NAVAL AVIATION NEWS

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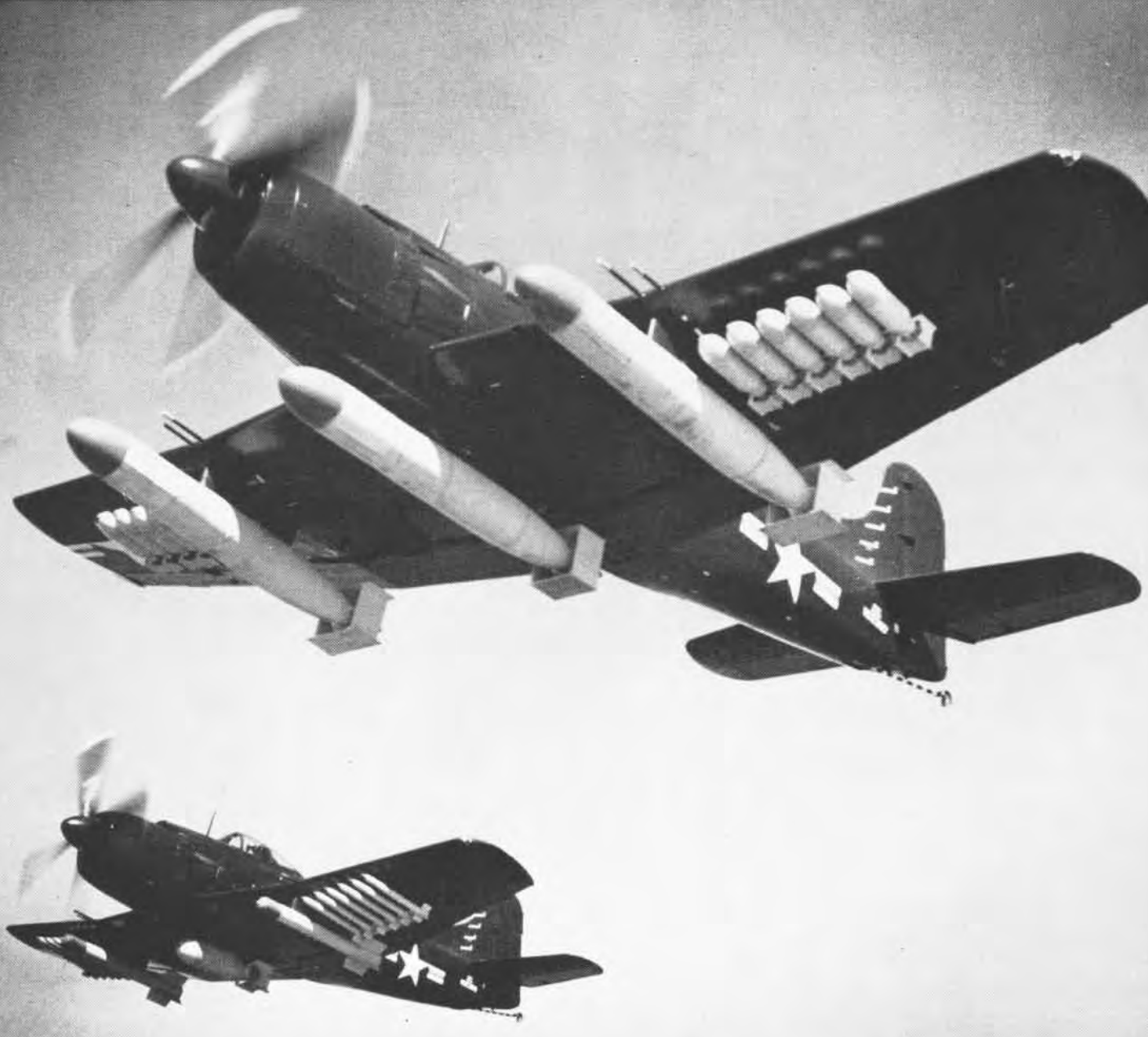


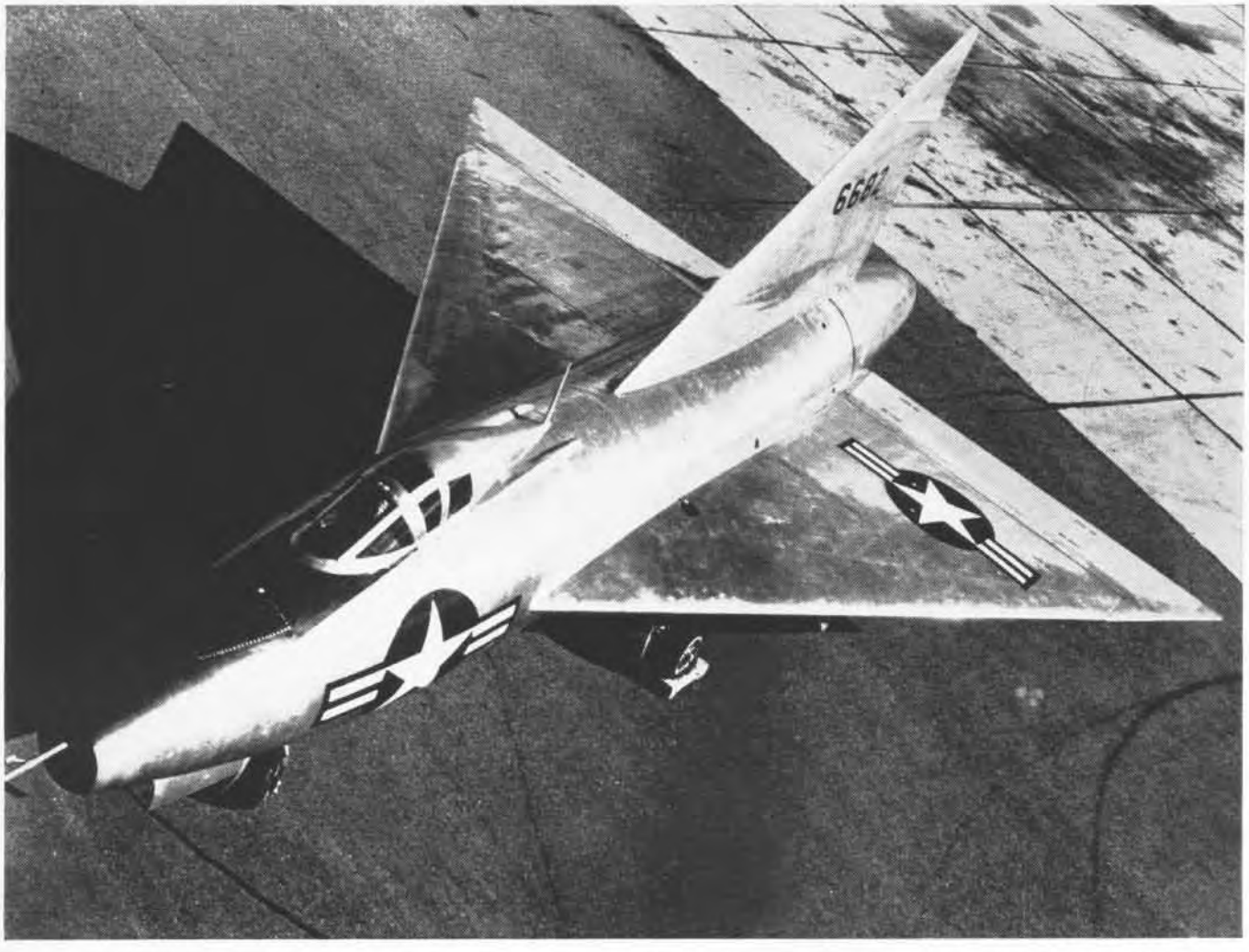
Four Long Years

Radarman Training

NavAer 00-75R-3

JUNE 1949

RESTRICTED



JET BUGGIES

The delta wing is a dead giveaway to the aircraft at the top; the lower one is wearing a coat of paint for the first time. *Answers on last page.*

NAVAL AVIATION NEWS
JUNE 1949 NO. 294

AFTER FOUR LONG YEARS . . .

Lt. (jg) Van Ripple opens his eyes in a new world of aviation after a helicopter picks him off of his lonely island in the ocean

IT WAS on the coral and cocoanut-studded island of Bongo Bongo in the Pacific. The time was 1949, but time did not mean much there to the natives—or to the one white man on the isle. For Lt. (jg) Wink Van Ripple had long since lost track of time from the day when his F6F, its gas line creased by a Jap 7.7 mm bullet, flopped with a spine-wrenching splash in the surf offshore.

That was in 1945. It was in the closing months of the war, but Van Ripple did not know it. In fact, he still did not know the war was over because news travels slowly between coral islands, even in peacetimes.

So it was a sunny day in 1949 that a strange apparition with a crooked black fuselage and two fluttering rotor blades flew over Bongo Bongo and lowered a cable and sling to rescue the bronzed aviator from his island prison. It ended four long years of isolation.

NAVY USES MANY F-80 JETS AS TRAINERS DURING INTERIM PERIOD

XTB3F-1S WITH RADOME, CALLED 'GUARDIAN' FLIES WITH AN XTB3F-2S

Jet Age Reached Navy During Pilot's 'Visit'

MANY WERE the questions on Van Ripple's lips as he got aboard the helicopter, for it was a helicopter although fantastic compared to those he saw before his 1945 dunking. It had two rotors, for one thing. Its fuselage was big enough to hold two or three of the helicopters Van Ripple last had seen in Lakehurst.

Four years on a desert island is not a long time, but in those four years naval aviation had taken a lot of steps forward while Van Ripple's life stood still. The helicopter pilot tried to bring the recluse up to date about the end of hostilities, the atom bomb and aviation of the day. He had not realized how far ahead the Navy's air arm had moved and the new planes it was flying until he began answering Van Ripple's questions.

"What kind of a beast is this you're flying," the rescued man demanded, looking around the roomy fuselage, "We never had any of these things when I was flying off the *Lexitoga*."

"No, I guess the Navy's got a lot of new planes you haven't seen," the helicopter pilot told him. "Four years is a long time. Last time you did any fighting, we were flying F6F's, F4U's and FM-1's. You oughta see what the Navy's fighter stable looks like today. Better than a dozen."

WINGTIP TANKS BOOST RANGE OF FJ-1'S OF VF-51 NEAR MT. RAINIER

"AREN'T WE still flying *Hellcats* and *Corsairs* any more?", Van Ripple asked.

"Yes, the Reserves are and some fleet squadrons and Marines used a new *Corsair* F4U-5. You remember the F8F *Bearcats* that were just beginning to come out when the Japs surrendered in 1945? Well, we got a lot of them, but those two are about the only propellered fighters we have today. It's all jets now."

A puzzled look creased Van Ripple's brow. "Jets? What are they?" he asked. "Seems to me I heard of them in Germany."

"Brother, you have been gone a long time," the pinwheel pilot said, "The Navy's lousy with jets now, even some patrol planes have 'em. No props. Just suck the air in the front end and squirt it out the back.

"The Navy tried out jets on carriers and found they work out fine. The FH-1 and F2H-1 by McDonnell, the F9F-2 and -3 by Grumman and the FJ-1 by North American all have what it takes. But that isn't all the new fighters we got since 1945, brother. Some of 'em we haven't many or any of, but they came out in droves right after the Japs quit fighting. They'd been in the works during the war and after the war they began popping off the assembly lines.

"Why Chance Vought alone had three, the XF5U-1 that looked like a flying saucer with props, the F6U jet and a dilly called the F7U. That last one ain't got a tail but it flies like hell on two jet engines. We got a two-man fighter, even, the F3D by Douglas El Segundo . . . even bought a few Lockheed F-80's through the Air Force."

"I don't know what you're talking about, mister, most of those names don't mean much to a cocoanut-picker like me," Van Ripple commented. "Got any other new ones?"

The foregoing fictitious dialog between "Van Ripple" and the helicopter pilot is just a way of calling the attention of NEWS readers to the fast strides naval aviation has made since the war ended four years ago.

The helicopter pilot could have told the rescued man about a lot of new planes. If he could have stood on the line at Muroc or Patuxent River for a little while he would have seen a veritable parade of planes go by, some to fly a little and then be discarded, others to make the grade and win big contracts for the aircraft companies which designed them.

The patrol plane lineup would include such new "faces" as the versatile and powerful P2V, the P4M and P5M by Martin, a land and seaplane respectively, and even a wheeled

version of the old standby PBM. No longer do many naval aviators fly PBY's, PV's, PB4Y-1's, PBJ's or PB2Y *Coronados*.

