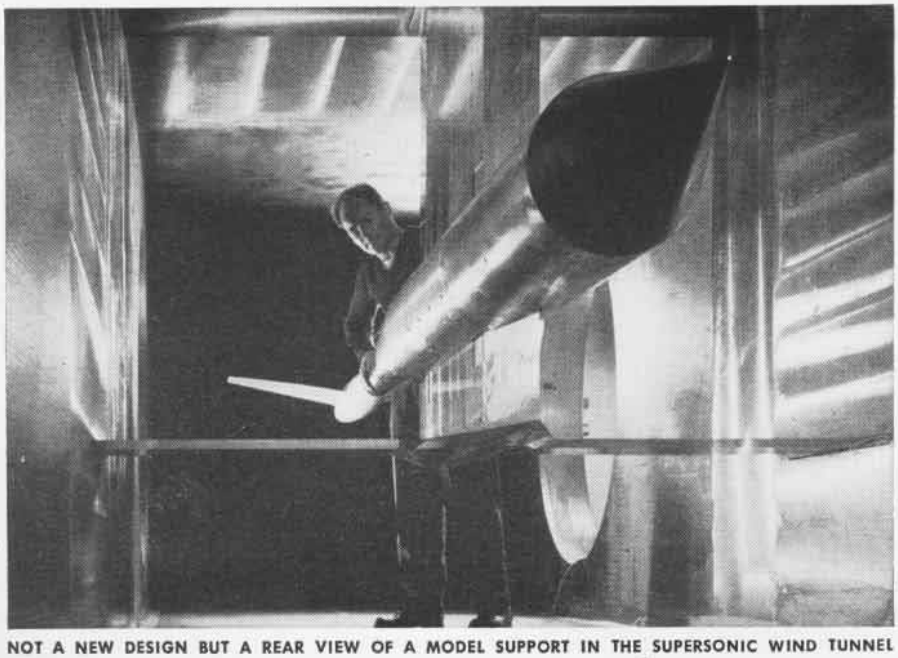
THERE is too much trading in aviation "futures" these days. Drawing board aircraft are winning tomorrow's wars faster than a dogpatch shmoo can produce pork chops and turnip greens.

Nonetheless, theoretical goals of aviation are interesting and informative *if* one constantly keeps in mind that they remain strictly theoretical.

Speeds of 600 or 700 mph are still new enough and fast enough to make one pause a bit. But according to an address by a NACA engineer presented at the Annual Wright Brothers lecture, that "ain't nuttin'." With intensive and continued research and development, one can look forward to aircraft powered by turbojets which fly at speeds up to 1500 mph at altitudes up to 140,000 feet. Though it will take a long time and depend on more "ifs" than Kipling ever considered, the goals are theoretically possible.

Attainment of these high performance goals will require design of efficient light-weight compressors with pressure ratios up to 20 and 30. Present-day turbojet compressors average pressure ratios around 5. It will require cooled turbines to operate efficiently at temperatures of 3500 to 4500 degrees F. Today's turbines operate—and not for long enough—at about 1400 degrees F.

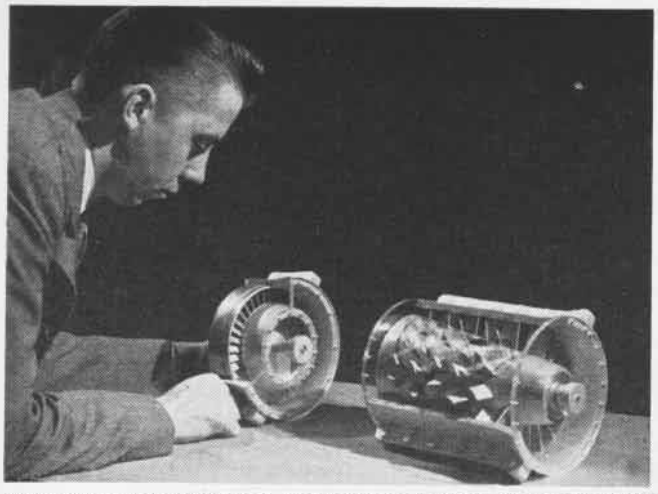
Combustors will have to operate efficiently over widely selected ranges of temperatures, velocities and pressures, at heat input rates from 30 to 50 x 10^6 btu per cubic foot, as opposed to today's top heat input rates of the order of 6 x 10^6 btu per cubic foot. In addition, high temperature resistant materials to operate with cooling at gas temperatures of 3500 to 4500 degrees F will be required. Materials used in present tubrojets operate with temperatures around 1400 degrees F. In other words it'll take some red-hot developing.



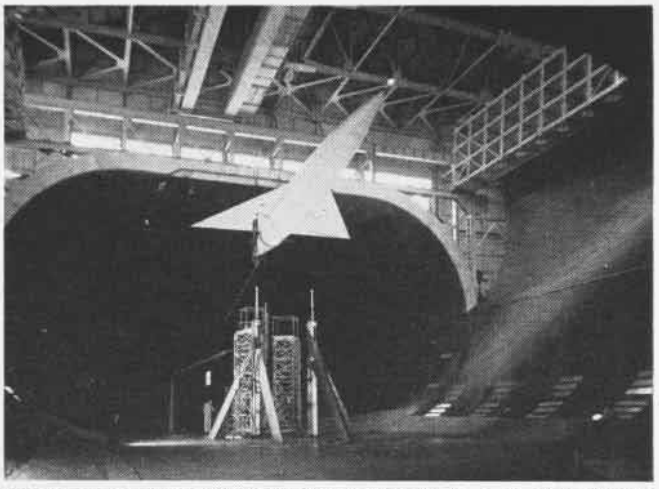
NOT A NEW DESIGN BUT A REAR VIEW OF A MODEL SUPPORT IN THE SUPERSONIC WIND TUNNEL

THOUGH the problems of turboprop and compound engine development are somewhat different from the ones involved in turbojet development, the same factors with different application will result in raising the performance of all three power plants. So far as speed is concerned there is, at present, a point beyond which any propellered aircraft cannot be expected to go in the foreseeable future. This speed is probably not much in excess of 600 mph. Range at lower speeds will be increased in the compound and turbojet configuration by as much as 40%.

On the other hand, only a slight range increase can be expected from



SUPERSONIC COMPRESSOR ON LEFT EQUALS PRESSURE RATIO OF OTHER



LARGE SCALE MODELS ARE DWARFED BY NACA'S 40 x 80 FOOT TUNNEL

future turbojet development. Speed and altitude possibilities are practically unlimited, but range at speeds beyond the speed of sound, even theoretically, offers only .2 of the maximum low-speed ranges of propellered aircraft. Atomic-powered aircraft would change this concept, but they aren't close enough to realization to do much predicting as yet.

TO OBTAIN higher pressure ratios from the turbojet, research is being conducted by NACA using two co-axial compressors. This method should result in higher pressure ratios, but it also makes the engine still more complex. Another possibility for obtaining higher pressure ratios lies in the field of supersonic compression. A single stage supersonic compressor will approximate the performance of some current multi-stage subsonic axial flow compressors. A three-stage supersonic compressor, when and if it works, should produce pressure ratios in the values desired. NACA and Navy are both working on supersonic compressors and they promise excellent results—someday.

Turbine cooling is advantageous not only for application in high temperature cycles to increase the engine performance, but also to enable the strategic materials content to be reduced in turbine blades operating at lower temperatures.

Liquid and air cooling of the turbine blades is being investigated. Liquid cooling offers very good possibilities; but there are some problems to be solved first.

Cooling efficiency is important because this factor will dictate the temperatures at which the engine will have to operate. Temperatures of 4500 degrees F will certainly not be required for continuous operation if efficient turbine cooling is realized. But requirements may go that high for short periods of time.

Combustors will have to be stepped up to meet the new concept. At the present time combustor performance in turbojets is good enough to produce a heat-release rate of 6×10^6 btu/cu ft/hr, for this is what is required at 500 mph at 30,000 feet. However, when the new golden day dawns, and the turbojet is pooping along at 1500 mph at 30,000 feet, the combustor will have to be releasing heat at the rate of 50×10^6 btu/cu ft/hr.

A lot of combustion work has been done prior to the present stage of development. Early aircraft gas turbine engines suffered from blow-out troubles around 18,000 feet because of inadequate combustor performance. Present jets have flown as high as 59,000 feet without blow-out, so if development continues at the same rate, attainment of the predicted 140,000 feet goal, should be realized.

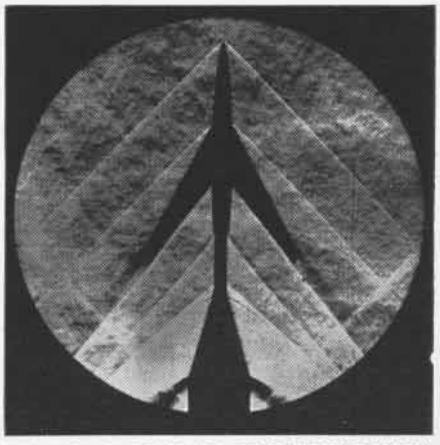
Comes the matter of heat resistant materials. To operate the jet at ranges, speeds and altitudes the NACA lecture mentions, materials are going to have to withstand operating temperatures up around 4500 degrees F for short periods of operation. To get this kind of performance, turbojets will probably have to be constructed of materials that aren't in use today.

Some of the best materials can't be used because they fall under the so-called "strategic" materials class (mighty ticklish thing 'strategic'), such as cobalt and columbium, which are not available in sufficient quantities for emergency use.

TRIANGULAR MODEL IN HIGH PRESSURE TUNNEL

The best future metal alloys will probably be able to sustain operating heats very little in excess of 2000 degrees F. Materials that may deliver the desired heat performance of the futuristic dream-boat are such materials as ceramics, carbides, nitrides and borides. Upon satisfactory completion of the research and development phase of manufacturing the material, it will still be necessary to work out practicable design methods to utilize the blade in a turbine configuration.

Solution of the problems mentioned above, of course, covers only a small part of the development needs. Fuels,



SCHLIEREN PHOTOGRAPH OF FUTURISTIC MODEL

inlet and duct, propellers, nacelles, icing, cockpit heating and cooling, suitable control and structures all constitute major development in themselves. Operational problems are growing bigger by the day, trying to keep up with present jet performance. Somehow it will be done, the question is how — and when.

(All photos by NACA)

SKYRAIDER

THE NAVY took delivery on its 500th AD *Skyraider* recently at Douglas El Segundo plant, a milestone in production of that versatile attack bomber, which to date has seen 22 different versions built. There may have been only one of some of those versions, but the Navy has run through a total of 22, making the *Skyraider* about the most versatile and adaptable airplane to reach the fleet.

First of all, there were four major types of AD's, the AD-1, AD-2, AD-3 and AD-4. Then there are a lot of modifications of those types to do special jobs such as night fighting, antisubmarine hunting, radar countermeasures and the like.

The configuration of a single-man dive bomber started out as the XBT2D. It was the forerunner of the AD-1, and 25 experimental *Skypirates* were built. The Navy decided to do away with the internal bomb bay such as the TBF and SB2C had. Before the advent of the XBT2D there had been the SB2D and XBTD-1, a gull-wing two-place dive bomber with bomb bays and a remotely controlled turret. When bomb bays went out the window in favor of externally-carried stores, the need for a plane of that type diminished.

When the war was over the AD-1 appeared. Only one modification of it was produced, an AD-1Q, radar countermeasures plane. The AD-1 series had the R-3350-24W engines. Some trouble was experienced with carrier landings, and the need was voiced for a stronger tail and wing structure.

Next came the AD-2, with 200 more horsepower and beefed-up tail and wing. The prop was changed to the M20B and the cockpit changed to a standard arrangement. The AD-2, incidentally, was the first airplane to have cockpit controls of a functional design—that is, the landing gear lever had a little wheel on it and the dive brake lever had a miniature dive brake instead of a knob.

Like the AD-1, only one version of the AD-2 airplane came out, an RCM modification designated the AD-2Q. When the AD-3 appeared the version boys really went to town. Included in this stable were the AD-3Q, AD-3N night attack, AD-3W airborne early warning, AD-3E prototype airborne early warning and ASW search, AD-3S prototype night attack plane and ASW attack.

The tow target version, one of the newer developments, is converted by attaching to the bomb rack a streamlined "package" housing a reel with two miles of stable cable. A crew member connects the targets to the cable through a door in the bottom of the plane. The yellow cloth sleeves are swept aft by the airstream.

Controlled by push button, the cable may be let out at a mile a minute rate and reeled in hydraulically at from 600 to 1100 feet a minute, depending on the airplane's speed.

In emergency, such as entanglement of the cable, an explosive cartridge drives a "guillotine-type" fitting to sever the cable automatically. A unique feature of the Navy-developed target equipment is a "messenger" gadget that travels to the end of the cable to strike a fitting which releases the target after damage by gunfire. Additional sleeves then may be run out to the end for continued gunnery practice. This eliminates rewinding for each new target.

SKYRAIDER UNFURLS TOW TARGET FROM A TANK

Compared to the AD-2, the -3 had an improved performance Aeroproducts prop, a 10-inch stroke oleo lengthened to 14 inches, increased strength for carrier landing by a stronger landing gear carry-through and wing structure. Its fuselage was reinforced, the tail wheel revised, an air bottle provided for emergency operation of the canopy and the cockpit was further refined.

The AD-4 comprises four versions, the basic, the AD-4Q, AD-4N, and AD-4W. This airplane has the P-1 auto pilot and different radar. Installation of the radar

BTD-1 Powerful engine gave gull-wing Douglas airplane speed

XAD-1W *Skyraider* with guppy on it was early warning airplane

XTB2D Counter-rotating props, tricycle gear featured this version

scope necessitated relocation of instruments on the instrument panel.

In addition to the above-mentioned versions of the *Skyraider*, there were some odds and ends like the XAD-1W and AD-2W, AD-2Q(U), XBT2D-1N, XBT2D-1P and XBT2D-1Q.

Not always does the *Skyraider* pilot fly his heavy plane alone. Several of the versions above carry one or two crew in addition to the pilot. The AD-N plane has a rear cockpit housing a radar navigator and RCM operator. The AD-Q carries an RCM operator. An extra man goes along in the AD-2Q(U), which can be converted into a utility plane in approximately one hour to tow aerial targets. A tow reel in fairing is attached to the center bomb rack, with a door in the floor to aid in launching the target. The AD-W is a three-place job with two radar operators.