The picture has changed also in torpedo bombers. The Navy abandoned the three-man TBM and TBF and replaced them with single-place attack planes like the AD and AM, with the AJ and XTB3F coming along also.

Scout bombers and observation planes are almost ancient history. The war-tried SBD, SB2C, SC-1, OS2U, SO3C are all but gone. Helicopters have replaced float planes on cruisers and battleships for spotting and the attack planes are doing the dive-bombing as well as torpedo dropping.

ALTHOUGH not so numerous, changes in other classes of Navy planes also have been made since the war. Take transports. Most of them still are R4D's, R5D's and R5C's, but new ones are on the horizon. Two Lockheed *Constitutions* are flying for the Navy, plus a new post war JRM-2 *Caroline Mars* seaplane. Plans call for the Navy to get some R4Q *Flying Boxcars* from Fairchild.

No new training planes are being used, but the system of using them changed after the war. Instead of launching cadets in N3N's and N2S's, the Navy now starts them out in SNJ's, then graduates the pilot right into operational-type planes. The jet *Shooting Star*, labeled TO-1, is a transitional trainer until squadrons get their own Navy types to fly.

Our returning hero from Bongo Bongo would notice a big difference in the helicopter lineup too. Helicopters have really come of age in the fleet in the past four years. They are fast replacing plane guard destroyers in picking up pilots ditching off carriers. The float plane already is a casualty to the versatile pinwheel. Such machines as the HRP-1 *Flying Banana* which rescued Van Ripple, the Bell HTL, the HJS Sikorsky, and HJP by Piasecki and the HJD McDonnell are all types unveiled after the war.

There are a number of miscellaneous planes around the ramps from war days, like the JM-1 *Marauder*, JD-1 target tow plane, JRF, J2F, JRB, R5O, and SNB. Since the pressure is on fighting planes, fewer changes and new types are brought out in the utility field. A new Grumman amphibian, the JR2F, is in the works.

In dirigibles, a new N-type blimp was announced since the war as postwar antisubmarine work brought blimps again to the fore. Two even operated off the CVE *Sicily* in the Caribbean maneuvers. Two Douglas research planes, the D-558 I and II, are flying in the near sonic zone.

If our marooned hero, Lt. (jg) Van Ripple could pay a visit to the waterfront he would see a lot of new names on the ships that are carrying the Navy's new planes around.

MANY REFINEMENTS PROTECT THE PILOT OF NAVY JETS LIKE THE F2H

The twenty *Essex*-class CV's that ended the war are either in mothballs, or as in the case of the *Saratoga*, at the bottom of Bikini atoll. Heavyweights of the carrier fleet today are the CVB's *Midway*, *F. D. Roosevelt* and *Coral Sea*. Backstopping them are the CV's *Philippine Sea*, *Valley Forge*, *Princeton* and *Kearsarge*, plus three light carriers, the *Cabot*, *Saipan* and *Wright*.

During the war, the Navy had 71 CVE's, but most of these were sold for scrap or laid in mothballs soon after powder smoke cleared away. Today's fleet only has a handful of newcomers like the *Badoeng Strait*, *Siboney*, *Sicily* and the *Rendova*. The CVL's work with the training command and do special jobs like qualifying jet squadrons to operate aboard a flattop.

The vast array of seaplane tenders, aircraft repair vessels and crash boats which had their own jobs to do in wartime naval aviation has for the most part disappeared although a few of the former remain. One, the *Norton Sound*, was converted as a test ship for launching various guided missiles.

LSO BRINGS BLIMP ABOARD CVE DURING CARIBBEAN MANEUVERS

AIRCRAFT CARRIER CAN EXTEND RANGE OF ANTISUBMARINE AIRSHIPS

ELECTRONICS TRAINING GROWS INCREASINGLY IMPORTANT IN NAVY

ENGINE CHANGE IN A JET SIMPLE OPERATION ON CVE HANGAR DECK

Swept Wings Boost Air Speed of New Aircraft

THE FOUR-YEAR period since the war has seen many changes in airplane design. Sweptback wings are appearing in such planes as the F7U and the D 558-II, the former also without a fuselage or tail. Combination jet and turboprop engines are in the offing for other new planes. Ejection seats and new high speed parachutes are being developed to rescue the pilot from his faster plane. The side-by-side cockpit of the two-man F3D provides an escape chute for its pilot and radarman to dive out through.

Thin wings are a must on new Navy jets, reducing the gasoline capacity of wing tanks and forcing supply relocation in the fuselage or in wingtip tanks. Armament on planes is still the familiar 20 mm. cannon of wartimes, for the most part, plus rockets. Changes in this line have been fewer than in new plane types to carry that armament. Planes likes the AM-1 just can carry more of it.

New engines to give planes more and more speed are coming out. Half a dozen different jet engines have made their appearance since the war to push aircraft well above the 600 mph. mark. Most fighters use the axial flow J-34 and J-35 while the British-developed J-42 *Nene* centrifugal flow engine is going in the F9F-2.

New, more powerful gasolines were perfected and a new cheaper jet fuel developed for use in both Navy and Air Force jets. The demand for speed also has stepped up research on such engines as ramjets, pulsejets, rocket and afterburner installations, for planes or guided missiles.

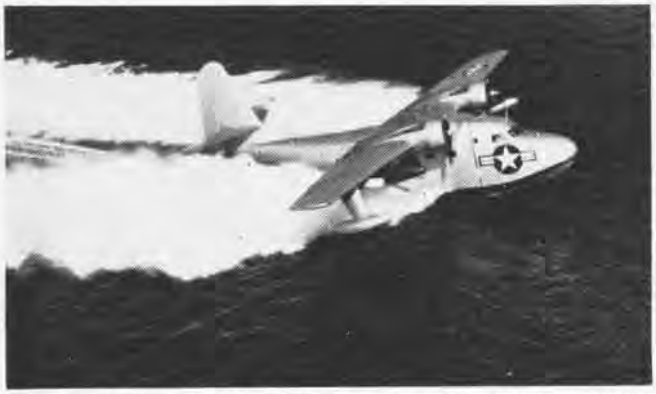
INITIAL worries over the short life of jet engines, exorbitant fuel consumption and fighting tactics to be used are beginning to be ironed out.

Heavier planes are requiring bigger catapults and stronger arresting gear, plus stronger carrier decks and elevators. During the war the biggest planes to take off from a carrier were Doolittle's B-25's, but the Navy eclipsed that when it made several launches of P2V's with heavy bomb loads to establish their ability to carry an A-bomb great distances if necessary. JATO, a wartime development, really came of age in the past four years as an assist in getting heavily-loaded planes off the deck or runway.

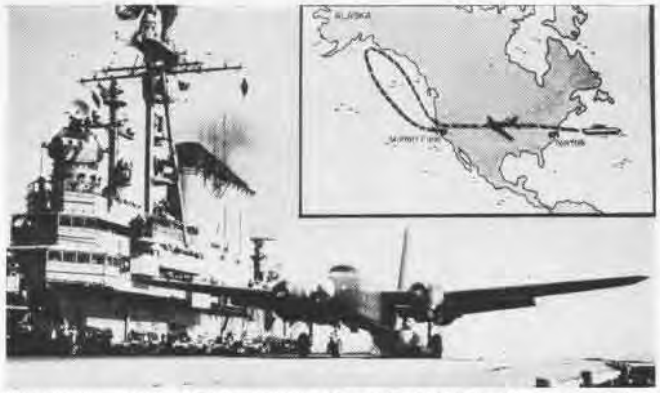
In line with the A-bomb research, the Navy has developed new ship formations for its carriers to spread them against such an attack. In the Caribbean exercises, a simulated A-bomb attack was able to disable one carrier temporarily.

The Navy did a lot of fighting in Alaska and the Iceland areas during the last war and it isn't letting its cold weather "know-how" lapse. Frequent excursions to the frigid zones by carriers and seaplane tenders and land-based cold weather operations in Alaska and Newfoundland have helped to keep naval aviation toughened up to problems of polar war. The first R4D's to take off from a carrier deck were launched with JATO off the CV *Philippine Sea* and flew to icy runway landings on the Antarctic continent.

Just as Naval Aviation took a long step forward between World War I and II, so has it progressed ahead in the four-year period since VJ-day. Unsettled international conditions have kept the program moving forward since that time, in contrast to the disabling drop-off of activity after the first war. In addition to keeping a fast fleet in readiness in mothballs, the Navy has kept its combat pilots in flying trim through a comprehensive Air Reserve program.



NEW GRUMMAN ALBATROSS JOINS RANKS OF VERSATILE NAVY AMPHIBS



P2V SHOWS LONG RANGE, FLYING OFF CVB MIDWAY TO ALASKA AREA

AND THERE I WAS ....

Tack For Tact

A MARINE CAPTAIN landed behind a brand new *Corsair* at Norfolk. The *Corsair* was taking its time down the taxi-way, and the Captain had an appointment. When, about half way to the tower, he noticed the F4U hadn't opened its cowl flaps, he picked up the mike and was caustic.

"*Corsair* on taxi-way, the manual points out that smart boys open their cowl flaps while taxiing."

The F4U pilot politely thanked the good Captain, and the cowls opened. About that time the tower asked for the *Corsair* pilot's name. "Admiral ——— from ———," was the answer.

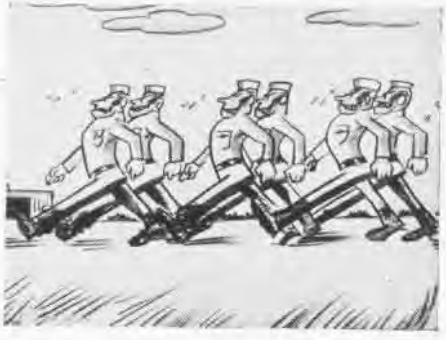
As the Admiral parked in front of the tower he was perhaps surprised to see an apparently pilotless *Hellcat* roaring by on the taxi-way to park at the far end of the parking area.

Marine Captain Jensen had closed his hatch, pulled his goggles down, tried to imitate the turtle as he went by. And he didn't report to Operations to close his flight plan for a full 30 minutes—and to hell with his appointment.

Attention Marine DI's

THE NEOPHYTE drillmaster gave his platoon of VR-5 men a column left order to avoid a small water puddle. He failed to notice a much larger and deeper pool hard to port.

Unflinchingly, the entire platoon waded in, more than ankle-deep. Unable to countermand the original order in column left formation, the flustered platoon leader waited until the group emerged at the far shore, then redoubled the awkwardness of the situation by the only order he could think of: "To the rear, March!"



Unhand Me, Knave!

THIS ONE will kill you! It comes from VR-2, that intrepid group which flies the big *Mars* seaplanes to Hawaii.

On a recent westbound trip, one of its pilots escorted an attractive widow, en route to a civil service job in Guam, to her seat in the plane. The sweet young thing then coyly asked the pilot if he would come back and tuck her in after the take-off. Assuring her that he would love to do this, he gently returned his eyeballs to their sockets and manned his take-off station.

Being a man true to his word, our young hero returned several hours later as he promised. In the meantime the young lady accepted a bunk offered by the orderly. A burly chief moved into the vacant seat and pulled the blanket over his head for a few hours of "shut eye" in the now-darkened passenger deck.

Upon being awakened by the unsuspecting Galahad with the words, "Well here I am, ready to tuck you in," the chief emitted a snort and remarked:

"Don't you think this is carrying passenger service and comfort a little too far?"

Hastily retreating, our now-confused hero muttered, "Chivalry may not be dead but rigor mortis is sure setting in fast!"

Double Take

A CREWMAN from VR-6 had bumped his head on a stanchion while en route from Guam to Germany to join the *Operation Vittles* run. When his plane got to Honolulu, Cdr. R. F. Carmody, staff medical officer for Fleet Logistic Support Wings, dressed the wound, taking several stitches.

The following morning the youth took off for Moffett via R5D. Cdr. Carmody re-

turned during the night on the *Mars* and resumed his regular duties at Moffett.

On entering the sick bay he found the same patient with the head injury. Without further ado, he redressed the wound, asked the patient how and where he got the cut and who had patched him up.

"Some sawbones out in Honolulu sewed me up last night," replied the puzzled sailor. "I musta been hit a lot harder than I thought, though, because it seems to me he looked EXACTLY like you!"