Navy Airlifters Win Medals

Air Medals Go to 142 Navy Officers

The two commanders of VR-8 and VR-6 which led all squadrons in the Berlin Airlift in such spectacular fashion have been awarded Legions of Merit for their feats. They are Capt. J. O. Vosseler and Capt. H. P. Badger.

Personnel of the two Navy squadrons who participated in 100 or more missions were awarded Air Medals. A total of 142 men won these and 10 others won commendation ribbons.

It is estimated about 350 naval officers earned the Naval Occupation Service Medal for flying in the airlift. The Air Force, which had more men involved for a longer period of time, awarded 37 Legions of Merit, 895 Air Medals and 72 letters of commendation.

VP Navigators Prove Sharp

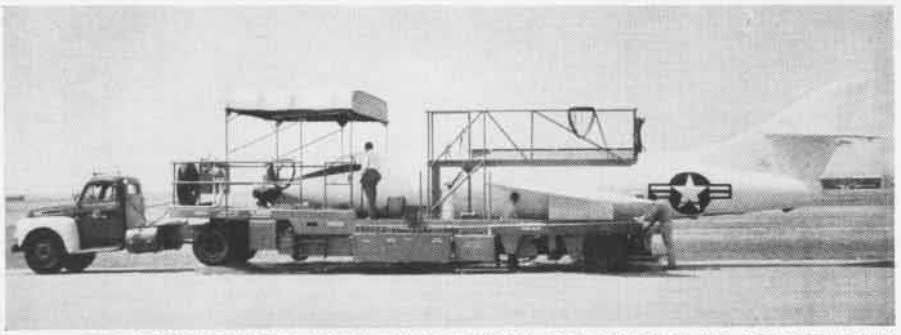
Panama Flying Helps Good Work

VP-3, COCO SOLO — This squadron, based in Panama where loran is unreliable and radio and navigational aids inadequate, has developed some sharp pilot-navigators who know their DR and celestial navigation. In fact, it might challenge any squadron in that field.

An analysis made by the navigation officer for fiscal '49 shows how sharp they are. Grading according to ComAirLant rating check list for navigators, the pilots made the following record:

They submitted 85 flights for grading. Average grade was 3.37 and nine were 4.0. Of the 85 flights, 27 were night hops and 49 were actual operational or formal exercise. The squadron flew 3,482 hours of which 414 hours were actually graded navigation flight hours, 132 at night. Thirty-four pilots were used, who shot and plotted 1,549 celestial lines of position, an average of 45.6. They also were required to complete ground training, averaging 3.84 in their examinations.

SERVICE FOR A STAR PERFORMER



TRAILER NOT ONLY TRANSPORTS D558-II BUT IS EQUIPPED FOR SERVICING THE RESEARCH PLANE

THE NAVY'S Douglas-built *Skyrocket* has its own portable service station. However, in this case, the "portable" isn't carried; it does the carrying.

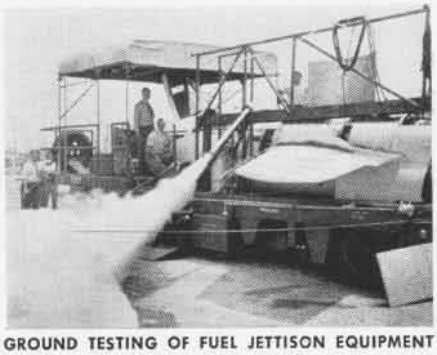
This unique situation arises from the fact that the D558-II is a research aircraft and, like a temperamental star, it rates special handling. To fit this piece of high-performance laboratory equipment into a tightly scheduled scientific test program, moreover, requires careful planning.

Since ordinary run-of-the-mill facilities can't cope with the job of servicing the *Skyrocket's* fuels, engines, and equipment, the Douglas El Segundo Plant engineering personnel designed a special mobile trailer-shop combination which even gets down on its knees to give the plane a piggy-back ride. In just a few minutes the *Skyrocket* is run right up onto the trailer to be transported from its hangar at Muroc to its desert take-off point on the runway or to the Douglas plant for modification.

The Douglas design, fabricated by the Fruehauf Trailer Company, consisted basically of a trailer 13 feet wide and 35 feet long. This basic trailer was supplied with ramps and a winch for loading the airplane onto the trailer. To simplify the loading, the trailer has a kneeling feature in the rear wheels so the plane can be rolled on or off the ramps on its own gear. The wheel retraction is accomplished by two 24-volt five-horsepower electric motors through a 125:1 reduction by V-belt and worm gears to a three-inch diameter Acme screw moving the coil spring carriage.

The *Skyrocket's* fuel systems can be loaded from tanks provided on the trailer. All necessary gauges, regulators, etc., are provided in an instrument panel that permits loading in the safest and most efficient manner.

Work platforms at convenient locations facilitate the servicing of the plane without auxiliary equipment. There is even an overhead canopy to shade the pilot's compartment of the airplane before flight and as protection from the sun for the flight and maintentance crews at the Muroc desert operations base.



GROUND TESTING OF FUEL JETTISON EQUIPMENT

The trailer has complete safety facilities. A Hale type portable pump supplies pressure to two 1½-inch high-pressure 50-foot fire hoses equipped with combination frog and straight seam nozzles. An additional one-inch diameter 50-foot hose is used for wash-down of the fueling areas in case of spillage. A rectangular tank is used to store 700 gallons of water for the fire pump. A shower is provided with a pressurized water tank for use of the crew if accidentally sprayed with active liquids.

Four 12-volt truck storage batteries are used to furnish power for both 12 and 24-volt systems to operate the trailer lights, kneeling system motors, loading winch, and the various airplane engine starting motors, etc.

The trailer is an ingenious merger of transportation, servicing and safety equipment for the D558-II research plane. The saving in operation time and expense has already justified the cost of the unit many times over.

● VR-3—Florida is not the only place that has high velocity winds. NATC PATUXENT was hit by a small twister on 19 August which swooped in suddenly, wrecked planes and buildings and was gone. Five squadron planes sustained minor damage.

● NAS LAKEHURST—The aerographer's mate school includes in its course of study the principles of oceanography so the men can forecast the sea as well as the weather.

Hardly recognizable *as the famous Douglas Skyraider is the strange-looking plane above with the three tails, odd canopy and bulbuous radar guppy on its belly. This AD-3W version of the Skyraider, in production at El Segundo the past three years, carries the new look in airplanes to a new extreme. Extra rudders help give the plane more flying stability.*

Navy To Fold 5 Flattops

Economy Plan Hits Ships and Men

The Navy plans to put five aircraft carriers in mothballs, reducing its air groups from 14 to possibly nine, decommission one antisubmarine squadron and 10 patrol squadrons as a result of Secretary of Defense Johnson's cutback orders.

The rollback program calls for the release of 55,000 officers and men from active duty in the Navy and Marine Corps between now and July 1, 1950, to bring the Navy's strength down to 461,000.

The five aircraft carriers to be decommissioned are the *Leyte* and *Kearsarge,* both CV's, and the CVE's *Rendova, Siboney* and *Bairoko.* At the same time it plans to recommission the CVL *Bataan* as an antisubmarine warfare carrier.

Two seaplane tenders, the *Floyd's Bay* and *Gardiner's Bay,* also will be decommissioned in January. During the war the Navy had more than 100 aircraft carriers—today, after the "mothball" program above is completed, it will have 14, eight of them small ones. Only the three CVB's and three *Essex*-class will remain in operation in addition to these.

Besides the aircraft carriers, the Navy will decommission six cruisers, 14 destroyers, 9 submarines and one DE. Under present orders, the Navy must cut its expenditures $350,000,000 below what Congress appropriated for it.

How many air groups and squadrons the Navy and Marine Corps will have by the start of fiscal 1951 was undecided as of 1 November when this was written. Several tentative plans have been drafted for reducing their number from 14 to 9 air groups, or more or less that that figure. Just which squadrons would be decommissioned had not been decided on that date. Marine aviation was scheduled at one time to be cut from 23 squadrons to 12 but the latter figure may be upped.

New Reserve Policy Board

Permanent Defense Organization

The Civilian Components Policy Board, a permanent Department of Defense planning and coordinating organization, is now a going concern. The first meeting was held in October.

The board's mission is to develop, coordinate and issue policies and programs relating to the civilian components of the armed forces. It is charged with the study and evaluation of questions affecting the Organized Reserves of the Army, Navy, Air Force and the National Guard, both ground and air.

The board is composed of a chairman, an executive officer, and an 18-man staff which includes top level civilian officials and Regular, Reserve and National Guard officers of the various services.

Mr. William T. Faricy, president of the Association of American Railroads, serves as chairman, while Col. Luke W. Finlay, ORC, USA, is the executive officer. Navy and Marine representatives on the board are: Under Secretary of the Navy Dan A. Kimball; Rear Admiral Frank Watkins, USN; Rear Admiral I. M. McQuiston, USNR (Air); Captain George Parkinson, USNR; Colonel Melvin J. Maas, USMCR (Air); and Colonel C. H. Cox, USMCR.

Arctic 'War' Tests Forces

Huge Tank Fleet Tries Out Tactics

Land-based aircraft and submarines vs. carrier aircraft. That potent warfare question mark was tested when the Atlantic fleet sent 100 ships north to the Arctic circle during November on the largest peacetime maneuvers in that ocean.

Nineteen submarines were assigned the job of turning back the Second Task Fleet en route from Norfolk to Argentia, Newfoundland. In another phase, the new guppy-snorkel subs tried to keep the carrier task force out of Davis strait, a small bottleneck in the frigid zone.

The task force consisted of the *Midway, Franklin D. Roosevelt* and *Philippine Sea,* plus the hunter-killer ASW carriers *Wright, Mindoro* and *Siboney.* Also in the force were 49 destroyers, four cruisers and numerous smaller "train."

During latter phases of the maneuvers, NAS QUONSET POINT and ATLANTIC CITY were designated as "enemy" bases and simulated attacks made by carrier planes to neutralize opposition as the fleet moved in. A total of 42,000 naval personnel on ships, submarines and in planes participated in the maneuvers. Last year 65 ships and 31,000 personnel took part in North Atlantic maneuvers, featuring an assault landing against Argentia.

Pilot Rescues a Helicopter

Pinwheel Loses Lift, Avoids Dunking

NAAS CORRY FIELD—This is a case where a pilot down in the water rescued the rescue helicopter.

Mid'n Andrew G. Brtis ditched his F8F in Perdido bay. Lt. (jg) Charles H. Boldt dropped him a life raft but before he could swim to it the helicopter from the search and rescue unit here was hovering over him preparatory to rescuing him.

However, at this stage the procedures were reversed. When Lt. (jg) Robert C. Hamilton, pilot of the pinwheel, lowered the hoist to the downed pilot it was the helicopter that was drawn to the water instead of the pilot being hoisted to the helicopter.

Because of hot weather conditions, the helicopter lost lifting power and was drawn down until its wheels were submerged. Brtis quickly released himself from the hoist and the helicopter lifted clear of the water. The standby PBY made the pickup and 25 minutes after the crash Brtis was at the dispensary.

Use of shoulder straps undoubtedly saved this pilot's life. When his F8F flipped over on its back as it hit the water, his straps held him so all he got were a few minor cuts on his legs.

Head Down, Locked, Mac

Near-Collision Caused by Radio 'Off'

VA-15, CECIL FIELD—A recent near-accident in this squadron revealed that occasionally pilots will bend over backwards to stick out their necks.

While flying simulated type instruments on the radio range, one pilot became annoyed with the great volume of radio traffic on the VHF channel and to eliminate this interference turned off his VHF receiver as he neared the range cone, thereby terminating communications with his chase plane.

At this point, the chase plane discovered a multi-engine aircraft approaching on opposite course level, but was unable to contact the type instrument pilot on either VHF or MHF, although only a moment before communications had been excellent.

The rate of closure was so great that the chase pilot had no opportunity to warn the instrument pilot with slipstream. A head-on collision between the multi-engine aircraft and the instrument plane was averted only when the former made a pull up at the last moment, missing the latter by a few feet.

The moral to this story is: "Don't be one-way with a two-way radio."

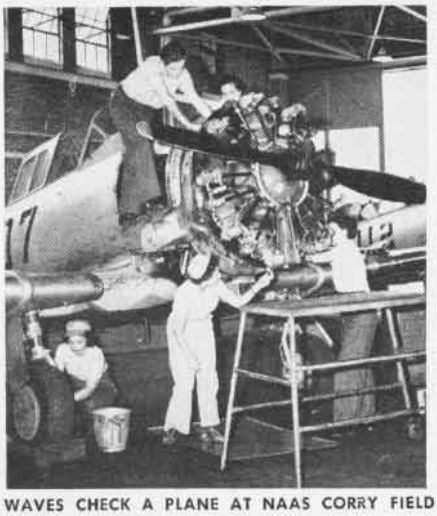
Seven Good Conduct Medals

VU-3's Leading Chief 2nd in Navy

VU-3, EL TORO—The man with the second most good conduct awards in the Navy probably is Morrison Clark, ADC, leading chief of this squadron, who recently won his seventh medal.

In 27 years in the Navy, Clark's duty has included service on the *Pennsylvania* for eight years. The last ship he served on during World War II was the CVL *Monterey* with AG-28. He was with that ship when it fought at Iwo Jima, Guam, Saipan and other major engagements. Clarke plans to retire on completion of 30 years.

Capt. William *V. Davis Jr. of NATC Patuxent River is shown here receiving the National Air Council's annual award for his work in testing jets at extreme altitudes and evaluating helicopters. Capt. Vincent Mazza, USAF pilot who was ejected from a jet at 555 mph also received a platter from Sec-Defense Louis L. Johnson for his exploit.*



WAVES CHECK A PLANE AT NAAS CORRY FIELD

64 Waves at Corry Field

Wave Aviation Ratings Being Tested

NAAS CORRY FIELD—All WAVES holding the ratings of AD, AM, AE, and AT (with the exception of those assigned as flight orderlies) have now been transferred to the Pensacola area, which will serve as a proving ground to determine what aviation mechanical ratings will be retained in the rating structure for USN(W) personnel.

As a result of this transfer, NAAS CORRY FIELD now has on board 63 enlisted WAVES plus one officer, contrasted with 16 who were assigned to the station in July. All of them have more than proved their ability.

Recently the WAVES have taken over their own line, maintaining SNJ's. This is expected to lead to the development of a good competitive spirit between the sexes and to further demonstrate that the WAVES are good sailors.