Just Lucky I Guess

LIEUT. COMDR. Robert (*Kamikaze*) Blake was flying his *Privateer* from Brisbane to Melbourne. "Bull" Hickox was navigating, and from the look of his chart, he was doing a masterly job. The day was clear, radio hot, sun on course, but according to an RAAF passenger, familiar with the terrain, the plane was not—on course, that is.

"Check the course," roared Robert, as only Robert could.

"Sir," quoth Bull, with the injured air, "I've just finished a series of sun lines; I've obtained a number of radio fixes. At the moment we're flying squarely over "dead-man's" hump; it's on the chart; I can see it with my eyes. We'll be over St. Kilda Road on the outskirts of Melbourne in 12 minutes. Are you going to trust an exact science, believe in your ace navigator, or are you going to follow the intuition of some half-baked Australian, a former transport pilot at that?"

So, after flying 15 minutes on course and no Melbourne, a 90 degree turn to the left was executed and the *Privateer* landed some 30 minutes later. The engines were cut; the RAAF gent smugly departed; Robert spoke to the Bull.

"Why, tell me why, of all the good 106 navigators that I had to choose from in Palawan, did I have to pick you?" he asked simply.

"I can't understand it, Boss," sez Bull; "just lucky, I guess."

Him and Pearson

WHEN NAS PATUXENT was in its infancy and the tower radio was not yet in operation, the skipper of one of the units based there was cleared by green light for a flight south in an SNB. Five minutes later the tower operator spotted what he thought was the same plane returning and cleared it to land. In reality it was an Army Air Force AT-11.

The tower man notified operations that the Captain had returned, starting a chain reaction which resulted in a telephone call to the skipper's wife, who hurriedly drove the five miles to the station from home. By that time her husband was well south of Norfolk. After diligent search without success she was informed of the true state of affairs.

The good lady, unfamiliar with Navy plane designations, frustratedly declared, "But he must be here. The duty officer phoned me that the SOB had returned."

GRAMPAW PETTIBONE

Big Secret

Two student pilots were on an assigned gunnery flight in basic training with their instructor flying the tow plane. After a high side run one joined up on the other, but decided that he had a little too much interval. In an effort to close in, he passed under and ahead of the other plane and lost sight of it. As he pulled up the rudder of his plane struck the right wing and pitot tube of the other SNJ. Both pilots felt a slight jar, but saw no apparent damage to their planes, and consequently did not inform their instructor. Each made another gunnery run.

After this run the instructor told the flight to return to base because he considered their formation flying too erratic. It was while returning to base that the instructor first learned of the mid-air collision.

One plane had a dent in the right wing and a damaged pitot tube, while the other had a badly damaged rudder which could not be moved to the left.

Grampaw Pettibone says:

I've always admired people who could keep secrets — but you fellows are carrying things too far. That last gunnery run might well have been fatal for either of you, since one plane was minus an indication of altitude and airspeed, and the other had a jammed rudder.

Mid-air collisions aren't "CONFIDENTIAL," at least as far as your instructor is concerned. Whenever you damage an airplane—either on the ground or in the air be sure to report it promptly. If you don't you have your neck out a mile.

P.S. Just in case you're careless about your own neck—don't forget that you may not be the next person to fly that particular plane.

New Flight Safety Movies

Since the gasoline shortage is going to keep a lot of pilots on the ground most of this month, why not spend a morning or two looking at flight safety movies. There are four new ones out and they can be obtained from the film libraries at the major air stations. The running time on the films in the flight safety series is only five to seven minutes, so plan to show several at a sitting.

The newest ones are:

"Marginal Weather Accidents"-MN-4353-L

"Avoidable Accident Injuries"-MN-4353-M

"About Sensations"-MN-4353-N

"Unfamiliarity in Type"-MN-4353-O

Belly Landing Box Score

July 1 to December 31, 1948	
Forgot to lower wheels	20
Made inadequate attempt to lower wheels	29
Raised wheels instead of flaps after landing	16
Total	65

Grampaw Pettibone says:

Just look at those figures! Sixty-five belly landings in six months. The boners which cause these accidents are costing us well over $1,000,000 a year.

Let's see if we can't cut this loss down by using the check off list faithfully before every landing. Listen for the warning horn before every landing. Listen for the warning horn before you move the wheel lever. When you hear it, actuate the gear, and listen for the horn to stop blowing. After landing wait until you have slowed down to taxi-speed before raising flaps, and visually identify the control that you are about to use.

Dear Grampaw Pettibone:

"Here's a 'near accident' for your collection, as reported by one of the pilots in our squadron:

"I was tow pilot for a gunnery hop while operating out of Nan Yuan Field in Peiping, China. Due to a scarcity of material, we were using quarter inch wire rope instead of the usual manila tow line.

"After taking off and climbing to altitude I proceeded on course and the hop started runs. Midway in the second run, I felt the banner fly off and the tow escort confirmed this. Immediately the standby tow was called for and I proceeded back to base to drop the tow line.

"After getting normal clearances from the tower I came in and pulled the tow release several times and then called the tower for a check. The tower notified me I was clear. I returned to the area and upon locating the flight, joined up in tail position to make runs. After my third run, one of the other pilots on the hop noticed a "glint" and checked to see if I was losing oil. The oil turned out to be the steel cable still firmly anchored to the plane."

Grampaw Pettibone says:

It's lucky for the rest of the formation that this fellow joined up in the tail position. That quarter inch cable can saw a plane in two in nothing flat.

Dear Grampaw Pettibone:

Of all the accidents you have covered, you have never touched upon mine. Since it was somewhat unusual, and since my squadron has had a few laughs out of it, perhaps your readers would enjoy hearing about it.

After receiving a normal cut in a F6F on a CVL, the nose was allowed to drop through and the plane brought back into a 3-point attitude. Just as the plane hit the deck, the stick went "limp," and the tail flew up. I was rolling down the deck with very good visibility, but no chance of catching a wire. A quick glance into the cockpit told me that the plastic handle on top of the stick had slipped off as I came back on the stick to cushion the landing, and the rest of the stick was somewhat forward, being held only by the trigger, bomb and rocket wiring. I grabbed the "stump," brought the tail down and engaged the #8 wire and barrier.

I was quite "put-out" until someone in the ready room came out with "It could have happened in the groove!"

More power to your accident prevention column.

Lieut. ——— USN

TOMBSTONE

Here lies old "Hotrock"
So Quiet and Serene
Made his last take-off
With the mixture in lean.

Shot Off the Tow

The F4U pilot was making an overhead run on the towed target during a scheduled gunnery flight. Just as he passed the firing position and started his recovery the target parted from the tow line and the pilot was unable to avoid a collision. The tow shredded as it went through the prop; the greenhouse was observed to explode; and the right elevator broke off. The F4U entered an abrupt spin to the left.

Both the flight instructor and the safety pilot called to the pilot to bail out, but there was no answer and no apparent attempt to recover from the spin. At about 1000 feet the spin flattened out and the aircraft hit the water in a nearly horizontal position. It disintegrated on impact leaving a small oil slick and a few bits of debris. The pilot's body was not recovered.

The accident board was of the opinion that there was no pilot error involved and that the accident was unavoidable.

Grampaw Pettibone says:

I can't go along with the last part of the board's opinion. I believe that this accident could have been prevented if existing safety directives had been followed.

Technical Note 9-47 which was published nearly two years ago describes the use of a safety webbing leader which goes between the target and the end of the tow line. It actually replaces about 100 feet of tow line just in front of the target, and makes it much more difficult for a pilot to shoot off the target. This item is available through the Aviation Supply System (Stock # R94-W-90800) or can be manufactured locally in accordance with the drawings in T.N. 9-47.

It was not used in this instance, and the accident was exactly the type that the safety webbing leader was designed to eliminate.

Chasing Ducks

While on a local familiarization hop in an SNJ a pilot proceeded to a lake some 75 miles distant from the base. He observed a flock of ducks on the lake and made a low level run to observe them. While he was concentrating on the ducks his port wing hit a tree at the edge of the lake.

The impact was slight and the pilot thought at first that he had hit one of the birds which had flown up in front of him. When he inspected the damage after landing it was obvious that he had encountered a tree top.

Grampaw Pettibone says:

This chap really went out looking for trouble. We have enough bird accidents without chasing them around at 50 feet. There are a number of cases on record where planes have been seriously damaged by impact with birds. One F4U, for example, required a major overhaul after taking a buzzard in the wing center section. Another "bird collision" caused a fatal accident not long ago. In a third recent case the pilot of a PBM made a sharp turn at low altitude to avoid a seagull and tore off a wing tip float. The seagull's evasive tactics weren't so good either, for the pilot brought back the bird.

When you feel the urge to chase ducks sing this little ditty instead:

"Some birds won't obey civil regs;
On days when they feel a bit frisky
They flathat and buzz Navy planes
And don't even know that it's risky.

"But be kind to our web-footed friends,
For a duck may be somebody's mother
And besides if one busts up your plane
You can't make him buy you another!"

One Man Airshow

The picture above shows all that is left of an FG-1D after a Marine Captain in the Organized Reserve decided to put on an unauthorized airshow for his friends. After take-off at a civilian airport he turned back towards the field and made a fast low pass parallel to the take-off runway.

He then pulled up in a climb and between 1000 and 1500 feet rolled the *Corsair* to the inverted position. Witnesses state that the plane seemed to hesitate momentarily and then the right wing dropped and the aircraft crashed into the ground in an almost vertical dive. The pilot was killed just five minutes after he started his one-man airshow.

9.3 "G" Pull-out

During a glide bombing run an F8F was observed by the spotter to be in a 45 degree dive instead of the 30 degree angle specified for this type run. In an attempt to complete his pull-out above 1000 feet, the pilot applied 9.3 G's to the aircraft.

The safety wing tips in the F8F are designed to fail at loads in excess of 9.0 G's and the right wing tip came off during the pull-out. However, F8F Change No. 27, which incorporates a burn-off mechanism to assure that *both* wing tips come off, had not been properly installed. Therefore the port wing remained intact.

The pilot regained positive control of the aircraft and climbed to 6000 feet where he tested stall characteristics. He found that the plane tended to roll to the right at speeds below 110 knots with wheels and flaps down. A safe landing was effected by coming in at 120 knots with 15 degrees of flap. The pilot found it necessary to use considerable left stick and rudder during the roll out to keep the plane on a straight course.

Grampaw Pettibone says:

This accident interests me for several reasons. First of all, the pilot was not wearing a G suit when he pulled 9.3 G's, yet he reports that he did not grey-out or black-out. A flight surgeon tells me that this is quite possible. It takes *time* for the blood to leave your head, and if the G force is of short duration the pilot may not realize that he is exceeding the safe limits for his plane.

This squadron has directed all pilots and plane captains to check the circuit breakers for the wing-tip burn off mechanism prior to each flight. Also the test procedure outlined in F8F Service Change No. 7 will be accomplished during all future maintenance checks.

Nose Heavy

The pilot of an R4D got a sudden lesson in the importance of proper weight and balance during an engine run-up at NAS MINNEAPOLIS a few weeks ago. The plane was facing approximately 75 degrees out of the prevailing wind in order to be in a position to observe landing traffic. The starboard prop had been run through without incident. As the throttle was advanced for the starboard mag check the tail of the R4D came up slowly and both propellers hit the runway before the pilot could retard the throttles.

The starboard prop was torn loose and traveled straight ahead, but the port propeller hit the fuselage and cut through just forward of the pilot, severing the control column. Fortunately the blades missed the pilot's legs and he got by with minor bruises.

A check of the weight and balance after the crash indicated that the passengers had not taken the seats which they were assigned in the computation of the C.G., which was already near the forward limits.

Grampaw Pettibone says:

There's a first time for everything and in all the years that we've been using R4D's to the best of my knowledge this is the first time this has happened. In fact I've talked to a number of R4D pilots who were sure that it "just couldn't" happen, until they saw the pictures and saw what a close shave this fellow had.

Let's figure weight and balance carefully and see that the actual loading is correct. It will take 5000 man hours to repair this R4D. And it will take $5,000 to buy a couple of new propellers for the plane.

DID YOU KNOW?

ROCKET-JET FLIGHT

SKYROCKET ZIPS OVER MUROC DRY LAKE BED USING BOTH ROCKET POWER AND TURBOJET ENGINE

THE NAVY has revealed that its D 558 II *Skyrocket* flew recently for the first time using both rocket and jet engine power simultaneously at Muroc test base. The needle-nosed plane got off the sand runways in 2400 feet using the two power plants.

After exhausting rocket fuel the plane built by Douglas El Segundo flew around on its jet engine for another 19 minutes and landed with that power. During the past year the *Skyrocket* has made numerous routine research flights with its jet waiting for development of the rocket engine by Reaction Motors Inc. Unlike the Air Force's X-1 research plane which has exceeded the speed of sound by several hundred miles using only rocket engines, the D 558 II will be able to gather data on high speed flights using both of its engines simultaneously.

The interior of the *Skyrocket* is a labyrinth of intricate systems. A cross-section view of its big rocket and jet power plants and their contributory systems appears like a chemo-electronic laboratory. Many chemical combinations acting simultaneously drive the plane forward in flight.

Gene May, veteran Douglas test pilot, who has flown both the *Skyrocket* and its sister ship the *Skystreak*, says "The *Rocket* is a flight machine refined to the 'nth degree. It's extremely stable, yet as sensitive and light as an arrow. I thought the *Skystreak* was a dream plane but the *Rocket*'s flying qualities are without parallel."

Hawaii Mars Saves Money

Caroline's Little Sister Has Glamour

The *Hawaii Mars* may not be the record breaker that its glamorous big sister *Caroline* is, but it has achieved a few records of its own.

Tax payers will be interested to know that every time the *Hawaii Mars* takes to the air, it is putting money right back into John Q Public's pocket.

Breaking two records for JRM-1s, the *Hawaii Mars* carried 218 passengers and a total pay load of 48,854 pounds on a flight from Alameda to San Diego.

The savings to the Navy on this single trip amounted to $6,664.16.

Railway and bus fares over this route, plus berths and meals for the 218 passengers would have cost $31.72 per man, or a total of $6,914.96.

The *Hawaii Mars* used up $242 worth of gas (1,100 gallons) and $8.80 in oil (20 gallons), at a cost of only $1.15 per man. This of course does not include maintenance and overhead costs on the JRM-1, but the savings are still considerable, and heartening to America's "forgotten man."

Transports Top 3 Records

Mars and Constitution Do It Again

Fastest transcontinental flight ever made by a Navy transport was recorded in March by the *Constitution* in a non-stop eastbound trip from NAS MOFFETT FIELD, Calif., to Washington, D. C.

Piloted by LCdr. V. H. Larson, USN, the plane's deck-to-deck time of eight hours and 35 minutes lowers by nearly an hour the record R5D time established by LCdr. H. R. Herman, last year.

The *Constitution* followed a great circle course, averaging 287 miles per hour groundspeed.

Two other speed records were achieved during the same period in flights which were aided by strong gradient winds associated with the characteristic pressure patterns of the vernal equinox.

Setting a new JRM record, LCdr. Robert Hunt, USN, crossed from Honolulu to Alameda, Calif., in the Air-TransRon TWO *Caroline Mars* in nine hours and 59 minutes.

VR-5 pilot Lt (jg) H. E. Smith, USN(T), logged ground speeds over 300 miles per hour in the *Caroline Mars* between check point midway along the Seattle, Wash., to Moffett Field run. He averaged 254 miles per hour for the 734-mile trip, with a block-to-block time of eight hours and 53 minutes. He was aided by the clockwise circulation of an unusually high pressure cell centered 300 miles off the Oregon coast.

Aerial Trucks On The Move

Marine Transports Make Big Hauls

Earning their nickname as the *Cherry Point Aerial Truck Drivers,* the Second Marine Air Wing transport squadrons did a weighty job during the Atlantic Fleet Command war maneuvers, carrying a total of 12,551 persons between the United States and Caribbean islands.

Of the 1,612 flights made during the maneuvers, every transport plane took off with a full load. The R5D *Skymasters,* R5C *Commandos,* and R4D *Skytrains* hauled more than 1,500,000 pounds of equipment and supplies for Marines at two Puerto Rican operation bases, Roosevelt Roads and Losey Field.

The aerial truck drivers were on the job night and day, counting up an aggregate of 5,239,797 passenger miles to their credit in a two-month period.

NAVY FLOAT TRAVELS CROWDED PANAMA STREET

Panama Sees Navy's PBM-5

Carnival Parade at Colon Has Model

NAS Coco Solo—This air station took part in *El Carnaval de la Concordia,* an official carnival of Panama, entering a float in the final day's big parade which was witnessed by thousands in the streets of Colon.

The float, called the USS *Concordia,* was in Navy blue and gold, together with the white and blue carnival colors, representing the cooperation between America and the Republic of Panama. A scale model of a PBM-5 featured the float. Flying from the masthead were various international and Navy flags.

Two lovely mermaids were on the fantail and around the model representatives of the Navy and Marine Corps were grouped. Military personnel made the float, working over the 22 February holiday and over the week end to complete it.

Carrier Has Varied Career

Ex-Long Island Transporting DP's

Tanker, aircraft carrier, cargo vessel and transport is a varied career for any ship. This distinction goes to the ex-USS *Long Island,* now the Panamanian ship *Nelly,* once the only flush deck carrier of the Navy.

Nelly is now in the business of hauling displaced persons from Europe to Australia. Her mercy missions for DP's follow trips to the West Coast where she took on diesel fuel and Galveston where she loaded 10,000 tons of grain for cereal short Italy.

Before she became the *Long Island* in 1939 she had been a tanker.

Her appearance now is a far cry from the days as a baby flattop. She has been shorn of her flight deck and has a small superstructure amidships housing the navigation bridge and quarters for the crew and 12 passengers.

Converted in Italy, the ship can now carry 1100 persons per trip to Australia.

F8F-FJ IN TEST RACES

Which is the best performing airplane, the jet FJ-1 or the F8F *Bearcat?*

The question came up last winter when Naval Aviation News carried a news item about a race between a *Fury* and a *Bearcat* at Seattle. Immediate denials of the occurrence came from VF-51, which under Cdr. E. P. Aurand, flies FJ-1 jets.

But the seed was planted and in the following two months, five test races between the two planes were held, unofficially, between VF-51 and *Bearcats* from VF-113 and VF-53. It was really a test between two plane types, jet and reciprocating engine, representing the old and new type of fighters.

Reports on these five tests are given below, edited to remove exact performance figures for security reasons:

First Test—Two FJ's and two F8F's participated in a climb test from a standing start. The F8F's were to use water injection but due to malfunctioning, it was used only for a few minutes after take-off. The best of the two F8F aircraft beat the two best FJ's to 15,000 feet by better than a minute.

Second Test—A zoom climb test was conducted with the two plane types. Both stabilized speed at full power at 1,000 feet. On signal both aircraft commenced a zoom climb. The FJ beat the F8F to 10,000 feet by 13 seconds. The F8F stalled trying to catch up with the jet going on to 15,000 feet.

Third Test—Two weeks later VF-51 pitted a *Fury* against a *Bearcat* from VF-53 at NAS San Diego, to race to 25,000 feet above El Toro 63 miles away. The FJ-1 arrived a minute and 40 seconds before the propellered plane.

Fourth Test—This test simulated catapult launching climb performance. Commencing at 500 feet in flight with gear and flaps down, a climb was started on signal. The timing was stopped accidentally when the stop clock was stopped in the F8F. The test was inconclusive but VF-51 said it felt the jet would have won this one too.

Fifth Test—A simultaneous take-off was made. The F8F gains about 5,000 feet while the FJ is still on the ground and therefore can make a gunnery run on the jet immediately, if desired. In the test, the F8F got off the ground and immediately pulled up to make the first pass. On the second pass it fell behind the FJ-1, and in the final race to 10,000 feet the FJ won by 7 seconds and further increased its lead to 15 seconds in climbing to 15,000 feet.

VF-51 pointed out that the jet *Fury* was being tested against the best characteristics of the F8F, i.e., rate of climb at low altitude. It contended the FJ-1 was far superior in other respects.

New Pinwheel Does Loop

SEVEN-MAN PIASECKI FEATURES FOLDING ROTOR

The Navy is procuring seven utility helicopters from Piasecki, the XHJP-1 twin rotor plane that has looped the loop (accidentally) and flown faster than any other helicopter.

The accidental loop was done by Piasecki's test pilot Jim Ryan, while making dive tests with the new plane. He had pulled the plane into a vertical position, nose up. Rather than fall off into a stall, he decided the best way to recover was to continue on through a loop.

During its tests the XHJP-1 was flown at 131 miles an hour, surpassing unofficially the present world's record of 124.3 made by the British Fairey *Gyrodyne.* An outstanding feature of the Piasecki helicopter, smaller sister to the big *Flying Banana,* the 10-passenger HRP-1, is its folding rotor blades to permit carrier stowage on even a CVE.

The new helicopter can carry three stowed litters in addition to the pilot and co-pilot, or five passengers plus the crew. The XHJP-1 features a large internal rescue hatch near the pilot's seat, big enough to accommodate a laden litter. A hydraulic lift will raise the rescued personnel directly into the cabin, an operation which can be conducted by the pilot without assistance.

The helicopter has an all-metal fuselage. It is 39′ long with blades extended and 31′ with blades folded; it is 30′ wide with rotors extended and 9′ with them folded. Rotating blades are seven feet from the deck, for safety of ground crewmen who happen to pass.

WHEN Academy of Motion Picture Arts and Sciences awarded a gold Oscar to the Navy color movie *The Secret Land* as the best documentary film of 1948, it brought recognition to a group of 68 Navy, Army, Marine Corps and Coast Guard cameramen who went to the South Polar region in 1946 to take stills and movies of *Operation Highjump*.

Released through Metro Goldwyn Mayer, the 78-minute feature length movie has been showing in motion picture theaters all over the nation. The Byrd expedition spent two months in the Antarctic in 1946-47. During that time, 241,000 feet of motion picture film was exposed, most of it black-and-white. Color movies were taken only when convenient for the photographer as the original M. G. M. plan called for the picture to be released in that form.

Lt. C. C. Shirley was officer in charge of photography for *Highjump*, a veteran of the 1939-41 south polar expedition. Other photographers who contributed much to securing footage for Secret Land included:

Lt. A. E. Stein, First Lt. H. H. Anglin, ChPhot E. F. Mashburn, CWO R. L. Chappel, A. E. Weed, CPhoM; E. E. Johnson, CPhoM; T. H. Malone, PhoM1; K. C. Swain, PhoM1; W. H. Nawodylo, PhoM1; J. Meding, PhoM1; J. M. Pollack, PhoM3; J. M. Waltersdorf, Corp., USA; J. Shimberg, Corp., USA; H. F. Cope, PhoM3; A. D. Shelby, PhoM1; E. D. Dieglman, PhoM1; E. C. Pidgeon, PhoM1; H. E. Mohaupt, PhoM1; H. C. Foster, Corp., USA; R. R. Conger, PhoM1; T. W. Baker, PhoM1; W. L. Lowe, PhoM1; G. Levko, PhoM1; and E. Zinberg, Corp., USA.

The primary objective of the operation was to train personnel and test equipment in subzero temperatures. The secondary objective was to chart and photograph little known or unknown polar areas.

No special attempt was made to conduct tests on photographic equipment. Many different types and models of cameras were used to photograph the operations and all got plenty of testing. There was no time to stage any action; it had to be photographed as it happened.

Biggest problem, of course, was to keep the cameras rolling at sub-zero temperatures in which —50° F was not uncommon. Despite cold weather advance preparation, movie cameras gave trouble and froze frequently. Because moisture would condense on the cameras and cause freezing and rust, they had to be kept in cold storage huts.

If a photographer took his gloves off to reload film and accidentally touched unpainted metal his skin froze immediately to it, with resultant painful consequences. Cameramen found electric motors to drive the big movie cameras failed repeatedly, requiring them to be hand-cranked. Spring-driven hand cameras were of little value in extreme temperatures, nor could they be hand-cranked.

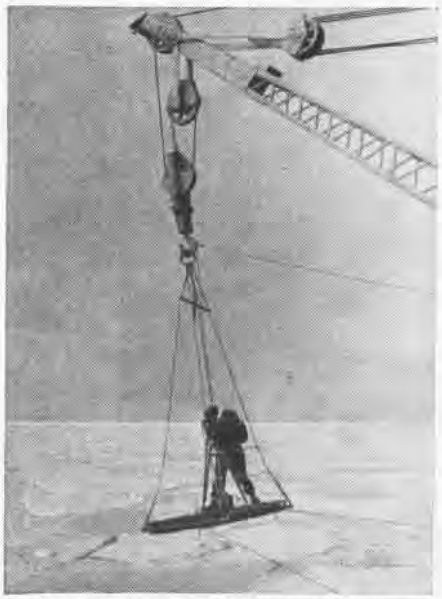
Although the cameras were given special grease jobs to make them usable in Arctic temperatures, many troubles arose from contraction of aluminum or magnesium alloy parts inside the camera. These light alloys contracted more than steel and fouled up moving parts.