WAVES shown checking the plane in the picture are: *standing on plane,* Italia F. Birkinsha AD2 and Bernadette Miner AD3; *on ground,* Lucia C. Collach AD1, Helen Pachter AD2 and Flora Fasselin AD2.

War History of CAG-20 Out

Album Tells Exploits of Squadrons

The *Air Group Twenty Album,* telling the story of that naval aviation unit throughout the war, with sidelight articles by members of the group, has been published and is ready for distribution.

It has been compiled by members of Bombing 20, Fighting 20, Torpedo 20 and CAG-20 staff, reflecting experiences of the group and individuals in it. Copies of the *Album* are being sent, with the Air Group's compliments, to all next of kin of deceased members whose addresses are known. The Album can be procured from Chauncey Stillman, 230 Park Ave., New York, N. Y.

First Reserve Jet Jockeys

Two Pilots Qualify at NAS New York

First Organized Reserves to qualify as jet fighter pilots were Lt. Cornelius N. Nooy and Lt. Frank T. Donahoe of VF-52-B, NAS NEW YORK.

During their two weeks active duty, both officers logged flying time in the FH-1 *Phantom,* which was recently delivered to NAS NEW YORK. As additional jets are received at this station, selected groups of five pilots from each of the New York squadrons will get an opportunity to qualify.

Lt. Nooy, a wartime ace, is credited with 19½ Japanese aircraft. He holds three Navy Crosses, two Silver Stars, two Distinguished Flying Crosses and five Air Medals. Lt. Donahoe, who saw action from Guadalcanal to the Philippines, is now a pilot with Pan American Airways.

Spotter Planes Fight Fire

Marines Help Army With Spot Work

VMO-6, OCEANSIDE—Reminiscent of the post-World War I days when de Havillands used to scout for forest fires, this squadron was called on to use its artillery spotting experience to help combat the disastrous forest fire at Camp Pendleton and the adjoining areas to the northeast.

Fire marshals, forest rangers and cameramen were flown over the fire continuously during daylight hours. As the rangers charted the progress of the fire, these charts were placed in message cans and dropped to the fire fighters at the scene of the fire or to the temporary headquarters in the rear area.

At the same time the squadron kept two aircraft available at all times for the 13th armored division of the Army which was holding its annual summer training period. A unique feature of this arrangement was the fact that Army pilots were flying Marine Corps aircraft which were obtained by the Navy from the Air Force.

Capt. A. P. *Storrs III is now the head of Naval Air Basic Training, relieving Capt. Wm. Sinton at Pensacola on 30 June. Capt. Sinton was retired as a rear admiral. Storrs was chief of staff to VAdm. J. W. Reeves, Jr., CNATC.*

RESERVES STREAMLINE SET-UP

Assistant Secretary of the Navy Koehler presents miniature Conway trophy to Capt. Butts, NARTU NORFOLK, as RAdm. Doyle applauds

CO's of winning squadrons, FASRON-65's Sheek, VP-ML-56's Rogers, VA-62-E's Brakefield and VF-62-E's Gunnels, hold Noel Davis plaques

NOT SATISFIED with having produced the most successful machine for Organized Reserve training in the country, the Naval Air Reserve is now turning out a model designed for even more efficient operation.

The new model, which is slated to be in working order at all of the 27 stations and units within the Naval Air Reserve Training Command by 1 January, features a streamlined restyling of the Organized Reserve set-up. Instead of having air groups and squadrons, each Reserve station and unit will now have an Organized Reserve air wing, which will include various types of squadrons and an air wing staff.

The size of the wing will depend on the authorized Organized Reserve allowance for the individual stations and units. Stations such as NAS MIAMI will thus have the smallest wing, those in the class with NAS NEW ORLEANS the next size and stations such as NAS LOS ALAMITOS the largest wing. The plan provides for no changes in previously assigned overall complements for any of the stations, just for a realignment of squadrons.

Under the new set-up, the 27 wings will be composed of 128 fighter squadrons, 41 attack squadrons, 25 composite squadrons, 29 patrol squadrons, 26 transport squadrons, 30 carrier aircraft service squadrons, 27 patrol aircraft service squadrons, and 5 LTA (ZP) squadrons.

Carrier-type squadrons will be smaller than under the previous organization, since many of the officers and men in such specialities as aerology or supply will now be assigned to the wing staffs instead of to the individual squadrons.

Several of the VF, VA, VC, and VP squadrons will specialize in all weather, photographic, antisubmarine, and airborne early warning operations. These squadrons will utilize currently assigned aircraft and train under regular syllabi until necessary equipment becomes available and suitable syllabi are developed.

The air wing staffs at the various stations will be responsible for providing administrative and technical support for the squadrons but will exercise no control over squadron operations. Each staff may be headed by a four-striper—either an aviation or a ground officer—selected for his administrative ability.

In line with the general reorganization, fighter-type aircraft are being reallocated so that each station or unit will operate either *Hellcats* or *Corsairs*. Two stations, NAS GLENVIEW and NAS OLATHE, will have *Bearcats*.

Primary purpose of the reorganization was to cash in on the efficient administration and operation that can be accomplished with smaller, more closely-knit squadrons and to obtain more effective utilization of plant and equipment. Under the new set-up, Organized Reserve squadrons are also brought more into line with the current size of Fleet squadrons.

Since the air wing staff now takes over many of the administrative duties that used to weigh down squadron CO's, the latter will be able to focus their attention on smoother-running squadron operations. The CO's will also have time to work more closely with their personnel. This should lead to high morale and cut down the turn-over that often occurs when the CO is too snowed under with paper work to provide proper leadership.

Concentrating most of the specialized personnel on the air wing staff also will allow both officers and men to obtain advanced training in their specialities without cutting down on the usual support they give to the various squadrons. ACI officers, for example, some of whom will be aboard for each weekend of drill to lend squadron support, may also come together as a group from time to time for the latest word in ACI techniques.

Under the new set-up, different types of squadrons can also be scheduled for drill on specific weekends so that planes can be utilized to the fullest extent. At the same time, the overload on aircraft and equipment, that used to occur, for example, when a CVBG came out for training, can now be avoided. As a result, pilots will have more opportunity to fly and squadron personnel will receive more explicit training.

Asst. Sec. Koehler Gives Awards

On 8 October, in a ceremony at NARTU NORFOLK, the Assistant Secretray of the Navy, the Honorable John T. Koehler, formally presented the Naval Air Reserve's top awards for outstanding work in fiscal 1949 to NARTU NORFOLK and to five Organized Reserve squadrons from Norfolk, NAS COLUMBUS and NARTU JACKSONVILLE. Rear Admiral Austin K. Doyle, Chief of Naval Air Reserve Training, took part in the ceremonies and introduced Secretary Koehler.

Captain W. S. Butts, commanding officer of NARTU NORFOLK, accepted the Edwin Francis Conway Memorial Trophy on behalf of his unit. This trophy is awarded each year to that station or unit under the Naval Air Reserve Training Command that shows the great-

est overall efficiency.

Also present to receive the Noel Davis Trophy, which is awarded annually to Organized Reserve squadrons in the fighter, attack, patrol, transport and service types with the highest rating, were the CO's of the winning squadrons.

LCdr. J. A. Brakefield of VA-62-E, Norfolk, Lt. W. B. Gunnels of VF-62-E, Norfolk, Cdr. Frank A. Sheek of FASRon-65, Norfolk, LCdr. W. G. Clark of VR-73, Columbus and LCdr. C. W. Rogers of VP-ML-56, Jacksonville, each was presented with a Noel Davis plaque. The trophy, itself will be rotated among their squadrons.

NAF Salem Joins Reserve Line-Up

The State of Oregon is in the Naval Air Reserve line-up and proud to be aboard, thank you! NAF SALEM, which is supported by NARTU SEATTLE and is manned by a stationkeeper crew of two officers and 21 enlisted men, was commissioned in August. It is Oregon's first Naval Air Reserve activity, and, as such, will be local headquarters for more than 900 officers and men living in the Willamette Valley area.

Commissioning day was a big event in Oregon's capital city. Governor Douglas McKay, Mayor Robert L. Elfstrom of Salem, and high officials of the Oregon department of the American Legion were on hand to assist Captain A. E. Buckley, Commanding Officer of NARTU SEATTLE with commissioning ceremonies.

Salem residents will remember longest the 20-minute air show, staged by the Navy's *Blue Angels,* precision flight team from Corpus Christi. Making their first Pacific Northwest appearance, the *Blue Angels* put their fast-climbing *Bearcats* through maneuvers, the like of which few Oregonians had seen before. Their exhibition topped off a demonstration of naval air power, which featured 34 TBM's and F6F's flown by Reservists from NARTU SEATTLE.

Navy daughters Tierney, Fox, Emerson, Varian, Kuhn competed for 'Miss Task Force'

Opening of the Salem air facility is welcome news to Naval Air Reservists in Oregon and Southwest Washington. It's about 190 miles and five hours driving time between Seattle and Portland—a long way to go even for "weekend warriors" eager to maintain their aviation proficiency. The centrally-located Salem field will now provide flight facilities not only for the Associated Volunteer Unit (A) at Salem, but also for Reservists in Volunteer Aviation Units located at Portland, Eugene and Corvallis in the Willamette Valley.

Ten planes, two F6F's three SNB's and five SNJ's have been assigned to the Oregon facility. The Navy unit will operate from one hangar at Salem's McNary Field, named for the State's late Senator Charles L. McNary. LCdr. Walter Hug, a wartime Navy torpedo pilot who saw duty with the RCAF prior to Pearl Harbor, is officer-in-charge at Salem. Nine of the enlisted stationkeepers, all rated, are natives of Salem.

Station Round-Up

● NAS ST. LOUIS—CVG-75 wound up the 1949 Reserve carrier requalification cruise schedule in a top-flight manner. Pilots made 230 carrier landings, for an average of 11.5 landings per pilot, and 30 catapult take-offs. Crews kept aircraft availability at a 97.6 average. There were 7 group launches. Feature of the cruise was a joint exercise with aircraft of VF-81-E from NAS MIAMI.

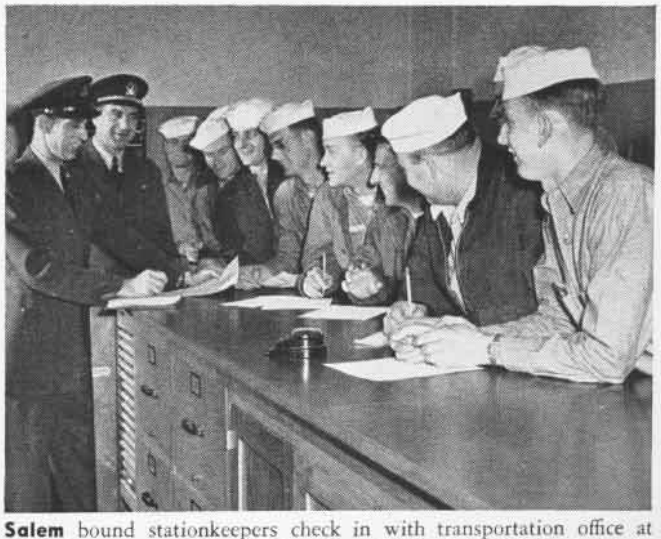
● NAS GROSSE ILE—A flight of 19 F6F's of VF-89-A was brought in by GCA in an unusual exercise. The flight leader contacted the control tower at 1007 requesting clearance for his flight for a GCA approach. GCA made contact at 1009 and instructed the flight to stack over the Windsor, Ontario, Range. The first *Hellcat* landed at 1034 and the last one was safely down on the deck by 1114. The successfully executed problem climaxed a month of intensive training, during which VF-89-A completed 424 GCA approaches for an all-time record for a CV squadron.

● NAS DENVER—A surprise air group strike was conducted on 25 September. The target picked was an obscure lake 142 miles from the "USS Buckley" with Colorado Air National Guard acting as enemy VF opposition. Briefing was conducted by ACI, photo-interpretation officers and the air group coordinator. The "group" was considered very successful in that weather was sufficiently bad to insure traverse to the target, strike completion, and initial retirement before the "enemy" opposition made contact.

● NARTU ANACOSTIA—The Washington premiere of *Task Force* received excellent coverage. In promoting public interest a "Miss Task Force" (Miss Mary Lee Emerson, shown in the accompanying picture) was selected from a group of 11 contestants, all Navy daughters, each of whom was sponsored by a Reserve squadron from NARTU ANACOSTIA. She was crowned at the premiere of the movie at the Warner Theatre, which was attended by Navy notables and which honored naval air heroes of World War II.

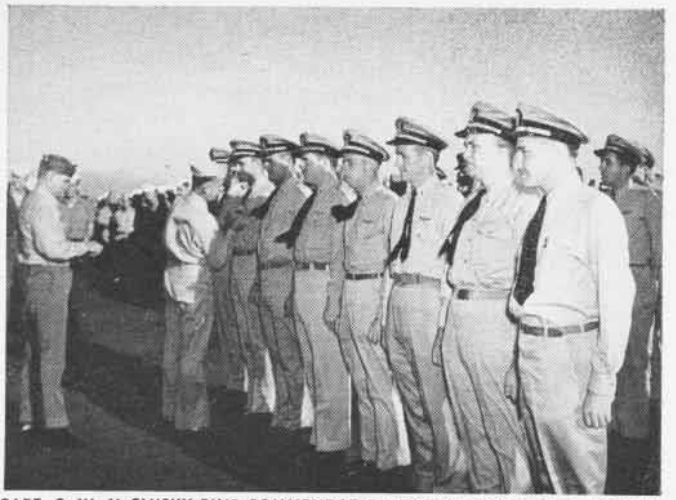
● NAS MINNEAPOLIS—When the Minnesota Department of Health requested this station to fly urgently needed plasma for victims injured in an explosion at a resort near Bemidji (200 miles away), Reserve operations got underway so fast that the plasma was being administered at Bemidji Hospital one hour and 30 minutes after the plasma was received at the NAS.

High ranking civilians and officers come to attention as the colors go up over the Navy hangar at commissioning of NAF SALEM



Salem bound stationkeepers check in with transportation office at NAS SEATTLE as LCdr. Walter Hug, OinC of the NAF, stands by

CREW FINALLY HAD TO ABANDON U-1229 BEFORE IT WAS SUNK BY VC-42.



CAPT. C. W. McCLUSKY PINS COMMENDATION RIBBON ON LT. W. A. TOWLE

COMPOSITE SQUADRON 42

ONE AFTERNOON in mid-April 1943, five pilots were shooting the breeze outside Hangar No. 22 at NAS ALAMEDA when a newcomer came to the door, removed the ragged cigar from his mouth and asked, "Is this VC-42?" "Yes sir, all of it!"