CAMERAMEN OPERATE MITCHELL AT SNOWY CAMP

The unreliability of shutters and light meters in the Antarctic made it doubly difficult for Navy movie cameramen to get good color footage because of the

SHIRLEY, HEAD PHOTOG, SHOOTS SLATE HELD BY STEIN IN SNOWSTORM

WEED, MALONE, POLLICK AND TIEGAN SHOOT BAY OF WALES LOADING



MALONE SHOOTS ICE BREAKING BY THE EDISTO

short exposure range this film has compared to black-and-white. Film was very brittle in cold temperatures and broke easily. It was recognized that in the event of a war in polar regions, a new type of less-brittle film base or emulsion probably would have to be developed.

Following the expedition, Lt. Shirley recommended that a special cold weather camera be developed for sub-zero photography in combat. He declared it should be light weight, have few unpainted surfaces, be semiautomatic magazine loading and have controls that could be operated with hands encased in three heavy woolen mittens plus an outer leather mitten shell.

Electric power to run the camera is preferred, also a machine that could be used hand-held rather than on a tripod. It should function smoothly at —67° F.

Because of the overabundance of light in the polar region, even with the low sun, movie men found they had to use neutral density filters on any film faster than 50 Weston. They also had to mask off their exposure meters because the light, even on overcast days, shoved the needle beyond the top of the scale.

Among the outstanding *Highjump* sequences which Navy movie men were able to capture by being on the spot with their cameras were such occasions as the loss of a PBM from a seaplane tender in heavy seas, a helicopter crash in the open sea, and considerable footage of the rescue of men from a PBM that crashed and was lost in the Antarctic wastes two weeks. Three men were killed in that crash.

Despite the exposure problems, freezing cameras, 100-mph gales and other occupational hazards, cameramen were able to capture a beautiful running coverage of the entire expedition, complete with human interest shots of penguins, husky dogs, high officials and seamen all of whom played a part in the expedition. The picture ranks with the best in Navy photography alongside such combat pictures as *Fighting Lady*.

The running commentary accompanying the picture was supplied by Robert Taylor and Robert Montgomery, movie actors as well as Naval Reservists, and by Van Heflin, an Air Force veteran.

Woman Wins Model Award

Pensacola Meet Draws 600 to Corry

NAAS CORRY FIELD—More than 600 spectators turned out to see a model aircraft meet held at this station on 20 February, featuring competitions between four classes of men, women and children. The station was "commissioned" as "U. S. Model Air Station, Admiral Mullinix Field" for the occasion.

Seventy-four flights were made during the day and winners awarded nine trophies approximately 16" high with a statue of Victory on top. Highlight of the day was a woman who captured three first place trophies, two in open competition, and turned in the fastest speed of the contest, 111 mph. The youngest competitor was nine years old and part of a mother-son team which won second prize.

Accidents are inevitable when one tries to control a bee on a string, consequently a midget racing car was given the contestant who had the most spectacular crash as a suggestion in guarding against future repetition.

As a result of the contest, the hobby shop reported a 300% increase in sales of kits, parts and material. Another meet on larger scale is planned for June which would be the largest district meet ever staged in Pensacola area.

Berlin Airlift Rugged

THE STORY of how Navy transport squadrons VR-6 and VR-8 stepped into the Berlin Airlift and began setting records for freight carrying has been told. Behind the scenes is another story, not too glamorous, but just as necessary to keep the planes flying, the story of engineering.

On a few hours notice, the squadrons were uprooted from Hawaii and Guam and sent halfway around the world to feed Berlin. When they arrived in the middle of winter, conditions in Germany were rugged. Let VR-8's Engineering men tell their own story:

The tasks confronting us were: reorganization to fit the need of the job, establishment of shops, nosebays, working and office spaces and the immediate and pressing requirement of keeping 12 aircraft in the air. After balmy Hawaii, even the elements appeared hostile as we combatted the cold and *MUD*. Concrete taxiways and hardstands were something you encountered further towards the center of things; we are on the end of the line.

Circumstances at times seemed perverse and cruel: our beautiful spares procured for us by Moffett Field from the resources of the Navy at a high priority and guarded constantly while enroute were lost. We were forced to turn them in to Air Force Supply; one plane taxied into a cletrac necessitating that engines 1 and 2 be changed and putting the vitally-needed cletrac out of commission.

The electric lights were so dim that we could not read; the telephone service was erratic, and many a night was spent with no illumination other than that provided by flashlights. What could happen next? We ran out of flashlight batteries and were unable to procure them for a prolonged period.

We live 10 miles from our base of operations, commuting by bus. Unusual fogs have grounded the busses on at least four occasions so the duty crew were unrelieved for 24 hours. The engineering officer started for operations office, a 10-minute walk. He arrived at the passenger terminal four miles away four hours later. He explained that his gyro slipped 90° in the dense fog and that he had no idea where he had been.

We had no fresh water, we had an outside "Chic Sale" head, and we had no coffee mess. Also we were without the transportation necessary to visit the more enlightened areas. If an impression of a gloomy, starkly desolate working area has been created in the reader's mind, the actual conditions existent in November and December undoubtedly exceed the impressions created.

Statistics reflect the concerted efforts and toil of all hands. However, while the overall picture takes into account this all out effort, it conceals the sacrifice of the individual men working in relays because the bitter cold numbed fingers after 10 minutes; sweeping ice and snow from wings with brooms dipped in alcohol; sheltering spark plugs and leads from the sleet with articles of clothing while the water searched for and found openings in the clothing.

YEARS OF NATS training in precision flying certainly paid off in Germany where they enabled VR-8 pilots to consider as commonplace the final approaches between apartment houses in Berlin when the weather is at or slightly above minimums. The squadron had been flying into Templehof three weeks before the ceiling lifted sufficiently to permit the crews to get startled glimpses of the apartment houses through the cockpit windows.

All has not been easy for the crews. With the quarters 22 kilometers away in Frankfurt, the problem of getting back and forth to the flight line is not too pleasant. Rather, it means standing up in a crowded bus for an hour before and after a flight to Berlin.

AUSTRALIAN NAVY AIR ARM

AUSTRALIA'S experience during the last war emphasized the need for preparedness. Foremost in Australia's current defense program is a five-year naval expansion plan which will provide a strong and compact carrier striking force of 26 ships with a reserve of 80 more vessels.

The new Royal Australian Navy is designed to operate independently as a carrier task force, or in cooperation with greater allied naval groups.

The new force will be composed of two light fleet carriers, two cruisers, six new destroyers and 16 other vessels, including frigates, survey ships, minesweepers and boom defense vessels, and will be in commission by 1952. Personnel strength will be increased to 14,750, two and a half times the prewar strength, and the largest peacetime navy Australia has ever maintained.

The Royal Australian Navy is establishing a naval aviation department for the first time. It is training young men in naval aviation in preparation for the arrival of its two newly-constructed aircraft carriers from Britain.

The first group of airmen to be absorbed into the RAN are composed of those pilots who flew with the British Navy during the war. Training is now going on and additional personnel is being drawn from qualified enlisted ranks within the Navy, and from new civilian recruits. Training is being carried on through a cooperative effort of the RAAF and the RAN.

EMBYRO AUSTRALIAN NAVAL AVIATORS 'GET THE WORD' FROM SOME TOP RAAF AND RAN BRASS

The first carrier to arrive in Australia will be the 18,000-ton light fleet carrier *Sydney*. It was scheduled for delivery early in May. The second carrier will be of the same type and named the *Melbourne*.

The Hawker *Seafury* fighter and the *Firefly* striking plane will operate off the new carriers. The *Seafury* is the latest British naval fighter and is armed with four 20 mm cannons and either a 1000-lb. bomb or twelve 60-lb. rocket projectors under the wings. It has a maxi-

PLOTTING THE RADAR TRACK OF AN INCOMING AIRCRAFT ABOARD SHIP

A FEW LAST MINUTE INSTRUCTIONS BEFORE SENDING HIM OUT ALONE

FOR CARRIER FIGHTER THE RIGHT HOT SEAFURY

THE FAIREY FIREFLY FITS THE ATTACK NEEDS

ONE MUST LEARN TO READ THE COMPASS RIGHT

mum level speed of 460 mph at 16,000 feet. The *Firefly* is also a top flight British type.

USE OF jet propelled aircraft has been discussed, but naval chiefs of Australia consider that they have not been fully proved for carrier operations, (British have not yet made any jet squadrons operational on carriers) so they have decided to wait until Britain has developed them further.

The now familiar pattern of long-range carrier task forces maintained at sea for long periods by a fleet train of refueling and supply ships emerged logically from the conditions of naval warfare in the Pacific. Balanced, hard-hitting task forces composed of aircraft carriers, battleships, cruisers and destroyers, roved the vast expanse of the Pacific striking at targets thousands of miles from their bases. The last war, in the Pacific, was mainly a carrier war. And it was naval forces that kept Australia from being invaded by the Japanese.

Australia's new Navy will put to sea but a small model of the powerful task forces the U.S. Navy and Royal Navy employed in the Pacific. But it will have the same flexibility and the same power to operate as a long-range striking force capable of carrying out swift raids on distant bases or lightning attacks on enemy forces at sea.

An island continent with a coastline of 12,000 miles, Australia, within the limits of her industrial resources, must base her defenses primarily on the Navy. In wartime her existence is dependent on keeping the seaways open for the arrival of reinforcements, and to some extent on safeguarding her own coastal trade.

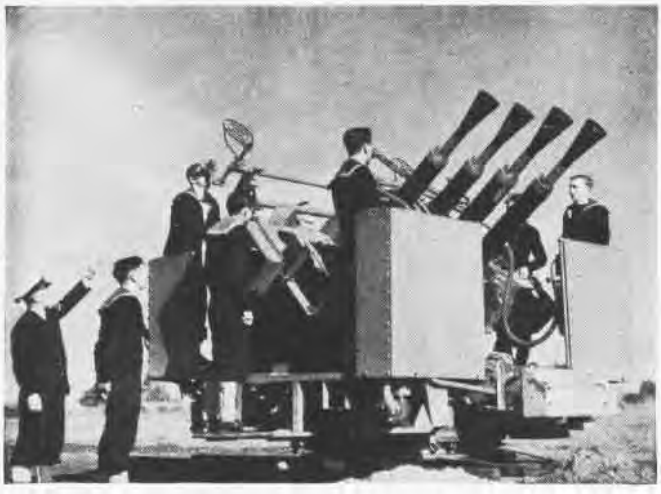
The peril in which Australia stood when the Japanese occupied the island screen covering her northern approaches showed how swiftly a protective barrier could be turned into a menace to her security. Fast strong naval forces of the type evolved in the island to island warfare of the Pacific are essential to prevent the occupation of these northern islands by hostile forces.

IT IS this lesson which has dictated the decision of the Government to establish an advance operational naval base at Manus, in the Admiralty Group to the north of New Guinea. Manus, location of a vast American naval base in the Pacific war, was Australian mandated territory. It is to become an overseas service station for the Navy and Air Force from which a watch can be kept on the front door of Australia. And it's so much easier to stop an invasion at the front door than it is to stop it in the living-room or kitchen.

Training of the new naval aviators will have to include both thorough indoctrination into aviation as practised aboard ship, and training in the operation of the ships themselves. Aerial navigation must be precise to a matter of miles, but shipboard navigation must be precise to a matter of yards.

It is particularly interesting that as a result of the lessons learned during the last war, England and Australia are emphasizing carrier and naval aviation to such a degree while other countries of the world, as a result of lessons learned in the same last war, are emphasizing strictly aerial warfare more and more.

OCCASIONALLY SOMEONE HAS TO HEAVE A LINE



YOU LEARN HOW TO USE THEM, THEN HOW TO STAY OUT OF THEIR WAY

'AND PARACHUTE HARNESS IS JUST IN THE WAY—UNTIL YOU NEED IT'

Yes, ANYONE Can Learn Electronics

TAKE THE gobbledy-gook out of a course on aviation electronics theory and what have you got?

You've got a brand-new and highly successful Class A school for aviation electronics technicians and electronicsmen at NATTC MEMPHIS, Tenn.

To date *not a single student has failed* in this course, which covers both maintenance and operation, whereas under the old course the number of failures in each class ran up to nearly 40 percent!

The AT-AL School figures that it can continue to keep student attrition down to the zero mark, while at the same time it is graduating personnel in less than two-thirds of the time required by the former 44-week course.

Here's the secret of training in the new 28-week class at Memphis:

Instead of viewing electronics through the mysterious eyes of higher mathematics and obscure "engineers' English," instructors now give a descriptive presentation. They start trainees working on actual equipment during their first week in school, and the theory of electronics is translated into understandable language. They build their own radio sets.

The mathematics requirement is reduced to the level of sixth grade grammar school.

At the same time each trainee gains more skill in the use of his tools and testing equipment.

Any enlisted man or woman who applies himself to his studies at the Class A school and has proved himself competent to hold his rate can be practically assured that he will pass this new course, which has had the reputation in the past of marking the downfall of many a good technician.

A proctor system has been organized at Memphis, in which instructors follow a certain number of students completely through the course of training. They concentrate on weak students carefully observing those points in the curriculum in which trainees in their charge seem to experience difficulty.

THE SCHOOL works on the idea that it is impossible for anyone to fail the "new deal" in electronics training. They have the unusual attitude that if anyone should stumble or falter, the fault lies in the training. Students suffering low daily marks are thoroughly reviewed by their proctors who then give them homework in those phases in which they seem lacking.

Another unusual feature of the new course is that it gives identical instruction in two rates.

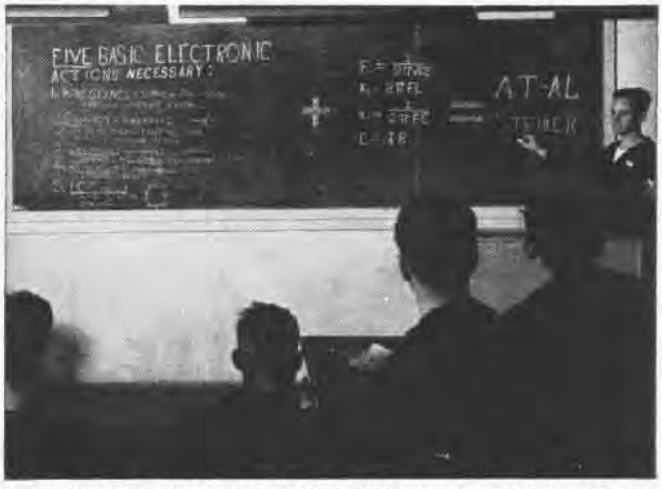
Aviation electronics technicians (AT) are Navy specialists who operate, maintain, adjust, test, install and repair all airborne electronic equipment used in naval aircraft. That includes radio, radar, Loran, IFF, RCM and electronic fire control equipment.

Aviation electronicsmen (AL), in

INSTRUCTOR ROBINSON CHECKS RECEIVER W. WHEELER WILL ASSEMBLE

J. B. CONYERS, AT1, EXPLAINS RECTIFIER TUBE BY USE OF MOCKUP

DOROTHY DOOLEY COMPLETES WIRING OF SUPERHET WITHIN TWO WEEKS



R. L. IMMUEL SUMMARIZES BASIC PRINCIPLES IN BUILDING RECEIVER

addition to operating electronic gear, are aircraft communicators.

Personnel in both of these ratings, in order to work intelligently, must understand the *why* and *how* of electronics theory. The new course provides the AL with a greater knowledge of maintenance and the AT with a better operator's knowledge.

The bulk of the curriculum is devoted to electronic theory and maintenance, while operator training is held to the familiarization level. Operators can continue their training in the fleet, working on the special equipment to which they are assigned.

These are the ingredients in the Class A course. Take a descriptive presentation of electron movement, plus six simple arithmetical formulas, plus five basic actions. Cook thoroughly, stirring constantly with proctors and in five weeks out comes your class of trained specialists. As a dividend, each specialist turns out a six-tube, superhetrodyne receiving set which he has built himself.

Before the ink spelling his name on the roster of the Class A school has dried, the new student is issued the initial elements of his new profession, a metal box filled with a jumble of tube and wires, and a wiring diagram which is his "blue print." They contain everything required to make a six-tube alternating current receiving set.

Sandwiched in between the laboratory work of the new trainee are lectures. The first one tackles atomic structure and the theory of electrons, which is a lot simpler than it sounds.

All circuits, voltages and currents in electronic equipment are electron movements. Circuit analysis can be most logically explained by studying the flow of electrons. When these flow paths are clearly understood, a six-grader can make the simple calculations required by maintenance men and operators in the field.

The six drops of arithmetical oil, needed to inject into the machinery of this method of training, range from Ohm's law through reactance and frequency to resistors and capacitators. They also are much less formidable than they sound.

With the theory of electrons and the principles of electricity behind him, the student next plunges into the five basic radio actions which make all radio sets tick. Here they are:

Resistance—a substance retarding the flow of electrons. It is a property of all materials and is measured in ohms. The greater the resistance, the fewer the electrons that can pass through.

Capacitance—the ability or capacity of a condenser to hold or store electrical charges. The condenser blocks off and holds captive the electrons attempting to pass through, while the electrons' motion is passed through open space to electrons on another plate.

Inductance—a kind of electrical inertia, it opposes any change in electron speed. Differing from resistance, the inductive effect attempts to prevent electrons from slowing down or speeding up.

LC Circuit—a combination of inductance and capacity.

RC Circuit—a combination joining resistance and capacity.

While he is wiring, soldering and bolting his equipment together, the student gets a grip on the intestines of his superhet receiver, putting theories into practice and making formulas mean something useful.

G. MELVIN CLIMBED FROM BOTTOM TO RANK 8TH

In the laboratory simplicity is also the rule. Formerly the school attempted to familiarize students with all types of electronic equipment used in naval aviation. However, human memory is too fallible to expect men to learn and retain familiarity with the rapidly increasing types of equipment.

With the aim of giving a good electronics *education*, the school now trains each student in a limited number of representative types. When personnel arrive in the field, Fleet Airborne Electronic Training Units can "peak" them in the special equipment they are expected to service in their duty assignments.

While this procedure causes some increase in FAETU training loads, it shortens the total time a man must be under training before his services can be utilized by the fleet.

One of the secrets of the training lies in repetition. The facts of electronics are told and retold so often, that at the end of his basic five weeks of school the principles are deeply rooted in the mind of the trainee—part and parcel of his mental makeup.

Credit for the job accomplished in adapting the new course to the needs of the Navy and the capacity of the average person to learn goes to Cdr. Thomas M. Adams, USN, officer in charge of the AT-AL School, and his staff of instructors.

With the course proved during an extensive period of experimentation, the first graduates to reach the field will arrive in late June. Fleet and air units will then have an opportunity to put this type of training to a test, compare it with former training, and make recommendations and suggestions.

NAVAL AVIATION ROLLBACK

NOT AN ICEBERG, BUT THE STAUNCH ROCK OF GIBRALTAR BEHIND CV HEADED BACK TO THE U. S.

NAVAL AVIATION is always changing its scenes of operation, just as the men who make up the squadrons switch every two years from land to sea duty. From the four corners of the world come squadron news letters telling of these shifts, some filled with nostalgia at leaving well-liked stations, others glad to leave behind isolated, cold outposts where Navy planes have been guarding the United States' strategic frontiers.

The news comes from Argentia, from Sangley Point in the Philippines, from the Aleutians, from a carrier in the Mediterranean and from idyllic Hawaii. All tell the same story—the Navy is rolling back its advanced bases as budget cuts are made. Let the datelines give the picture:

NAS SANGLEY POINT—After two years of operation, this air station has been closed down and its designation changed to a naval station. First used as a naval hospital and seaplane base, it became a bigger operation after Seabees from Acorn 45 came ashore in 1945, laid out Marston matting, cleared away invasion wreckage and made it a naval air base.

In its closing months, this Philippine station had a MATS detachment with two planes and a Coast Guard detachment with a PBY-5A. The former unit, VR-23, had a *Catalina* and *Dakota* under LCdr. George A. Hall. Many interesting flights and a weird assortment or cargoes were recorded.

Not exactly a typical day's work but one that covers the type of work done by a detachment of MATS can be shown by the log of 4 April 1949. The *Dakota* was flown to Pili, Southern Luzon, taking the body of a Filipino sailor home for burial. At the same time, the *Catalina* was on a mission to Subic Bay to pick up a merchant seaman who lost an eye in an accident and rush him to a Manila hospital. Later in the day the *Catalina* delivered medicine to Subic for a boy critically ill with pneumonia.

Other odd jobs assigned the detachment included transporting Bikini natives away from the atoll so the atom bomb tests could be held, flying doctors to the Culion island leper colony, picking up an American missionary and two other men adrift in a small boat in the Philippine sea. Another time the *Catalina* delivered repair material to a Trans-Asiatic Airways plane down 150 miles off Luzon. In what could be called *Operation Rice Lift*, the *Dakota* one day delivered rice to refugees from an erupting volcano on Camiguin Island, Mindanao.

USS *Tarawa*—After visiting Istanbul, Turkey, where two football teams from the carrier played an entertaining, if unintelligible, game viewed by 9,000 wondering Turks, this carrier headed for Norfolk and mothballs.

VF-11 reported its men came away burdened with ancient Damascus steel sabers, curved daggers, meerchaum pipes and fascinating collapsible snake rings. The carrier anchored in Suda Bay, Crete, amid battered men-of-war littering the harbor bottom, evidence of Nazi bombing during the war.

Gibraltar was a port of call, with sightseers latching onto British textiles and French perfumes for the girl friends at home while the more athletic men toured the honey-combed fortifications of the rock.

On the homeward bound trip across the Atlantic, VA-14 reported the athletic department ran off a basketball tournament aboard ship with 32 teams. Its squadron team won the championship trophy. Its world cruise over, the *Tarawa* went into mothballs and squadrons headed for Jacksonville, their new home.

VP-20, ALASKA—This squadron began its activities at Attu in 1945 as VPB-120 after reforming from VPB-12. Four years later it has been decommissioned.

At war's end the squadron became an air transport unit between Kodiak and Seattle assisting in demobilization, changing to an operating squadron in 1946 to do search and rescue, ice patrols and extended reconnaissance "chain flights" up and down the Aleutians from Kodiak to Adak, Shemya and Attu, then north along the international dateline to Nome, Point Barrow and inland to Fairbanks—a veritable Cook's tour of the north.

One of the better known sea stories recalls the days when it was VP-HL-10. It con-

ON FRIGID ARGENTIA RUNWAY, CREWMEN SWEEP SNOW OFF VP-8 P2V

PICTURESQUE TURKISH MOSQUE WITH CV TARAWA IN ISTAMBUL PORT

SANGLEY LOADS RICE FOR VOLCANO'S REFUGEES

cerned an icy runway landing by Lt. David A. Leslie at Kodiak. With a difficult crosswind, he applied brakes on his *Privateer*. It skidded on the ice. Power was added on #1 and #2 engines to complete a 180° turn. As the plane reached the position of sliding backwards, power was applied on all four engines, braking the plane's slide down the runway. It ended up headed in the direction from which it had landed.

The squadron helped save many lives in Alaskan waters, dropping provisions, exposure suits and giving moral support until a PBY or ship could rescue mariners in distress. Crews aboard the small boat *Dory* and cannery tender *Spencer* were saved.

Landing at Adak one day, LCdr. Litsey spotted a red flare. It was a JRF *Goose* floating helplessly on heavy seas. He hovered overhead until a nearby ship picked up the four survivors.

VP-8, QUONSET POINT—This squadron is back in the states after three months of cold weather operations at Argentia, Newfoundland, to test its P2V's.

Flying in temperatures as low as —55°, VP-8 was hampered often by low ceilings, blowing snow storms and shortage of daylight flying hours. Plenty of local training also was obtained in instrument and night flying and GCA landings, 190 of the latter being made in the three months.

VP-22, HAWAII—With closure of NAS KANEOHE, this squadron moved to Barber's Point where an old-fashioned Navy welcome helped take the sting out of leaving the well-liked Kaneohe base. A day's outing was held at the beautiful and fabulous Cocoanut Island in the middle of Kaneohe Bay.

Swimming at the pool started the day's activities, followed by cocktails and dancing on the beautiful lanai completed a fairy story day.