Then to the five men—Lt. Wilburt A. Lyons, Lt. (jg) John B. Watson, Lt. (jg) Quentin O. Kienholz, Ens. T. E. Dunnam and C.A.P. Chute—Lt. Cdr. Stuart Stephens introduced himself as the new skipper and Composite Squadron 42 was in commission.

By June 1, the squadron was a closely knit and well organized unit in training, and by the end of June, those aboard included 26 officers, 5 chiefs, and 168 enlisted men. VT and VF pilots were being drilled in all the tactics appropriate to the aircraft they manned.

Accelerated training had its price—three fatal accidents between 10 May and 31 July. In the one on 16 July, Lt. Cdr. Stephens and his two crewmen, A. D. Gilder, Jr. and A. C. DeWeber, were killed as their plane, struck by Stephens' wingman, went out of control and plunged into Monterey Bay.

On 31 July, VC-42 moved to NAAS HOLLISTER under their new skipper, Lt. Cdr. Joseph T. Yavorsky, to continue training. It was there that VC-42 first had an inkling that the squadron was going to the Atlantic on anti-submarine duty. This scuttlebutt was confirmed when torpedo tactics were replaced by depth bombing practice.

Training continued at NAAS HOLTVILLE and NAAS OTAY MESA. On 24, October, the pilots and combat crews went aboard the USS *Mission Bay* to pass carrier qualification tests during a three-day cruise. Then on 31 October, the entire squadron boarded the USS *Guadalcanal* for an eight-day cruise.

Shortly after their return, VC-42 pilots enjoyed its most gala social event. Lt. Phil J. Berg, ACI officer and a Hollywood agent of fame and influence, arranged a 60-hour program at the film capital for 50 squadron officers. The program included studio tours, parties studded with famous stars, and a round of gaiety which was never to be forgotten—nor was it neglected in the official annals of the squadron—by VC-42.

On 15 November, VC-42 headed for Norfolk aboard the USS *Guadalcanal,* and shortly after its arrival moved on to Quonset for training in anti-submarine warfare. In February the squadron was transferred to Manteo, N. C. and on 25 March went aboard the USS *Croatan* at Norfolk for its first operational cruise against the enemy. The *Croatan,* a *Bogue*-class ship and flagship of its Task Group, was commanded by Capt. J. P. W. Vest and known affectionately as "Ole Crow." It was on the *Croatan* that VC-42 was to justify its eleven months of varied and intensive training.

The *Croatan* and five destroyer escorts (U.S.S. *Huse, Frost, Barber, Snowden* and *Inch*) comprised the task group. On 7 April, this task group and two units of another task group were patrolling near Halifax. At 0325, Lt. Lyons and Lt. (jg) George C. Mabry were launched in their TBM-1C's on a routine night search. At 0359, Lt. Lyons made his initial contact report.

THE TARGET was picked up on radar at a distance of four and one-half miles, and the pilot was homed in by his radioman, F. C. McKee. When the plane arrived over the expected position of the target, there were gun flashes below them and tracer bullets coming up on their tail. Since there was no moon, the submarine itself was not visible. Despite AA fire, the pilot managed to drop a sonobuoy pattern and later a dye marker. In his attempt to drop a flare, however, the pilot released vital equipment in his bomb bay and was unable to make an attack. Because of the failure of the flare to release, Lyons could not sight the U-boat visually and was unable to utilize rockets, his only remaining ASW ordnance.

At 0430, Lt. (jg) Mabry, who had been vectored to the contact at 0359, arrived at the scene of action. The two planes circled, listened to the sonobuoys, but heard no submarine sounds. At 0600, a four-plane killer unit from the task group was launched. By searching in a scouting line, they discovered Lyons' dye marker, then proceeded to circle and listen for sound indications, but they had no success. This was the beginning of the all day hold-down instituted by ships of the task groups in the area.

Late in the day, the *Huse,* one of the *Croatan* escorts, and the *Champlin* gained contact, engaged the U-boat in

battle, and after an effective, coordinated attack sank it at 2137.

The next successful U-boat attack in which the squadron participated was one that took place off the Cape Verde Islands between the 25th and 28th of April. For 13 days both planes and destroyer escorts had been conducting search operations without success, and then at 2038 on 25 April, Lt. (jg) Alex Brokas made a radar contact which indicated an enemy submarine four and a half miles away. H. A. Ermer, the radioman, homed in the pilot to the position of the U-boat. As the plane passed over the spot of contact, the sub was seen in the moonlight just as it was submerging. The U-boat disappeared before an attack could be made.

MEANWHILE, Lt. Cdr. Yavorsky was vectored to the scene of the contact. Both pilots then laid sonobuoy patterns and when no results were obtained, they began an expanding square search.

By 2200, the DE's had arrived to begin a hold-down. Early the next morning, the USS *Inch* obtained a sound contact and fired a hedgehog pattern which produced two explosions. The contact was lost before further damage could be effected, so the ships resumed the hold-down and maintained it all day. At 1800, Lt. Kienholz sighted an oil slick and laid a sonobuoy pattern.

The hold-down continued the next day and the only new development was the increasing size of the slick. On the afternoon of the 28th, Lt. (jg) L. J. Besse reported that the oil slick was approximately 10 miles in diameter.

At 0600 28 April, the DE's again contacted the elusive U-boat at the edge of the slick. More depth charges—another hedgehog pattern—another explosion.

At 1145, the USS *Snowden, Barber* and *Frost* contacted the submarine. They made an all-out attack, but the U-boat did not surface. Oil samples and the reports of three explosions and numerous depth charges led Cominch to list the sub as "probably sunk."

★ THIS IS the twenty-second of a series of short sketches of squadrons in World War II. It is based on reports filed with Aviation History and Research in DCNO (Air).

When the *Block Island* arrived to relieve the *Croatan* the afternoon of the 28th, the skipper sent Capt. Vest a message: "If you don't have a sub, you've struck oil. Stake your claim!"

The *Croatan* returned to Norfolk as part of a convoy, and after another short period of training, VC-42 boarded the *Bogue* which was under the command of Capt. A. B. Vosseller. From the 5th to the 13th of August, planes and surface vessels of the task group reported seven radar and sonar contacts but no success. Then on the 19th, Lt. C. E. Lair caught a surfaced submarine off guard and attacked it with depth charges, but before he could make a second run, the U-boat had disappeared. This marked the first time in the war that a carrier-based plane equipped with a searchlight had attacked an enemy sub.

At 1227 the next day, Ermer, Brokas' radioman, picked up a radar blip at a distance of five miles. Thirty seconds later, Alex spotted a fully surfaced submarine and went in firing rockets in salvos. Then he dropped bombs which hit close to the port side of the target and plumes of the explosions completely enveloped the U-boat. Later, prisoners of war stated that an AA gun and several crewmen were blown overboard by the blast. The submarine tried zigzaging sharply before submerging.

The attack was followed up by other planes of VC-42 coming in. By 1421, the U-boat was again sighted, and at 1434, the crew abandoned ship. Six minutes later, the sub was rocked by internal explosion and sank. Forty-two survivors were picked up by the USS *Janssen*.

This kill was of great importance for U-1229 was the first U-boat equipped with schnorkel to be seen at close range by the Allies. Excellent photographs gave our side valuable information.

On 24 August, the task group tied up at Argentia, and Admiral R. J. Ingersoll came aboard to congratulate and decorate Lt. Lair, Lt. Brokas, and all the crews participating in the recent success.

During the rest of its operational cruise, VC-42 continued its battle against the U-boats. Then on 25 September, the schnorkel experts—for VC-42 had made the only kill of a U-boat in August and had battled schnorkel-equipped subs—were interviewed by three flag officers and went over all the details of battle. It was a great homecoming.

AFTER A short training period, VC-42 headed for the Pacific Theater via the Panama Canal and San Diego, arriving at Pearl Harbor 9 December. Two days later they exchanged 12 TBM-3's for TBM-1C's, and the complement of FM-2's was reduced from 16 to 14. On 2 January 1945, VC-42 sailed aboard the USS *Corregidor* for Eniwetok.

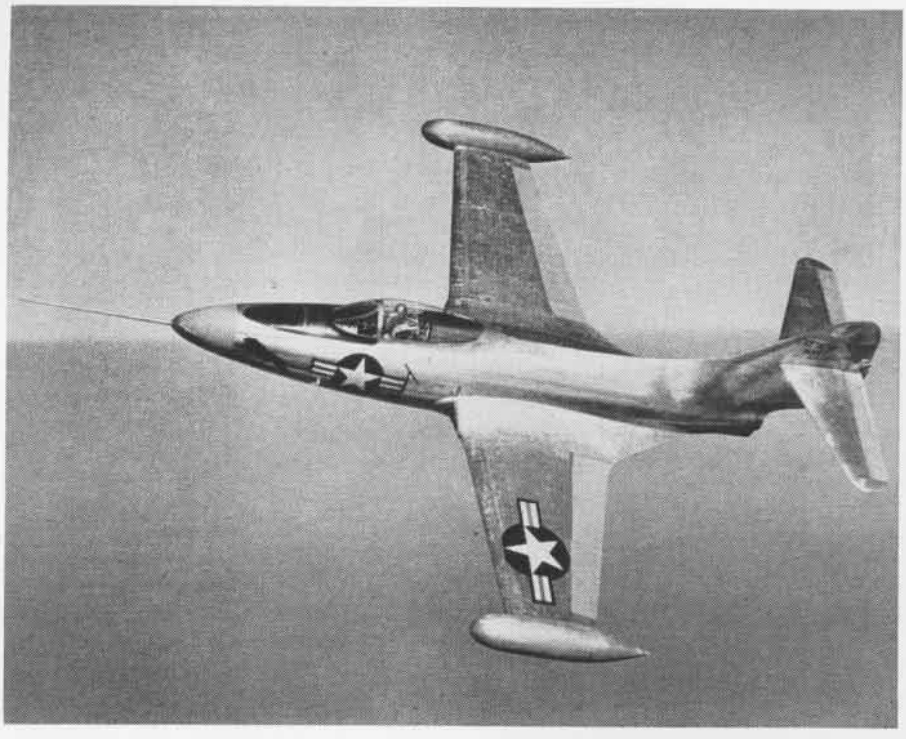
But the anti-submarine warriors were to be plagued with frustration. There were no sightings or contacts on their ASW patrols in the Pacific. All the patrols were conducted so close to land that shore-based aircraft could have done the job. Added to this, VC-42 had to operate in areas east of Eniwetok where the probabilities of tangling with the enemy were slight, if not non-existent.

In May it was decided that VC-42 should be dissolved, its units to be reassigned. And so it was that on 24 May 1945, the squadron arrived at the Golden Gate, little dreaming that for them the war was over. They had played their part valiantly in the Atlantic, and although in the Pacific, they had been forced to stand in the wings awaiting action, they had served there too.

LCDR. YAVORSKY AND LT. LYONS WITH AIR MEDAL WINNER FOCH McKEE

IT WASN'T ALL RUGGED FOR VC-42; THERE WERE PARTIES—AND CAKE

JET JOCKEYS ARE STINGY



LIKE THE passage of time when having a quick drink or two before going home, minutes in jet aircraft can rise up to slap the unwary pilot down, but hard.

With states zipping by below at a great rate the jet ace can no longer sit back and take it easy waiting for the next fix to make its appearance.

If he values his skin, let alone make sure he brings back $800,000 worth of aircraft, he must ask the questions, "How far can I go? How long can I stay in the air? Can I get back with a safe margin?" He has to be stingy with gas.

But he isn't the only one concerned with his welfare. In carrier operations the Command Operations Center (It's no longer CIC), with its finger on many aircraft in the air, has to answer the same questions quickly.

New instruments now in the design state take care of this overall problem and sometime in the future will be included in all new aircraft.

In the meantime, however, a little improvisation has been necessary by the squadrons and ships operating jet-type planes. They have come up with various types of cruise control computers which they submitted to the Bureau of Aeronautics. Although accomplishing the same mission they vary detail. Some of them were described in the April issue of the *Naval Aviation Confidential Bulletin*. Since it is felt that the word on these computers should be scattered as widely as possible, this description has eliminated confidential performance data and only the principles are discussed.

Preflight planning without shortcut aids requires use of numerous graphs and computations. Once worked out it is impossible to change plans in the air to meet varying conditions.

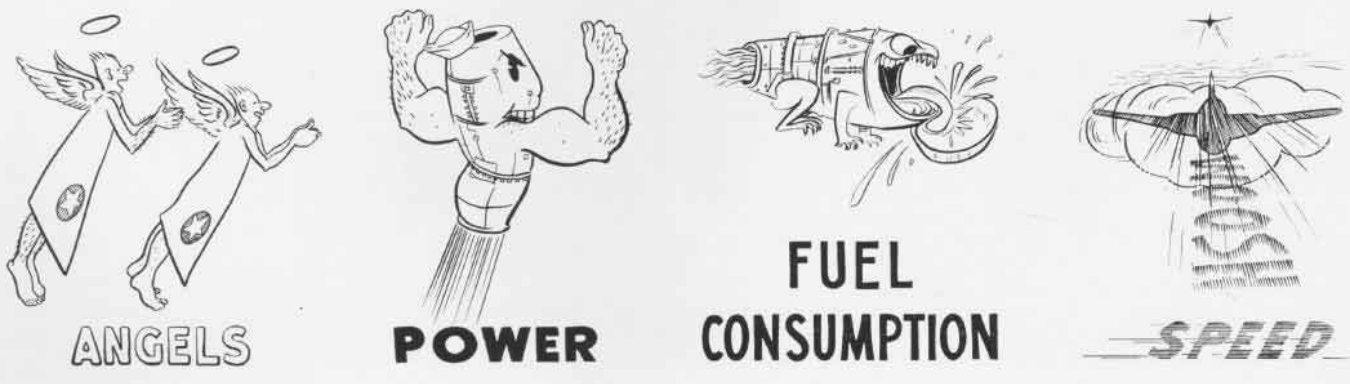
Two cruise control computers for use by pilots, two for COC operators, and one true mathematical chart will be described here.