Turtle Flies Route of NC-4

Memorial Flight Honors Crossing

Commemorating the 30th anniversary of the famous NC-4 flight, first aircraft to span the Atlantic ocean, the Navy sent its equally-famous P2V-2 *Truculent Turtle* on a memorial flight over the same route on May 8.

Piloted by Cdr. Thomas D. Davies, the same man who flew the *Turtle* for a world's long distance record from Perth, Australia, to Columbus, Ohio, the Lockheed plane made the 3900-mile flight in 20 hours 55 minutes. It took the wooden-hulled NC-4 19 days to make it to Plymouth, England, via the Azores and Lisbon, Portugal.

Accompanying Davies on the memorial flight was Admiral A. C. Read, pilot of the NC-4 on its 1919 flight. The plane took off from NAS FLOYD BENNETT, N.Y., a few miles from Rockaway, starting point for the NC-4.

The NC-4 made numerous stops in its epic flight, once off Cape Cod because of engine trouble, at Newfoundland, the Azores, Lisbon, Ferrol, Spain and Plymouth. The P2V-2 stopped only once at Lisbon, for commemorative ceremonies. With 11,236 miles under its belt on the Australia-U.S. flight, the *Truculent Turtle* could have made the 3900-miles hop nonstop with no strain had it liked.

VPB-84 Photos Needed

The historical sketch of VPB-84 *is ready, but we cannot publish it unless members of the squadron send in pictures of men and actions. Pictures will be kept carefully and returned to owners. VPB-84 cooperation will be greatly appreciated.*

We recently asked for pictures for VPB-118. The response was multiple, and we herewith thank R. M. Finley, W. H. Morris, W. D. Jones, N. M. Keiser, P. E. Pettes, and R. R. Wirth. VPB-118 will run in the next issue.

Navy Movie Wins An Award

Photography Aids Science Advance

Navy photographers are continuing to win honors for their movie activities, the latest being a silver medal granted by the Ninth International Exhibition of Cinematographic Art at Venice, Italy. The prize winning picture, *Naval Photography in Science*, was one of 15 films from 192 submitted to win silver medals.

The 30-minute picture, MN-5348C, is available for official use by naval activities. It shows the multitude of ways in which movie and still pictures taken by the Navy are used for research. Movies of guided missiles and upper-air rockets help analyze their flight, just as slow-motion pictures of underwater blasts contribute to study of explosives and vessels.

BRONZE MEDAL AWARDED TO NAVY BY ITALIANS

CAPT. QUACKENBUSH RECEIVES ITALIAN MEDAL

Another Navy picture, *The ABC of G's*, won a bronze medal at the same Venice competition in 1947. This color movie, running 19 minutes, is MN-3446. It shows high acceleration effects on aircraft pilots and how to combat them. The accompanying photograph shows Capt. Franco Baslini, Italian naval attache to the Italian Embassy, presenting the bronze medal to Capt. Robert S. Quackenbush, Jr. head of naval photography at the time it was given the award a year ago.

Helicopter Saves The Day

Transports Drone Pilot to Destroyer

UTWING, PACIFIC—Every day the Navy is discovering new uses for the helicopter. Take, for instance, the story of Lt. M. J. Tungate, officer in charge of a target drone unit with Utility Squadron 7 at San Diego.

Tungate was slated to go out on the DD *Fox* one morning with his drone to provide gunnery and training practice. Since the *Fox* did not intend to return to port for two days, it was necessary for the unit to be aboard when the ship left port.

Unfortunately Tungate got sick and missed the ship but his drone gear was aboard and would be excess baggage unless there was some way to get Tungate aboard at sea.

The *Fox* was operating 50 miles at sea the next morning when Tungate felt well enough to work. HU-3 at NAAS MIRAMAR listened to his tale of woe and agreed to fly him to the destroyer provided he could arrange an escort for the helicopter. VU-7 agreed to send along two TBM's for the job.

So the helicopter piloted by Ens. F. E. Johnson flew Tungate out to rendezvous with the destroyer. While it hovered over the fantail, Tungate was lowered to the deck of the ship and he took over the job of operating the target drone. Incidentally it was Tungate's first official ride in a Navy pinwheel.

Reserves Get 3 New VMF'S

INSIDE A BLACKED OUT MOBILE RADAR UNIT, MARINE RESERVISTS PLOT APPROACH OF A PLANE

TO GIVE additional Marine Air Reservists a chance to take part in Organized Reserve training activities, three new Marine fighter squadrons, plus three supporting air detachments, are slated to be activated at NAS LINCOLN, NAS NIAGARA FALLS, and NAS BIRMINGHAM by 1 July.

This brings the Marine count at 25 stations and NARTU's in the nationwide Reserve chain to 30 Marine Reserve fighter squadrons, 8 Marine ground control intercept squadrons and 25 air detachments.

The new squadrons will each have an authorized strength of 40 pilots, 10 aviation ground officers and 145 enlisted personnel. Like the present squadrons, these VMF's will fly F4U *Corsairs* and will take over the designations of famous wartime squadrons which were decommissioned.

Lt. Col. George F. Britt established the air detachment at Birmingham on 1 May. One June was the date set for the commissioning of VMF-541 at this station.

Maj. Russell D. Rupp and Maj. Edward V. Finn, who established the detachments at Niagara Falls and at Lincoln respectively, are slated to activate VMF-441 and VMF-113 at those stations on 1 July.

Enrollment in Marine Air Reserve squadrons is now at an all-time high of 94% of authorized strength. As the new squadrons are built up this figure is expected to rise to 100%.

As of 4 April, there were 1,611 officers and 5,068 enlisted men in the Marine Organized Air Reserve squadrons.

On that date the following squadrons were 100% complemented: VMF-244, Columbus; VMF-213 and VMF-234, Minneapolis; VMF-132, New York; VMF-217, Squantum; VMF-221, St. Louis; and MGCIS-17, Willow Grove. Crowding this mark were: VMF-112, Dallas; VMF-241, Los Alamitos; VMF-124, Memphis; VMF-142, Miami; VMF-141, Oakland; VMF-451, Willow Grove; VMF-223, New York; MGCIS-16, Minneapolis; MGCIS-18, Los Alamitos; and MGCIS-15, Atlanta.

Since the present turn-over in personnel averages less than 5%, all squadrons are developing competent teamwork that pays off in increased proficiency.

Shown in the picture are Pvt. R. Hawks, S/Sgt. R. Scmeling, M/Sgt. R. Beuthe, and T/Sgt. F. Powell, all of MGCIS-22 at NAS GLENVIEW.

Reserves Requalify on *Cabot*

Reserve carrier requalification cruises aboard the *Cabot* are now being run off with dispatch and authority. The latest group to successfully complete this training was composed of VA and VF type training officers and stationkeeper crewmen from 17 naval air stations and units in the Reserve chain.

Flying fighter and attack planes from their respective stations, pilots and crewmen converged on Corry Field, headquarters for the cruise, on 11 April, and were organized into a group. From then on, they followed the regular pattern for requalification training. Several days of field carrier landing practice were climaxed by squadron and group refresher operations aboard the *Cabot*. Type and inter-type tactics were emphasized.

Lt. Cdr. B. G. Preston, senior type training officer at NAS BIRMINGHAM, acted as CO of the group. Captain W. S. Harris, skipper of NAS NEW ORLEANS, served as cruise coordinator.

CVG-87 from NAS GLENVIEW, which took the previous cruise, also racked up an excellent record. Pilots executed 313 carrier landings and 38 catapult shots, and averaged 33 hours each of flight time despite poor weather.

A highlight of this cruise was the mock attack made on the *Cabot*, then operating in the Gulf of Mexico, by three PV's from Glenview. These were flown down and back in the course of one "expanded" drill day by pilots from VP-ML-54 to provide CVG-87 with realistic fighter director problems.

Much of the success of this cruise was due to the fine planning and leadership of CVG-87's commanding officer, LCdr. L. K. Droom, who was killed in the line of duty. Lt. Cdr. Droom had made an outstanding combat record in the last war.

Reverse Play on NAS Circuit

Air Planning Directive 3-NN-49, which transferred NAS SEATTLE to the military control of the Naval Air Reserve Training Command has been cancelled. NAS SEATTLE will remain, as in the past, under ComNav 13.

The Reserve will continue to operate a Naval Air Reserve Training Unit at the station.

Anacostia's VR-71 Takes Cruise

With all hands working not less than 12 hours a day, VR-71 from NARTU ANACOSTIA piled up a good record during its two weeks annual training cruise with VR-1 at Patuxent.

They maintained 100% of their schedule, which involved operating an R4D from NAS PATUXENT, to Norfolk, to Jacksonville and return. The amount of cargo, passengers and mail hauled, along with aircraft utilization and man hours worked compared favorably with similar operations by the parent squadron VR-1.

On the first day of operations, the squadron took right in their stride such matters as making a 120-hour check on an R4D they had borrowed from Willow Grove, replacing brakes which had locked on their JRB and the delay caused by having the wheel fall off their assigned truck.

Fourteen officers, including LCdr. B. F. Gerdes, the CO, 26 enlisted men and 1 WAVE participated in the training cruise.

NARTU ANACOSTIA'S TRANSPORT SQUADRON, VR-71, NOEL DAVIS TROPHY WINNERS FOR 1948, LINE UP FOR PICTURE FOLLOWING INSPECTION

Station Round-up

● NAS OAKLAND—When Robert Q. Cutter joined the Naval Air Reserve at this station ,he became the seventh member of his family to enter the Navy. The total naval service of the Cutters adds up to almost 100 years. Shown in the picture with Robert are his father, Robert C. Cutter, YNC who is attached to the Naval Reserve Training Center in Oakland; brother, Frederick M. Cutter, an O-1 Reserve, and uncle, Cdr. Paul T. Quarry, MCR, now a practicing physician in Santa Rosa, Calif.

● NARTU MEMPHIS—Malcolm L. Huffman, AN, USN, attached to NATTC at Memphis recently demonstrated the fine cooperation that exists between Reserves and Regulars, when he recruited six new members for the Organized Reserve in one day.

● NARTU NORFOLK—The Fleet Air Electronics Training Unit of ComAirLant accepted the invitation to use the NARTU's ground school facilities during the week to assist in their refresher course for Fleet personnel.

● NAS SPOKANE—As of 1 April the Organized score was 70 officers and 193 enlisted (including those pending). On the first good weather weekend, VF-86-E averaged 5.7 hours per pilot, VA-86-E—7.1 hours and FASRON-68—4.5 hours for one day. Plane availability for the two days was 100%. Four WAVE yeomen Associated Volunteers are giving a big boost to squadron administration. For gunnery and bombing operations, the targets

FAMILY WELCOMES R. CUTTER INTO THE FOLD

under the control of the CO, USAFB MOSES LAKE, Washington, are to be utilized.

● NAS MINNEAPOLIS—Three pilots from the Bemidji AVUA answered a call at 1100 to search for a *Cub* pilot who was 24 hours overdue at Bemidji. At 1150 one of the pilots sighted the missing plane 50 miles north in isolated timber country. In another hour, the pilot, none the worse for his sub-zero exposure, was drinking coffee at the airport restaurant. Asked how he got lost 50 miles north of the station, when he started from a point 100 miles south, the civilian pilot answered blandly "It wasn't easy."

VR-69 with 16 officers and 27 enlisted men took their annual cruise at the station. Acting as a self-sufficient unit, the squadron set up two regular flight schedules daily to Alexandria, Bemidji, Duluth and Glenview and to Glenview, St. Louis, Dallas and Olathe, with a lay-over crew taking over the return half of the latter flight. Sixteen men worked around the clock to complete one 240-hour check, two—120-hour, three—90-hour and three—30-hour checks plus trouble shooting to enable the R4D's to be utilized 7.5 hours a day and the JRB's 5.3 hours despite delays due to weather and waits scheduled enroute.

● NAS DALLAS—Reservists from this station helped in a project to aid the Navajo Indians of Arizona, undertaken by the Dallas Boy Scouts of America, by flying clothing to Phoenix. The Boy Scouts had collected almost a ton of clothing. Shown in the picture are: LCdr. O. A. Koenig (VR-74), Lt. R. T. May (AVUA Dallas) and Boy Scouts, Norman Crohn and Duncan Porter.

● NAS LOS ALAMITOS—After the annual inspection, the enlisted men put on a big party in the gymnasium, which they had turned into a high-class nite club. About 1500 to 2000 Reservists and guests attended. Shown in the picture are: *kneeling*, R. T. Reeves YN1, J. L. Kenney AD2, E. P. Mitchell AK1 and *standing*, Capt. M. H. Kernodle, Marion Morgan, Rear Adm. R. F. Whitehead and Bob Crosby, whose band furnished the music.