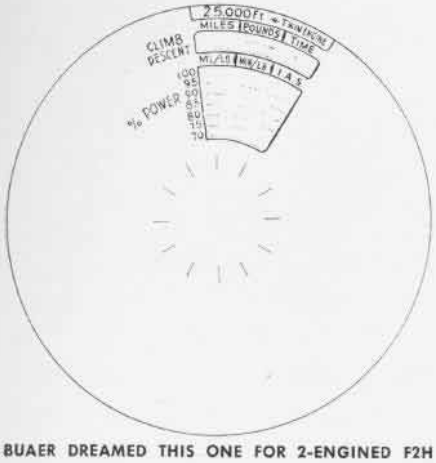
THEY SHOW how long the plane can stay in the air, how far it can go, and at what altitude, speed and power he can obtain the best results. With a flight plan worked out ahead of time, the computers offer a means of checking performance as the flight progresses normally. If conditions vary, the pilot can make the shift with a minimum of strain. By being able to choose alternate landing fields without delay while his plane is drinking fuel at a great rate, the pilot's confidence is increased.

If he is on a local flight, a jet pilot has to be ready to proceed to an alternate field if his own becomes socked in. By keeping a certain amount of fuel on hand, he can proceed to his alternate and take the number of wave-offs indicated by his computer. Obviously, navigation must be right on the button to make the answers worth anything.

Operational Development Squadron Three designed the computer shown in the upper left hand corner of the page. It is intended for use in the Lockheed TO-1 planes. The pilot sets altitude in the "Angels" window. As he climbs out of the field, he can then read time and fuel he will consume in the climb, number of miles he will cover and how long it will take. In level flight conditions the same altitude window will be used and then fuel consumption and indicated air speed can be read for various power settings. Combined with the computer on the outer perimeter is a standard circular slide rule similar to the Mk. VIII.

VX-3's computer, designed for a single-engined plane, was no good for the twin-engined F2H. BUAER consulted with VF-171 at Cecil Field, Jacksonville, a *Banshee* squadron, and developed the computer pictured in the upper right hand corner of the page. On one side, it embodies provisions for data for single-engine operation and on the other for twin-engine operation. As in the TO-1 computer, the pilot sets in the altitude and reads climb and descent data. Fuel consumption and indicated





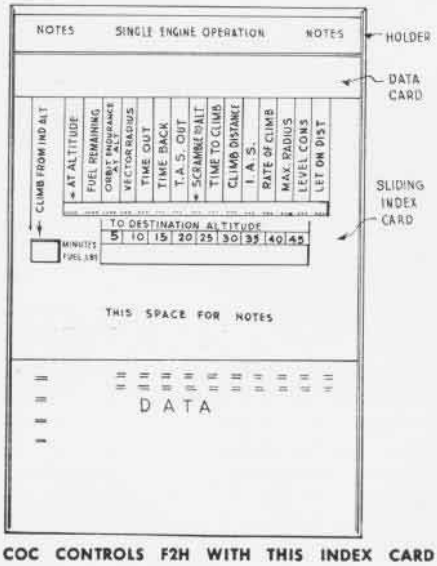
BUAER DREAMED THIS ONE FOR 2-ENGINED F2H

air speed versus percent of power for level flight conditions are readable for the same setting. It should be noted that fuel consumption data appear in both miles per pound and minutes per pound rather than in gallons per hour as shown on the TO-1 computer. From his fuel quantity gage the pilot can quickly determine his range and endurance in miles remaining and minutes remaining. One pilot suggested that percent of scare should appear in inverse proportion to the time remaining.

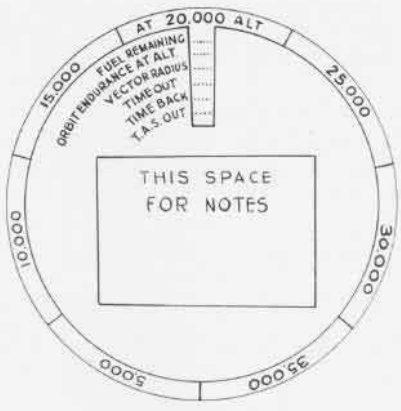
Flying over land in his jet job, the naval aviator is his own boss and master of his fate. In carrier operations, however, he has to share a little patch of landing space with many others whose fates are all tied together. That is where COC comes into the picture. COC must have the same information for its brood in the air as the pilots themselves.

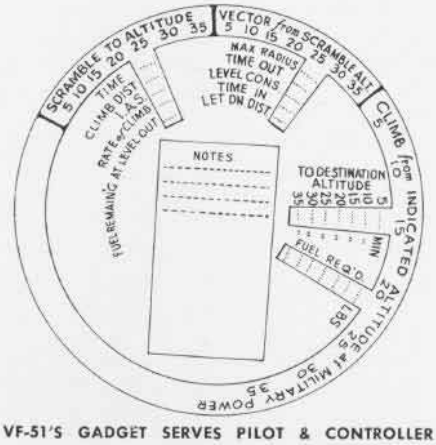
VF-51 made a computer for use with FJ-1 aircraft either by the pilot or the surface controller. Both sides are shown in the middle top of the page.

There are four different problems solved by the computer for the COC controller. In level flight conditions at altitude, he selects the appropriate



COC CONTROLS F2H WITH THIS INDEX CARD





VF-51'S GADGET SERVES PILOT & CONTROLLER

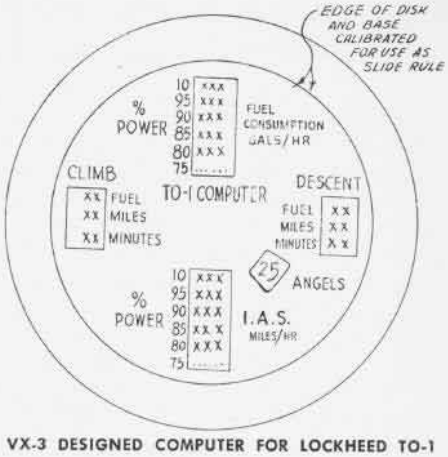
quantity of fuel remaining which has been transmitted to him by the pilot, and then reads off the corresponding data. For a "scramble to altitude" he uses the reverse side. After selecting the altitude to which the plane must climb he reads time, climb distance, IAS, rate of climb and fuel remaining on reaching altitude.

If he wants to vector a plane from the altitude to which it has been scrambled, he sets in the altitude and reads time out, level flight fuel consumption, time back from letdown distance.

For a climb from one altitude to another he sets in the "climb from indicated altitude" index and opposite the new altitude can read the time and fuel required in the climb.

It was found that a circular computer wasn't suitable for presenting data for single and twin-engine operation so a modified version was made. It is a metal or plastic holder containing a sliding index card. All information to be obtained is on one side for the particular operation involved. Notes required with the computer may be printed on a separate card contained in the holder, or may be printed at the base of the index.

Howgozit charts are not new, having been used in multi-engined aircraft on long flights for many years. Their application to single-seat jets is new, however. The circular computers described so far are in reality mechanical tables designed for easy reading. The Howgo-



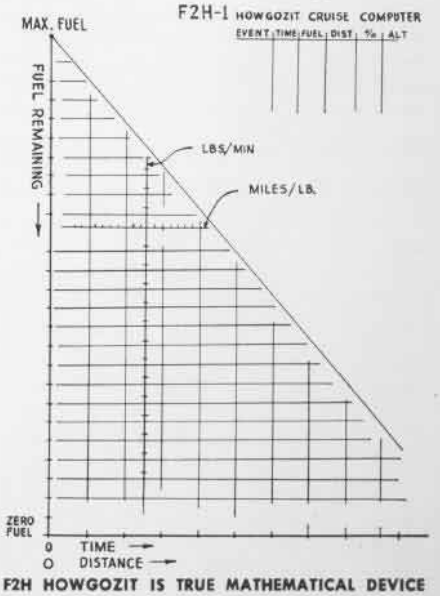
VX-3 DESIGNED COMPUTER FOR LOCKHEED TO-1

zit chart is a true mathematical device. The pilot plots in at least two points which are based on observations for fuel consumed versus time, or of fuel consumed versus known distances covered. Range or time remaining is obtained by using a parallel ruler and drawing lines through plotter points.

There is a tentative plan by the Bureau of Aeronautics to supply operating squadrons with computers such as the second and third types discussed here after favorable comments are obtained and current investigations are completed. They will be made with blank data spaces so that they may be filled in locally, using information from handbooks, and, in some cases, local test results when official test dope is not yet available. In the case of the circular computers, they will be supplied in blank form and will be applicable to all types of aircraft. This is not practicable for the Howgozit, however. It can be made locally.

The Bureau of Aeronautics is anxious to have suggestions from all units and individuals having experience with computers along similar lines.

Jet Pilots—drink a toast to parsimony!



F2H HOWGOZIT IS TRUE MATHEMATICAL DEVICE

Navy Planes In Air Exhibit

P2V Uses JATO for St. Louis Crowds

NAS ST. LOUIS—The Navy *Neptune, Constitution, Banshee* and other planes including Marine *Phantoms* thrilled the largest crowds in St. Louis' aviation history, an estimated 150,000, at the 1949 Air Age Exhibition here Sept. 17-18.

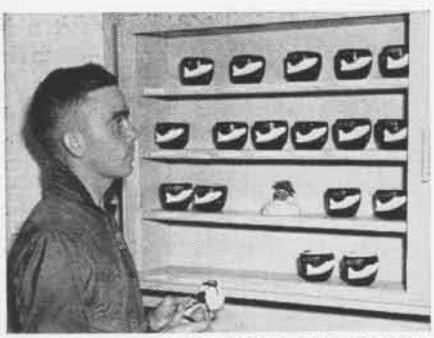
The demonstration included a JATO take-off by the *Neptune, Banshee* altitude climb, flights by the *Phantoms* and mass flights by Navy Reserve squadrons. "Navy participation and cooperation, even to housing some of the Air Force personnel, was a tremendous contribution to the success of the event," MGen. Leif J. Sverdrup, president of the sponsoring agency, the civic Aviation Council, stated. Lambert Field is also the home of McDonnell Aircraft Co., makers of the FH-1 and F2H for the Navy.

Eagle-Eyed Pilot Scores

VF-112 Competition Produces Marks

VF-112—During recent gunnery practice at El Centro, Lt. (jg) John P. Stecker compiled what is believed to be a record for fighter bombing by establishing a 22' average error for eight bombing runs.

During the competitive exercises, the squadron with its F8F-2's made a 61' average error in glide bombing, using Mk 47 miniature bombs, a 40° glide angle and an air speed of about 360 knots.



TALENTED MARINE PILOT WITH CUPS HE MADE

Marines Get Own Java Mug

Skilled Pilot Turns Out Art Objects

MCAS EL TORO—In the old days, a fellow used to have his own private moustache cup and his own shaving mug at the barbershop downtown. Pilots of VMF-311 have the 1949 version of that—individual coffee cups with their names and a raised model of the Lockheed *Shooting Star* which they fly.

The cups were made by fighter pilot 1st Lt. W. R. Mitchell who enrolled in a ceramics class a year ago and learned how to turn out such items. He does everything up to the "firing" process, which he farms out to a Laguna firm. Mitchell designs them and decorates the pieces.

The squadron's coffee cups are all placed in a rack in the ready room. Mitchell is working on another type of mug, larger than the cups, and is producing a mold on a wood-turning lathe, an unusual procedure. In the picture, Mitchell holds a Marine jet pilot in full regalia, which he also made.

Constitution On Big Tour

Big Plane Visits Tropics and Arctic

For a big airplane, the R6O *Constitution* really gets around!

Within a week after operating in the Arctic regions north of Nome, Alaska, *Constitution* #2 was equally at home in tropical Puerto Rico, 18° above the equator.

On its Caribbean cruise, the *Constitution* covered more than 10,000 miles. After the transcontinental hop from Moffett Field to Patuxent, it flew to San Juan via Jacksonville and Guantanamo. At Roosevelt Roads, a capacity load of ComFairWing 11 personnel and gear went aboard to fly to Argentia, Newfoundland. After refueling at Bermuda, the flight proceeded north but a cylinder failure in #3 engine caused it to divert to Patuxent.

Two R5D's from VR-1 finished carrying the 78 passengers and cargo to Argentia. After an engine change, the R6O flew from Norfolk to Washington with 75 SecNav guests. Returning to Moffett, it stopped at Lincoln, Neb., where it was a feature attraction at open house. Thousands of mid-Westerners went through the *Constitution,* standing in line until midnight. After a brief flyover at a music festival gathering at Grand Prairie, Neb., the next day, it returned to Moffett.

HOW'S YOUR RECOGNITION? WHAT'S THIS PLANE?

First F9F's Land on Boxer

Pilot Makes His First Carrier Landing

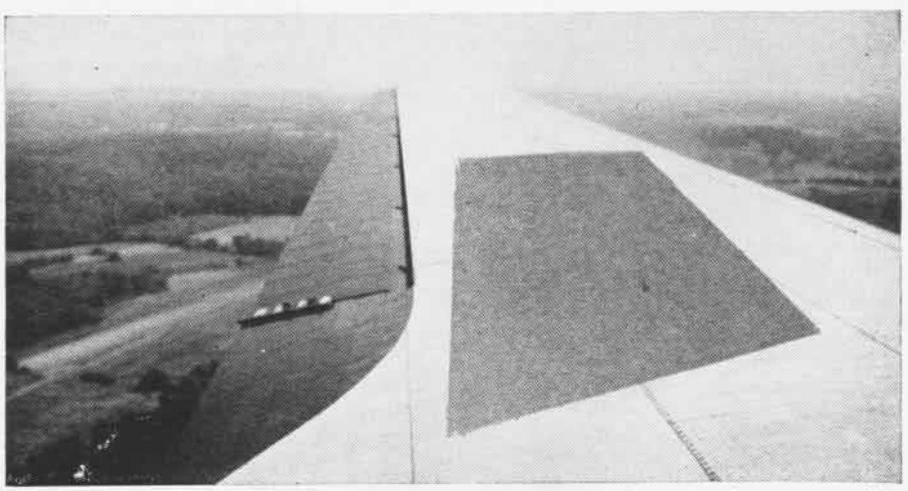
VF-51, SAN DIEGO—During September, this squadron took the F9F-3 *Panther* aboard the *Boxer* off San Diego—the first operational landings of the new jet fighter. Sixteen pilots qualified.

The first plane to come aboard was piloted by Lt. Don Buchanan, administration officer of the unit. For Lt. (jg) Christianson, it was his first landing aboard a carrier in any type plane.

Another "first" racked up by the squadron were the GCA landings made at Arcata experimental station by Lt. Don Engen. In actual instrument conditions, the F9F was landed successfully a number of times with ceilings down to 40 feet and visibilities of less than a quarter mile. The high degree of skill on the part of the GCA unit and the pilot demonstrates the kind of teamwork that makes the Navy click.

Commanded by LCdr. A. D. Pollock, VF-51 has been doing transition flying in FJ-1 *Furies* until its *Panthers* arrived.

● MCAS CHERRY POINT—That "tall fir" from Oregon, one-time world's speed record holder—LCol. Marion E. Carl, flew the Air Force's F-86 *Sabre* at a speed of 700 mph when descending from a hop to 47,000 ft.



STUDY this picture closely. NAS Los Alamitos reports one of its inactive reserve pilots boarded a commercial airliner, settled back for the ride. The takeoff was pretty sloppy. He glanced out of the window and almost passed out but managed to get control of himself long enough to snap this picture. The plane proceeded slow and easy to another field 30 miles away, made an unscheduled landing, none of the passengers the wiser (except one). We mercifully blocked out the line's initials. We're not telling tales—the CAA knows all about it.

TECHNICALLY SPEAKING

ALLOWANCE LISTS UP-TO-DATE

EXTENSIVE progress has been made in the integration and consolidation of Bureau of Aeronautics Allowance Lists. The purpose of this program is threefold:

1. To expand the coverage of all allowance lists so that each of them applies mutually to as many Navy and Marine aviation activities as possible.

2. To keep to a practicable minimum the number of lists in existence by including new material in existing lists which logically should cover it rather than establishing new lists.

3. To integrate methods of maintenance and operating support by enlarging the scope of existing lists so that each list may apply to the greatest possible number of activities.

To date, the following progress, with detailed information concerning the lists involved, has been made in implementing the program.

SECTION "H" EXPANDED—The Section "H" Allowance List, Flight Operational Gear for Aircraft Squadrons, now applies to all Navy and Marine Corps squadrons operating or having aircraft assigned. This expansion of applicability has required the deletion of applicable items of flight operational gear from all operating allowances in Tables of Basic Allowances for Marine aviation activities, and such deletion is now in process.

The Section "H" superseded and canceled the Table of Basic Allowances for Streamlined Squadrons, and this factor will require revision of Aviation Circular Letters 58-49 (Allowances for FASRons and FASRon Supported Squadrons) and 1-48 (Allowances for Self-supporting Squadrons). ACL 3-48 (Allowances for Marine Aviation Activities) will be revised not only to indicate the supersedure of the Streamlined TBA by the Section "H" but also to indicate the extended applicability of the Section "H" list.

PHOTOGRAPHIC ALLOWANCES—The Section "P" Allowance List, Photographic Material for Aircraft Squadrons, NavAer 00-35QP-7, has been published and supersedes and cancels the Section "P" Allowance List, Photographic Material for Marine Aviation Activities, NavAer 00-35QP-5.

In addition to superseding NavAer 00-35QP-5 and authorizing photographic allowances for Marine aviation squadrons, the NavAer 00-35QP-7 Allowance List contains photographic allowances for specific Navy squadrons. As applicable, Aviation Circular Letters 58-49, 1-48, and 3-48 will be revised to indicate applicability of the NavAer 00-35QP-7 list.

HELICOPTER SQUADRONS—The Table of Basic Allowances for Helicopter Squadrons contains Section "A" (Standard Aeronautical and General Stores Material), Section "G" (Shop, Handling and Servicing Equipment), and Section "H" type of material. In this connection the Section "H" Allowance List is applicable to HU squadrons; the revised Section "A" includes allowances of standard aeronautical material common among helicopter models; and the Section "G" for Carriers, Section "G" for Class C and D, and Section "G' for Battleships, Tenders, and Cruisers now contain applicable material for the support of helicopter models.

Accordingly, upon formal publication of the revised Section "A" Allowance List, the TBA for helicopter squadrons will be canceled. In addition, since the TBA for VMO is now also applicable to HMX squadrons, the requirement for the use of the TBA for helicopter squadrons in the support of HMX squadrons no longer exists. In accomplishing these revised methods of materiel support, ACL's 61-47 (Method of support of aircraft operating from aeronautical vessels), 1-48, and 3-48 will be revised as required.

FLOAT-TYPE TBA OUT—The Table of Basic Allowances for Ships Operating Float-Type Aircraft contains Section "A," Section "G," and Section "H" type of material. Float-type aircraft are no longer in the naval aircraft program and, in addition, the vessels to which this TBA was applicable now support helicopters.

The Section "H" Allowance List is applicable to HU squadrons; the revised Section "A" includes allowances of standard aeronautical material common among helicopter models; and the Section "G" for tenders has been revised to include authorized allowances of applicable material for battleships and cruisers. Accordingly, the TBA for Ships Operating Float-Type Aircraft will be canceled upon formal publication of the revised Section "A" Allowance List and ACL 61-47 will be revised appropriately.

TARGET AIRCRAFT SUPPORT—The Table of Basic Allowances for General and Target Utility Squadrons also includes Section "A," Section "G," and Section "H" type of material. The Section "H" is applicable to VU squadrons; the Section "G" for Class C and D contains authorized allowances of applicable material for the support of VU squadrons; and the revised Section "A" contains allowances of standard aeronautical material for all aircraft types supported by such VU squadrons.

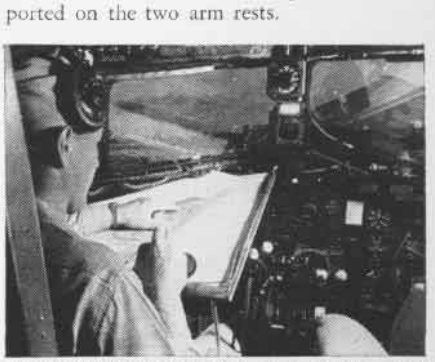
Upon formal publication of the revised Section "A" Allowance List, the TBA for general and target utility squadrons will be canceled. In addition, the TBA for target drone units (TDD) has been superseded and canceled by the TBA for target pilotless aircraft activities (now in the process of distribution). This allowance list authorizes material on a title basis to target pilotless aircraft activities, some of which are administrative units of VU squadrons. As required, ACL's 1-48 and 119-47 (Method of support of the target aircraft program) will be revised accordingly.

● NAS DALLAS—Seven officers and four CPO's from the Uruguayan naval air force took two months training duty here in TMB's and SNJ's.

R4D Pilot Uses Nav Table

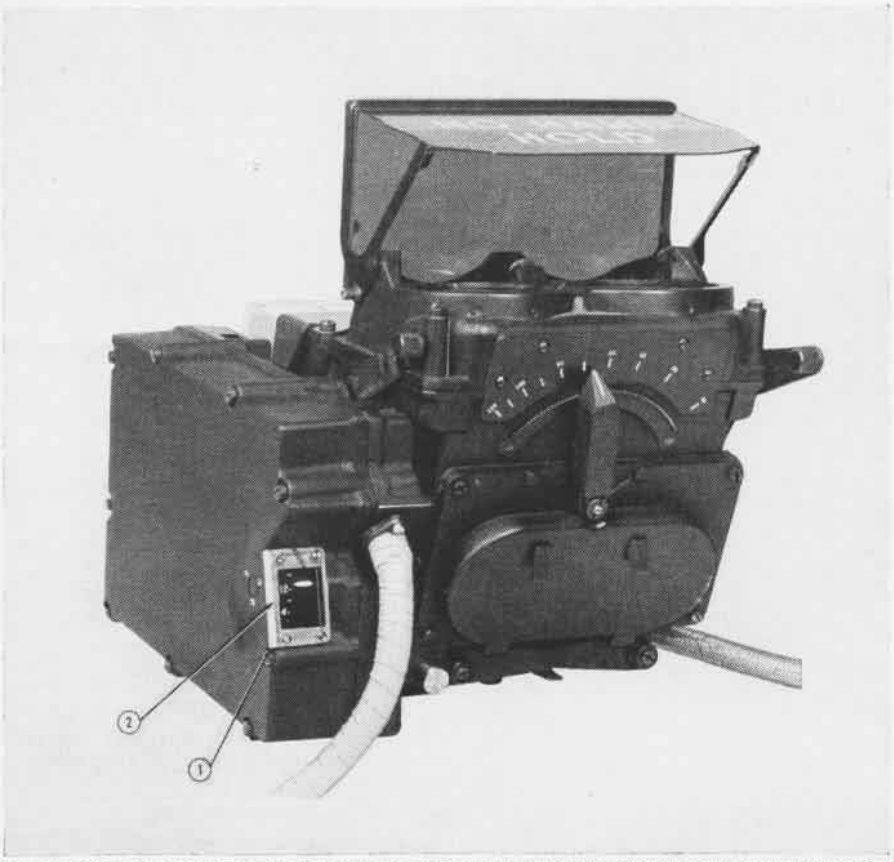
NAS COCO SOLO—This station has developed a quick detachable navigation table which a pilot of an R4D can use while flying.

The plane often takes long over-water flights with only two pilots, so that navigating from the pilot's seat sometimes is desirable. After much juggling of computer and dividers and trying to plot bearings on a chart in the pilot's lap, the table was devised. It does not interfere with any controls, but hooks on at the forward edge and is supported on the two arm rests.



HANDY TABLE HELPS PILOT OF R4D GET FIXES

AVIATION ORDNANCE



NEW RANGE INDICATOR ON MK 18 GUNSIGHT GIVES GUNNER BETTER LOOK THROUGH SMALL WINDOW

New Sight Range Indicator

The sight unit Mk 10 Mod 0, a component of the gunsight Mk 18 Mod 6, originally was issued for fleet use with the indicator showing the range setting located on the side of the sight. This proved very inaccessible when the sight unit was installed in the turret.

To improve this condition, the range indicator was placed on the side of the unit facing the gunner. This was accomplished by placing a window as shown in the accompanying photograph by figure (1) so that the range scale as indicated by figure (2) can be easily viewed.

Sights now in production will have this window incorporated. Sight units previously manufactured, serials 1 to 245, will have this window incorporated during overhaul.

Bomb Director for AD-4's

AD-4 and AD-4Q aircraft now coming off the production line are being equipped with bomb directors Mk 3 Mod 3 for use in dive and toss bombing in lieu of the AN/ASG-10 (bomb director Mk. 1 Mod 2). This bomb director consists of computer Mk 63 Mod 0, altimeter Mk 6 Mod 0, control box Mk 27 Mod 1, and power supply Mk 42 Mod 0.

The new director is, in many ways, similar to the AN/ASG-10 but incorporates innovations in circuitry to improve the operational characteristics of the equipment. The Mk3 Mod 3 may be used to release one type of bomb and two types of rockets during a *single run*, whereas the other type of equipment was capable of releasing only *one* type of projectile at a time. Another improvement is the extension of the altitude limits so that an attack may be started as high as 25,500 feet. Still another improvement is the measuring of angles with accelerometers instead of gyros thereby eliminating restrictions on tactical operations imposed by the possibility of gryo tumbling.

The computer Mk 63 Mod 0 is an electronic computer using two accelerometers, one of which measures dive angle, and the other, pull-up acceleration. The time to target is determined during the initial part of the dive on the target by measuring the time required to descend to five-sixths of the initial altitude. This information, together with estimated barometric pressure at the target (hand set before take-off), plane altitude, dive angle, and pull-up acceleration, enables the computer to release the projectile at the proper instant. With this bomb director, dives can be initiated from a maximum altitude of 25,500 feet, permitting pull-up and release at altitudes as high as 21,000 feet. While dive angles are not restricted, best accuracy is attained at dive angles greater than 25 degrees.

It should be noted that this director solves for trajectory only. Corrections for wind and target motion must be estimated by the pilot by choosing an aiming point ahead of the target along the line of apparent target motion. In order that a correct measurement of dive angle may be obtained, it is necessary for the computer to be aligned as closely as possible with the flight line of the plane. Since the flight line differs from the boresight datum line by an angle of attack depending for any given airplane upon loading, dive angle, and speed, it is necessary to align the computer along some average flight line. This may be determined by taking an average of the various angles of attack of the particular plane, depending on the dive angles and speeds which it is expected to use.

In addition to aligning the computer, the plane must be flown so that the flight line is *straight* and not curved. When using a sight unit with an adjustable pip, such as sight unit Mk 1 and Mods, the pip is raised in an amount equal to the angles of the flight path with respect to the boresight datum line, which will be negative during a dive. The pip of a fixed sight which is aligned with the boresight datum line must be held below the target by an amount equal to the above angle.

Activities servicing this equipment are allowed a test unit Mk 37 Mod 0, stock number J942-T-945-370, and a line maintenance set, stock number J942-S-2810, which are now being distributed for fleet use. The test unit Mk 37 provides a means of pre-flight checking the circuits and operations of the altimeter and the computer. The line maintenance set comprises the various items peculiar to the bomb director that can be quickly replaced in the field. Standard screws, wrenches, washers, resistors, and vacuum tubes are not included in the set.

SKYRAIDERS' NEW BOMB DIRECTOR MK 3 MOD 3

Transportation *de luxe in the Navy's big Constitution was provided the Navy football team when it played Southern California at Los Angeles. The big plane landed at NAS Los Alamitos, its huge space hardly crowded by the men. U.S.C. won the game by 42-20.*

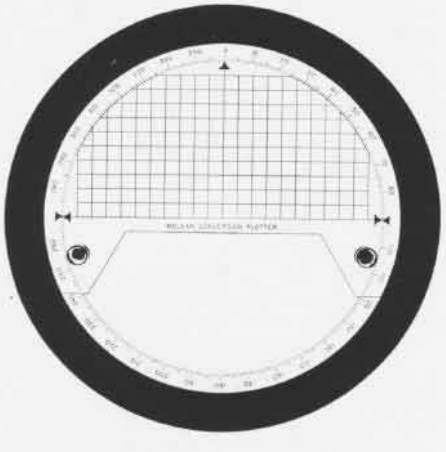
LT. (JG) MCLEAN AND PLOTTER HE DESIGNED

Device Speeds Radar Plot

Rapid determination of range and bearing of radar targets from points other than the observing plane has been difficult in multi-engine squadrons carrying radar operators.

To avoid confusion and speed up the process a conversion plotter was designed by Lt. (jg) C. C. McLean of VP-51 which allows determination of the problem directly from the face of the radar scope. Ordinary range rings and azimuth marks on the face of the scope are not suitable for the solution of these vector problems. A sloppy solution can be had by slewing the sweep—it lacks accuracy. An accurate answer can be had by transferring to a plotting board, but this takes time.

McLean's plotter is detachable and covers a little more than half the face of the scope. It is rotable with two knobs and its lines can be placed parallel to any two reference points on the plot and then switched to line up with any two blips on the scope. Readings are made from scales on the plotter.



▲ *BuAer Comment*—**This is a good working device of proved worth. Lt. (jg) McLean is to be commended for his ingenuity. This is one of a number of different devices which can be devised locally to mount on the CRT face for either conversion plotting or more accurate range determination between various targets. The only drawback to such devices is the fact that small faint target blips may be obscured by having their weak rays blocked by an extra thickness of material over the scope.**

MARINE RESERVES FROM WEST OF MISSISSIPPI WHO CHECKED OUT IN TO-1 JET WHILE AT EL TORO

Marine Reserves Fly In Jet

VMF-311, EL TORO—A class of 13 pilots and another of 20 mechanics from the Marine Air Reserve program were checked out in TO-1 jet operations and maintenance by this squadron during August.

Conducted during the Reserves' two weeks training cruise, the classes featured a shortened syllabus and longer working hours so the men could finish in eight days. Pilots were divided in two wings, flying half a day and getting ground instruction the other. Ground school included high altitude flight, cruise control, compressibility, aviators' equipment, oxygen, navigation, engine and airframe, ordnance, instruments and communications.

In their 10 hours of flying the pilots checked out in aerobatics, section navigation, instrument, bombing and gunnery. The jet maintenance class got theory of jet propulsion and all phases of the J-33-A-23 engine and the TO-1 aircraft.

Names of the pilots in the accompanying photo who took the training are: Top—Richard L. Thoen, VMF-213, Minneapolis; Franklin C. Coker, VMF-111, Dallas; James O. Seay, VMF-215, Olathe; William H. Shomers, VMF-236, Denver; John C. Hundley, VMF-143, New Orleans; Williams W. Rogers, Jr., VMF-216, Seattle; Roger A. Conant, VMF-141, Oakland. Bottom—Judson Flickinger, VMF-123, Los Alamitos; John W. Leaper, VMF-234, Minneapolis; Duke Williams, Jr., VMF-124, Memphis; Thomas W. Gillespie, Jr., VMF-221, St. Louis; James J. O'Reilly, VMF-241, Los Alamitos. Robert R. Norman of VMF-112, Dallas, was missing from photo.

T-Bar Guards CV Catapults

BUAER, in cooperation with Naval Air Material Center, Philadelphia, and the Dupont company, has developed a device to keep freezing rain and ice out of the catapult track on a carrier deck.

The problem became apparent when carriers were sent to northern or Antarctic waters to operate, their catapult tracks becoming fouled up by action of the elements.

The device consists of a T-shaped insert which can be forced down into the catapult track, with the top crossbar of the T covering the track against the weather. It will be made of neoprene, a Dupont plastic substance.

Upon completion, the cover will be given a test on a carrier during the next scheduled cold weather exercise. BUAER also is investigating a proposal to use electric heating to keep the track clear.

Smoke on 'Bat' Shows Hits

VP-25, HAWAII — Having trouble with other guys claiming your gunnery hits? Try the idea adopted by Lt. Jack Purl, head of this squadron's electronics department, to liquidate arguments about whose *Bat* hit the target.

Purl attached Mk 8 smoke bombs to all of the squadron's guided missiles, the smoke trail which follows the birds in to the target leaves little opportunity for a bombardier to lose his missile in flight.

When a missile is lost to the eye en route to the target, it is standard practice, of course, to automatically chalk up as your own the *Bat* dropping nearest the target. The unit has been using dye markers for drop evaluation. This combination of dye and smoke reduces the element of error to a minimum in charting hits.

How to Use PBM Searchlight

VP-40—Squadrons using the L-11 searchlight in PBM-5S operations may get some good ideas from technique developed by this unit.

Best operating results are obtained by checking the installation structurally and electrically a day prior to each searchlight flight, unless flights are scheduled at less than one-week intervals.

The crew member who operates the light is responsible for the preflight check. No major discrepancies have been noted that could not be corrected by these checks. Mainly it will insure that batteries are properly charged, the searchlight will train and elevate and that the beam is fairly well boresighted.

Operators have been given in-flight check-off lists so that all switches will be turned on and batteries will not be completely discharged. About 15 runs have been made in one night hop without harmful effects.

SERVICE Test
INTERIM REPORT DIGEST

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

F2H-1 (202 Hours)

Landing Gear. During 200 hour check of landing gear emergency extension system, landing gear control handle in cockpit failed to remain in emergency extension position, and landing gear would not "free-fall." It was necessary to hold control handle in emergency extension position until gear was completely down. The two arms of the latch had worn so that the latch would not engage serrations of landing gear control slide assembly, P/N 15-6810. *Recommend* that satisfactory landing gear control slide latch be provided.

Empennage Fairing. During preflight inspection, one stud installation, P/N 9M17F5-.110, was found to be pulled through the empennage fairing (access opening 70R). The fairing was cracked at another stud installation. Believe countersinking weakened fairing metal and contributed to failure. *Recommend* that satisfactory empennage fairing be provided.

Stud Installations. Stud installations, P/N 9M17-F7-.350 -.410 -.480, were extremely difficult to fasten after 60 hours of service. On several occasions it has been necessary to jack the doors into place before the stud installations could be secured. Time required to install engine intermediate access doors, P/N 14-11145-1,-2, could be decreased by thirty minutes if satisfactory stud installations were provided. *Recommend* that satisfactory fasteners be provided for engine intermediate access doors.

F9F-2 (194 Hours)

Removal Time Trials. Erection and Maintenance Manual was followed during removal and replacement time trials, but many necessary steps for removal and replacement of major parts were found omitted from instructions. Present E&M Manual contains no information on removal and replacement of engine or accessories in F9F-2.

Rudder Cap. After 40 hours service test, cap on lower section of rudder cracked. *Recommend* that satisfactory cap be provided.

Dive Brakes. When dive brakes were in full down position, the hydraulic pressure would not build up over 200 psi. Dive brake selector solenoid, P/N R83-SVL-12602-2, was found out of adjustment. Lock nut had been improperly safety wired and had backed off approximately two turns without breaking wire. *Recommend* contractor provide adequate inspections during assembly.

Hydraulic System. Grumman Service Bulletin No. 9 (modification of the aileron boost system) was installed on this airplane by the Grumman Aircraft Co. On five occasions the hydraulic system pressure has dropped to 50 psi when aircraft was above 35,000 feet altitude. On four of these occasions the system pressure returned to normal (1500 psi) when aircraft descended to approximately 5,000 feet. On the other occasion the pressure did not return to normal until after the plane was on the ground.

Believe tank pressure (10-psi) is inadequate for Vickers variable displacement pump (Model AA 21334) which was installed during incorporation of Service Bulletin No. 9. Prior to incorporation of this change, failure of the hydraulic system at altitude had not been encountered. *Recommend* that hydraulic system which will function properly at altitudes above 35,000 feet be provided.

AD-4 (130 Hours)

During this period 14 catapult launchings and 15 arrested landings were made. Nose cowl flaps were installed and will be evaluated in conjunction with engine temperature control unit. Test will be continued beyond originally planned 100 hours to properly evaluate new nose cowl flaps and other systems which differ from AD-2.

Ignition Switch. After 19.2 hours, binding post for right magneto lead in switch contact base, P/N AN 3212-1, became loose and caused intermittent engine operation when ignition switch was placed in the "right magneto" position. The binding posts provided contacts between the switch selector and the right and left magneto ground leads when the switch is placed in the right or left position, and are subject to pressure and slide loads when the switch selector is actuated. The serrations in base of binding posts are very small and do not provide sufficient holding strength in the Micarta base. *Recommend* that satisfactory ignition switch be provided.

Generator Warning Lights Generator warning lights, P/N AN 3157-8, cannot be dimmed. They interfere with the pilot's night vision during taxi operations at low engine RPM when the output of the generators is insufficient to operate the reverse current relay. *Recommend* providing generator warning lights that can be dimmed.

Engine Temperature Control. Investigation of erratic operation of engine temperature control unit, Bristol 89200, AN 3161-P5, showed that voltage regulator tube had failed. *Recommend* that satisfactory voltage regulator tube for engine temperature control unit be provided.

Inverter. Main inverter, P/N R17-I-6467, failed after 76 hours. Short circuit in DC series field circuit windings with overheating had caused insulation of windings to become scorched and solder to be thrown from commutator. Aircraft wiring circuits were completely checked for any malfunctioning unit which might have caused an overload on the inverter, but none was located.

Recommend that inverters with service life required by paragraph F-5u of Spec. AN-I-10b be provided and that immediate investigation be made to determine cause of main inverter failures.

Exhaust Stack. After 88 hours, exhaust stack support bracket, P/N 5258899-94, which is attached to the No. 9 cylinder ear and supports the exhaust stack to No. 8 cylinder was found broken just inboard of the attaching holes. *Recommend* that satisfactory exhaust stack support be provided.

Automatic Pilot System. The No. 1 servo amplifier and the amplifier adapter are very difficult to remove and replace because of the inaccessibility of the rack attaching screws. Removal and replacement times are as follows:

Remove adapter—30 minutes; replace adapter—58 minutes; remove amplifier—20 minutes; replace amplifier—50 minutes.

Recommend providing mounting bases for the No. 1 servo amplifier and the amplifier adapter similar to the MT-76/ACR-5 mounting base.

AM-1 (41 Hours)

A previous accelerated service test was conducted on AM-1 aircraft delivered under contract NOa(s)5400. An accelerated test will be conducted for approximately 250 flight hours in order to determine the serviceability of this AM-1 aircraft delivered under NOa(s)-8523 which incorporates numerous factory and service changes.

The following discrepancies are under investigation:

Rod assemblies of dive brake and outer wing flap were bent when aircraft was received.

Safety wire installed by contractor on reset knobs of emergency air bottles (main and tail alighting gear) prevents actuation of emergency alighting gear release system.

Engine driven fuel pump, P/N AN 4102-1-E, was found to be leaking at valve flange gasket after 13.9 hours.

Cowl flaps failed to open after 7.4 hours flight time; discrepancy in left hand main gear scissor switch, P/N 10-4951043.

Oil leakage is excessive from starter pad oil drain.

● NAS SQUANTUM—Due to numerous requests, classes for men desiring to obtain CAA mechanics' certificates were organized and started on 19 January. A CAA manual was purchased by each man and Pilot's Power Plant Manuals were drawn from the Technical Training library. Classes are being held for one hour each week. Typical CAA written examinations are given at each session, followed by discussion of the examination and the home-study assignments.

Fifty-six men have enrolled in the course and attend class regularly. The district CAA inspectors, who have visited the class, submitted a most favorable report to the regional office in New York on work done by the men.

Barriers for Runways?

As a result of a near-fatal accident when a jet made an emergency landing without flaps or brakes and ran off the end of a runway, BuAer is investigating emergency arresting devices for installation on airfield runways.

During the war, the Navy used regular HE-1 arresting gear engines and cables on outlying training fields and at advanced island bases. The jet accident occurred at NAS San Diego and inquiry was made of BuAer ship installations division about any devices the station could secure to prevent recurrence of such incidents.

Conventional shipboard barriers cannot be adapted for shore use, since, under certain circumstances, they are both dangerous to pilot and very damaging to aircraft.

BuAer's research program for years has been trying to find a "universal barrier" that will work with all kinds of planes and speeds. On the point of solution at this time, its principles may be satisfactory for shore adaptation, but its cost will be comparatively great.

Barrier adapter equipment now in use on carriers for jets is not considered satisfactory for runway use for several reasons, including its non-universal character. Undrawn nylon as an energy-absorbing material is not usable because of drastic weathering and temperature effects. In summary, to date, no barrier device has been conceived which would be adequate for all aircraft in a shore installation.

If only carrier-type, hook-equipped aircraft are considered, the following arresting gear arrangements are worthy of consideration, BuAer said. Their success will depend on the pilot's alertness in lowering his hook.

1. Chain-type arresting gear developed at NATC Patuxent River. The cost would be about $10,000. Very simple in its construction, it consists of two lengths of chain, 1500 feet long, laid along both sides of the runway, with a connecting cable across the runway, which the tail hook picks up. The plane gradually picks up more and more chain as it goes down the runway.

Patuxent found this system would stop a TBM going 61 knots in 1160 feet of run and an F7F going 122 knots in 2410 feet.

2. Two types of small, self-contained energy absorbers are under development test for intended installation as additional barrier engines in carriers. These units, when developed, could be installed in pairs to provide an arresting device for about $25,000 an installation. Centerline runout of about 200 feet would result.

3. A limited quantity of standard Mk 4 hydraulic engines can be made available at no cost and could be installed in pairs parallel to each edge of the runway. This would provide an arresting system similar to the HE-1 catapult used for carrier landing training during the war. Runouts would be about 200 feet. Cost of this type installation is $20,000 for foundations. Maintenance and periodic check of controlling air pressures would be required.

BuAer is continuing study of the problem of runway arresting systems. However, at this time, the cost of available devices and the need for several installations on the various runways of a field appear to make the above possibilities economically unsound if considered for use with other than deferred deliberate emergency landings on a preselected runway.

Air Map Locates Crash Sites

VMF-254, El Toro—This photo squadron made a mosaic of the entire Orange county area to help the security officer in locating off-station airplane crashes.

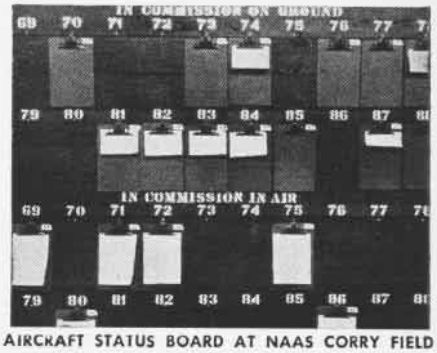
Additional copies of the mosaic were furnished the CO, station operations, station fire department and to the state forestry department, all of whom have found uses for such an aerial map.

Wire Coil Heats Plug Bin

SMS-33, El Toro—Standard procedure to heat spark plug hot lockers is to put an electric light bulb in each, but this costs money and the bulbs burn out. So this squadron worked out a highly efficient heating element to do the job.

T/Sgt. Roy I Parker used a scrap porcelain coil form, fluted on the outside diameter, and on this coiled Chromel A, size 22, .996 ohms a foot heat resistant wire. The porcelain coil form was acquired from electronics department and is about 5"x3".

The amount of wire coiled on it was determined to give a temperature in the hot locker of about 92° F. The heating element was connected to a light bulb socket with a 110-volt AC line of asbestos-insulated wire.



AIRCRAFT STATUS BOARD AT NAAS CORRY FIELD

Plane Status at a Glance

NAAS Corry Field—Carrier Qualification Unit Four has a new system of keeping close tab on its aircraft in commission. By using status boards for each of the five types of aircraft, an instantaneous picture is given of the availability of aircraft. These boards are maintained in front of the squadron duty officer's desk.

The boards are divided into two groups—"in commission on ground" and "in commission in air." Each plane number has a place in each group. When a plane is in commission on the ground and it is taken for a hop, the board is removed from the "on ground" group and placed in the "in air" group with the yellow sheet. Upon return of the plane, its board is again placed in the "on ground" group, provided that no trouble with the plane is encountered.

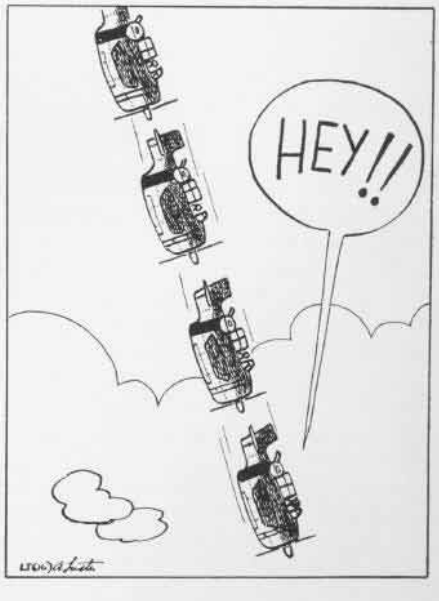
If trouble is found, the yellow sheet is pulled until the discrepancy has been corrected. The planes that are in check have a blank clip board, while planes in commission have a new yellow sheet. Planes that are in Overhaul and Repair have a folded sheet of paper indicating the reason the plane is in O&R.

During the first week of using this new system, it was found that there was a 12% greater utilization of available aircraft.

* * *

GCA BOX SCORE

Total landings, Sept.	12,740
IFR approaches, Sept.	426
Grand total landings	271,982
Grand total IFR	10,612



New Sources of Usage Data

FOR SEVERAL years the Aviation Supply Office has been compiling data on the usage of spare parts in the maintenance of naval aircraft. The purpose is to determine the appropriate range and quantity of parts to be included in the various BUAER Allowance Lists prepared by ASO, and to help determine the amounts of material to be procured and distributed by ASO.

The source of information has been a series of usage reports prepared by operating aircraft activities throughout the Navy. The data from these reports are assembled and tabulated at ASO.

Because of accelerated operations, a scarcity of usage information, and the addition of liberal safety elements, wartime Allowance Lists were highly overloaded. The full use of tabulated usage data now available has allowed an orderly reduction to current lists prepared for peacetime operations. It is believed that the currently published Allowance Lists constitute a realistic compilation of the material needed for maintenance.

The program also has clarified the usage patterns for different types of material which originally were matters of speculation and sharp disagreement among the "experts."

For example, as a result of usage analysis, the current allowances of propellers for a given number of four-engined aircraft are approximately the same as those for the same number of single-engined aircraft. However, before such usage data were available, the propeller allowances for four-engined aircraft established by the "experts" and their "crystal balls" were about four times as large as the allowances for single-engined planes.

The Aviation Supply Office is dependent entirely upon the reporting activities both for submitting the reports and for their accuracy. One of the most noticeable deficiencies has been an insufficient number of write-in items covering usage of parts not listed in the printed report form. Lack of continuous reporting by an activity due to changes in personnel or changes in location also affect accuracy.

For example, certain high usage standard parts may be issued in units of 100. These 100 parts may be sufficient for a year's requirements and no other issues would be made for that period. However, if the activity failed to submit a report during the period in which they issued the 100, the usage for one year as reported to ASO would appear to be zero. There has been no disposition to believe, therefore, that the program operated perfectly.

Early in 1947, the Fleet Aviation Accounting Offices were established in each fleet command. These activities, which had no connection with ASO, were designed to centralize the accounting for operating aircraft activities of the fleet, and to make possible the compilation of cost data covering the operation of the different aircraft in the Navy program.

The material with which these offices operate consists of invoices submitted by appropriate supply officers covering all material used in the maintenance of fleet aircraft, these invoices being accompanied by the stub requisitions by which the material was drawn. These stub requisitions were the same raw material from which the usage reports for ASO were being prepared.

The Fleet Aviation Accounting Offices, therefore, appeared to have startling possibilities as a source of maintenance usage data. It appeared that more satisfactory coverage would be obtained and that more accurate data, free from unfavorable personal elements entering into the usage reports, would be forthcoming. Further, the economy of effort in relieving operating activities of submitting usage data reports, and the economies in printing report forms were obvious. Steps were taken, therefore, by ASO and the two fleet commands to work out an arrangement for making available the potential usage data being obtained by the FAAO's.

All maintenance usage data from fleet activities now are being compiled at ASO from the stub requisitions forwarded through the FAAO for all aeronautical material except Section R electronics material. Since the stubs for electronics materials are not required by the FAAO, these usage reports still are submitted on the combined Section R Allowance List and reporting forms.

Activities under the training command, for which no centralized accounting offices exist, will continue to submit usage data reports for Section B and Section R only, as before. As it takes time to accumulate enough data to justify tabulating, it is too early to draw conclusions as to the value of the new system. A greater amount of paper must be handled at ASO, but this is a small price to pay for the benefits expected. Mere examination of the stubs as they are received makes it clear that a much wider coverage, both of reporting activities and of materials, is forthcoming. Fleet activities will undoubtedly welcome relief from submitting reports.

For the benefit of those activities which still are required to submit usage data on Allowance List reporting forms, such as the various training commands for Section B and Section R material, and the fleet commands for Section R material only, general directions for the submission of usage data are contained in the instructions for the appropriate Allowance Lists. Any questions regarding compilation and submission of these reports should be referred in writing to ASO through the cognizant command.

NANEWS INDEX JAN. TO DEC. INCLUSIVE 1949

INDEX 1949

JAN. TO DEC. INCLUSIVE

JAN. TO DEC. INCLUSIVE

INDEX 1949

Greasing Jams Jack Screw

In two instances failure of the wing flap drive jack screw has occurred during flight on P2V-2 aircraft. The Bureau of Aeronautics believes that an important contributing factor was the application of the wrong type grease to the wing flap drive jack screw. According to page 45 of the *Erection and Maintenance Manual,* the only type lubricant permitted is AN-G-24 graphite.

Since the photographs furnished with the RUDM's to BuAer showed a considerable amount of grease on the failed jack screw, it is entirely possible that this grease on the exposed jack screw caused jamming as a result of dust pick-up, congealing of the grease in low temperatures and drying of the grease after long use.

These jack screws are chrome plated and require no lubricant other than that listed in the *Erection and Maintenance Manual.* The use of a lubricating vehicle to facilitate application of the powdered graphite is permissible, providing it is of a type which will evaporate without residue within a few hours and not cause corrosion of the bronze nuts or of the chrome plated jack screws.

Unleaded gasoline or a mixture of unleaded gasoline and kerosene may be used if it is too difficult to apply the powdered graphite in the dry state.

A comparison can be drawn between this item and the door lock on an automobile. No one would ever consider squirting oil inside the car door lock to facilitate key operation after once having had the experience of being locked out of the car on an extremely cold morning because congealed oil prevented turning the key.

Air Block Endangers Lives

Routine inspection of multiplace life rafts for patrol planes at NAS San Diego revealed an embarrassing situation which might have proved fatal had the personnel been forced to use one of the rafts.

The CO_2 manifold, which is used to inflate the large raft, was found to be inoperative due to a restriction, BuAer was advised. The routine check-up found the discrepancy before any damage was done and holes were bored in the raft so it could be inflated. BuAer recommends that such inspections be made, as required by technical orders, to be sure life rafts will operate when an emergency arises.

● VR-2, Alameda—First demonstration of two-way airborne teletype was staged during an Alameda-Honolulu flight. Newsmen transmitted stories to their papers en route.

Eye Shield Aids in Training

USS Saipan—This carrier has worked out a substitute for the amber windshield-blue goggles type of instrument flying device which it feels is both effective and better adapted for flying.

Drawbacks of the standard device I-F in the SNB-JRB included difficulty of installing and removing the colored plastic sheets in the windshield while flying, visibility restrictions during take-off and landing, inability of the pilot to revert quickly to full contact in emergency, and blind spots for the safety pilot due to near opaqueness of the sheets viewed at oblique angle.

The *Saipan* designed a long shaped visor out of orange plastic sheet material and attached it to the blue lumerith goggles. The visor is shaped to allow the pilot full view of the instrument panel from either seat, but prevents his seeing out of the front or side windshield.

The device can be worn for an hour or more without causing undue pilot fatigue or discomfort and earphones can be worn over the elastic band of the goggles with no discomfort. ComAirLant reported the amber sheets on the windshield were difficult to keep in place in fighters with the cockpit canopy open.

AMBER 'BLINKERS' FOR PILOT MADE BY SAIPAN

LETTERS

SIRS:

Please accept my congratulations on the occasion of the 30th anniversary of the NAVAL AVIATION NEWS.

The October 1949 issue is typical of the high caliber work which we have come to expect of you and your staff. It is my sincere hope that Naval Aviation News will continue to play its role in disseminating material of interest to aviation personnel for yet another successful 30 years.

J. W. REEVES, JR., VADM.
NAVAL AIR TRAINING COMMAND
PENSACOLA

SIRS:

Would appreciate it if you would correct error in your September number, regarding designation of Aviation Pilot #1.

I, Robert T. Cupples, USCG Ret., ACMM, hold No. 1 Naval Aviation Pilot for heavier than air, U. S. Navy.

Entered aviation in 1914, U. S. Navy, resigned in 1923 as Warrant Machinist. Entered USCG aviation in 1935 and retired in July 1946.

ROBERT T. CUPPLES.
3540 9th St., S.
St. Petersburg, Fla.

¶ Reader Cupples refers to story from NAS San Diego claiming Lt. Winston A. Blizzard was the #1 NAP. Blizzard was a white-hat NAP back in 1921. BuPers records show that Cupples enlisted in 1909, made Warrant Machinist for aviation duties in 1917 and was designated a seaplane pilot 30 Jan. 1919. On 15 July 1919 he made Chief Machinist, taking him out of the enlisted ranks. Naval Aviation History has no records on NAP's, so Mr. Cupples' claim stands unless somebody else can prove prior designation.

SIRS:

Here's one slant on unification. When Gypsy Rose Lee appeared with the Royal American Shows at the Alabama State Fair in Birmingham, she brought about complete harmony *(see picture)* between Pfc. Robert C. Bryant of VMF-541, which trains at NAS BIRMINGHAM, and Curley W. Jones, QM3 at the station.

Both were in agreement that having the dancer around was a definite asset.

More than 100,000 people saw the Marine and Navy aviation exhibits during the one-week fair.

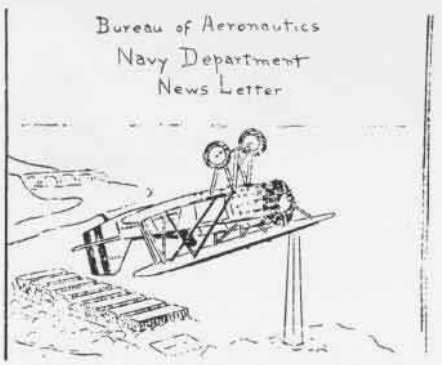
COMMANDING OFFICER
VMF-541.
NAS BIRMINGHAM.

SIRS:

Thoroughly enjoyed the October 1949 article "News Letter Grew With Navy" but I've got to take exception to a statement in the very first paragraph.

Your reference to the first cover picture on the News Letter describes a stencil drawing as "an F3B flying upside down." If my recognition is still active, it's an F6C-4!

A. A. SPROULE, LCDR.
NOTS INYOKERN, CALIF.



¶ Research proves Desertman Sproule's eyes are good and we are wrong. It also reveals an interesting story about that 1931 picture. The drawing was made from a photo of Lt. M. B. Gardner (now Rear Admiral) flying upside down over Washington monument. Lts. Gardner, A. P. Storrs and Fred P. Trapnell, known as "The Three Flying Fish" were engaged for a year in flying an F6C-4 borrowed from NACA to study inverted aerobatic flying.

The *News* said "nothing to compare with the variety and excellence of the 'back' flying of this aerobatic group has ever been seen in this country." The trio did inverted pullouts from a dive, inverted snap rolls, inverted outside spins and outside loops to get technical data on load factors required for fighters. Capt. Storrs is now chief of staff at NATC Pensacola and Capt. Trapnell is the Navy's leading test pilot and head of NATC Patuxent River.

● NAS CORPUS CHRISTI—Wasps were found in the static air inlets of *Privateers* here. The insects might cause false readings of the air indicators so a sharp lookout has been posted for their nests.

● VA-174—Although 70% of its pilots were new, this squadron scored an average of 84.6 feet in dive bombing competition—lowest score on record at ComFairJax since that command has been in existence.

CONTENTS

● THE COVER

The ability of the F8F to get in and out of tight places makes it a natural for Santa Claus, hence this month's cover photo from NAS Norfolk's photo lab. The model was Thomas H. Lewellen, ADAN. Photo direction by C. U. Ashley AFC, and taken by E. H. Sengstacken AFAN.

● RECOGNITION QUIZ

(Inside back cover)

Top—Chance Vought XF7U-1 Cutlass, one of the easiest planes in the air to recognize with its twin rudders. Long pitots are for experimental purposes.

Lower—De Havilland 108 Swallow also has swept-back wings but a single rudder. It was designed to explore near-sonic speeds.

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● The printing of this publication has been approved by the Director of the Bureau of the Budget, 10 June 1949

NAVAL AVIATION NEWS

Published monthly by Chief of Naval Operations (OP-501) and Bureau of Aeronautics to disseminate safety, survival, maintenance and technical data. Air mail should be used if practicable, address to: Chief of Naval Operations, Naval Aviation News, Navy Department, Washington 25, D. C. Direct communication can be made to Naval Aviation News, Room 4D356, Pentagon Bldg., office phones 73685 or 73515.

SWEPT-BACK WINGS

High speed jets of today almost all have wings with considerable sweep-back to delay formation of shock waves. This month's recognition quiz shows both English and U.S. Navy planes with this feature. Answers appear on last page.

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