● NAS BIRMINGHAM—As of 31 March 158 enlisted O.R. billets were filled.

● NAS ATLANTA—Announcements at morning quarters have stimulated interest in the USAFI program. Twelve G. E. D. tests were requested and two off-duty classes, one in high school algebra, were started.

PACKAGES FOR NAVAJOS ARE LOADED INTO AIRPLANE AT NAS DALLAS

EM'S POST-INSPECTION PARTY AT LOS ALAMITOS WAS HUGE SUCCESS

ATOMIC ROCKET

One of the long-haired rocket experts in BuAer crawled out of his test pit the other day long enough to discuss the possibility of atomic-powered rockets. Apparently the potentialities of such a vehicle reach amazing proportions. The article, as written by the expert, LCdr. R. C. Truax, will be set down fairly faithfully, as the editors wish to have nothing, if that much, to do with it.

LET US assume for the moment that the manifold problems connected with the development of the atomic rocket have been solved. Here is an atomic engine in a rocket of the V-2 type. With it, we could bombard any spot on the surface of the earth from the Antipodes. The missile would arrive at its target travelling some 15,000 mph. Interception would prove rather difficult. With a little refinement, the rocket would be capable of leaving the earth forever.

A take-off of the rocket would be an awesome sight. When a V-2 is launched, it sits on a small steel deflector that spreads the initial flames out along the surface of the ground. No material deflector could withstand the terrific temperature and velocity of the jet from the atomic rocket for even an instant. As the rocket rose from its launching position, it would be surrounded on the ground by an ever growing cauldron of molten earth and rock. We could expect the force of the blast to spatter a mixture of molten and solid earth for many thousands of feet.

Indeed, the danger to the vehicle of this man-made volcano might require the launching to be made from towers elevated several hundred feet in the air. The blast and clouds of radioactive gases generated during the first few moments of launching would make the site as dangerous to approach as the explosion of an atomic bomb.

AS THE rocket, with ever-increasing velocity, receded into the sky, the incandescent brilliance of the fiery jet would blind the eyes of observers for miles around, and the roar of the jet would be as loud as a thousand Niagaras. With such a vehicle the conquest of space, the age of inter-planetary exploration would have begun.

Now how to go about wedding the atomic bomb and the rocket into this vehicle of such staggering possibilities? The rocket engine will produce more power for its weight than any engine yet devised, but it is such a prodigious user of fuel that rocket-propelled vehicles are distinctly limited in performance, particularly as regards range. The release of nuclear energy promises to remove this limitation by providing an almost limitless source of energy.

The V-2 rockets that are regularly roaring more than 100 miles into the sky from the White Sands proving ground are powered by chemical energy, by energy released from the combustion of alcohol with liquid oxygen. This combination is one of the most powerful available.

At one point in its flight, the engine in the V-2 produces nearly 600,000 hp, yet it weighs less than one 2000 hp engine used in the B-29. The only factor that prevented similar rockets from spanning the Atlantic in the last war, and laying waste our seacoast, was that the V-2, in its 60 odd seconds of powered flight, consumes nearly ten tons of fuel.

These ten tons are sufficient to hurl one ton of payload a distance of about 200 miles at an average speed of 2500 mph. To obtain a range of 2000 miles, some 2000 tons of fuel would be required for the same one ton payload.

Considerable improvement over this performance is possible; better fuels and improved construction will extend the range somewhat, or permit greater payloads for the same amount of fuel, but really large increases in range are not possible with any conceivable chemical fuel except at the sacrifice of payload.

In unlocking the energy of the atom, man has released the power that runs the universe. In uncontrolled release, this power is capable of vast destruction. In controlled release, at least as conceived to date, atomic energy is not nearly so spectacular a performer. For example, within bounds of the earth's atmosphere, it will permit great increases in range, but little or no increase in speed. This is due to the fact that chemically-fueled jet propulsion engines can develop sufficient power for their

weight to permit speeds as high as considerations of atmospheric friction will allow.

At 3600 mph, the maximum speed attained by the V-2, a vehicle traveling continuously through the atmosphere would ultimately reach a temperature of about 3000 F. There appears to be no way of overcoming this problem except to travel where there is no air to cause the heating. This is possible only with the rocket. Thus it appears that to exploit fully the possibilities of atomic energy, so as to achieve infinite range with extremely high speed, we must apply that energy to rocket propulsion.

Nuclear fission will provide an abundance of energy, but the problem of how to utilize this energy in a rocket is a difficult one. The rocket obtains its thrust from the reaction produced by its exhaust jet. The thrust is proportional to the quantity of matter flowing out the nozzle, and to the velocity with which this matter is moving. If we can make the velocity high, the mass can be made low without reducing the thrust. Since the jet is made up entirely of the fuel carried within the rocket, and since fuel consumption is the factor that limits rocket performance, the problem is, through the use of atomic energy, to create a jet of matter that travels at extremely high velocity.

On the face of it, the task of producing a high velocity jet using atomic energy might seem simple. Most nuclear reactions give rise directly to high velocity particles. Indeed, kinetic energy of flying fragments is the primary type of energy reelased in the fission of plutonium or U-235. It is only when these fragments are slowed down by collision with the surrounding atoms that the kinetic energy appears as heat.

The obvious technique, then, would be simply to coat the back end of the vehicle with a thin layer of fissionable material and let the recoil of the exploding atoms provide the propulsive force. It is not even necessary, however, to go into the kinetics of the fission process to reveal a fatal "hitch" in this procedure. When an atom "fisses," the resulting fragments fly in opposite directions. This is a basic requirement of the law of conservation of momentum.

Furthermore, the orientation of the lines of travel is purely random. As a result, as many particles will travel into the body of the rocket as travel away from it. It can easily be shown that these fragments could not be absorbed without vaporizing the entire rocket in the twinkling of an eye.

A second and more practical technique is to build the rocket along more conventional lines and merely use the nuclear energy to gasify and heat a working fluid, and then expand this hot gas out through a nozzle in the same manner as is done in chemical rockets.

At first it might appear that the introduction of the use of a working fluid might place on the atomic rocket all the limitations of the chemical rocket. A brief analysis of the ideal working fluid will reveal the extent to which this is true and also point out the working fluid requirements for the atomic rocket.

It has been shown above that maximum propulsive effort is obtained when the velocity of the jet is as high as possible. The factors that determine this jet volocity are primarily the pressure in the combustion chamber and the density of the gases that form the exhaust. The importance of the last factor may be seen from a purely mechanical standpoint when it is realized that the combustion chamber pressure is the only force available to accelerate the combustion gases, and obviously, the lighter the gases, the greater the speed to which they will be accelerated by that pressure.

The analogy is similar to a light automobile and a heavy one, each powered by the same type engine. The light car will have more "getaway" and in a given distance will reach a greater speed than the heavy one. If we assume that mechanical considerations limit the combustion chamber pressure, the gas density is the controlling factor. Low gas density can be obtained by heating the gases very hot, or by using materials, such as hydrogen, the molecules of which are very light.

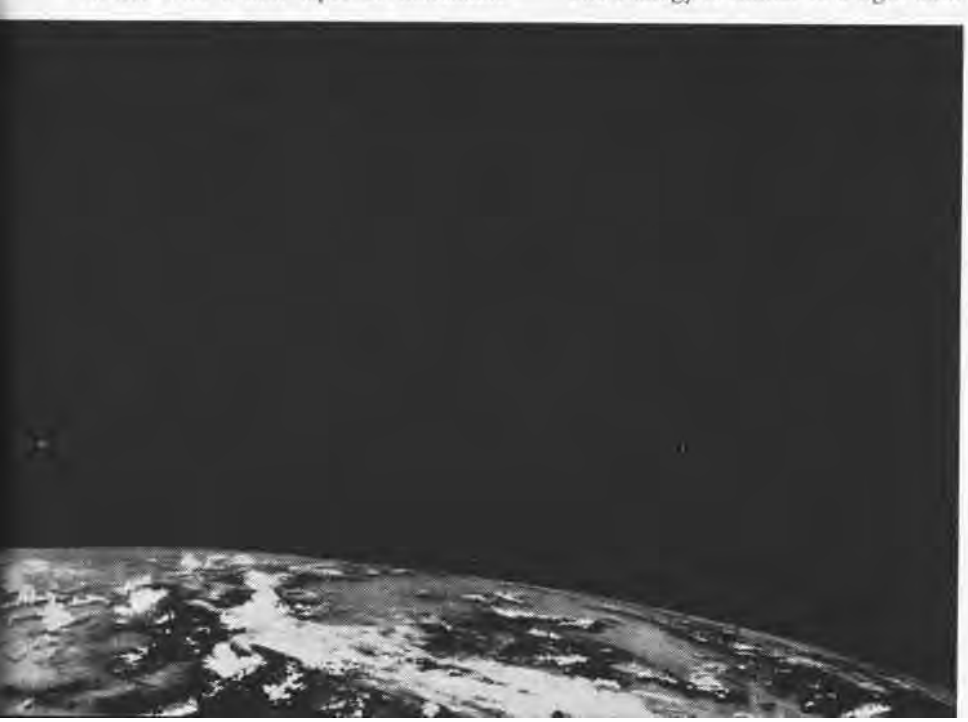
The first difference between the working fluid requirements for the atomic and chemical rocket is immediately apparent. In the chemical rocket the temperature is limited by the amount of energy liberated by the combustion of the propellants. In the atomic rocket the temperature is limited only by the existing techniques of cooling the combustion chambers.

The second difference is that the working fluid need not necessarily be the products of combustion of an energetic chemical reaction. For example, hydrogen alone would be useless in a chemical rocket, since it is inert in the absence of an oxidizer, and therefore would remain cold, while if heated by nuclear energy, to the same temperature as is generated in the combustion chamber of the V-2, it would attain a jet velocity of over 22,000 fps. This figure is nearly sufficient to give a rocket of V-2 proportions infinite range.

From this analysis, then, it would appear that the lightest known gas, hydrogen, heated by atomic energy to the highest temperature our techniques will permit, would be the answer to the problem. Unfortunately, practical considerations may keep us from this very attractive solution. In addition to being suitable from a thermodynamic standpoint as a working fluid, the material chosen must, in its liquid form, be capable of being stored in containers that are light in weight, and must be comparatively easy to handle.

Hydrogen, at ordinary temperatures is, of course, a gas. In fact, a lower temperature is required to liquify it than any other material save helium. A temperature within a few degrees of absolute zero is required. Even so, the difficulties of using it would not be prohibitive were it not for the fact that even in the liquid form, the density of hydrogen is only 1/12 that of water. That means that the tanks to store the material in the rocket must be about 12 times as large as those used in the V-2 to contain the same weight, and probably many times heavier.

A detailed analysis will show the influence of liquid density to be very serious. Moreover, the density of a substance in liquid form bears a fairly close



relation to its density in gaseous form, with the result that all the materials that have low density as gases and are consequently desirable from a thermodynamic standpoint, also have low densities in the liquid state and therefore present serious storage problems.

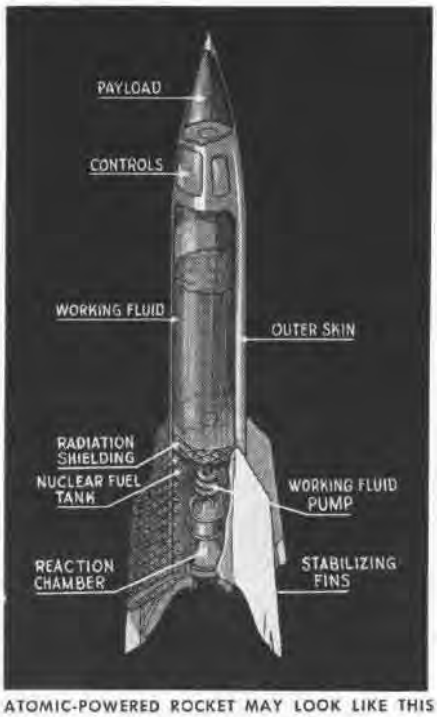
There is one solution to the dilemma that may prove the most practical. This is to choose as our working fluid a material that has reasonably low density as a gas, is the product of a very energetic chemical reaction, and has a reasonably high density in the liquid state. An engine using such a working fluid would have some of the characteristics of a chemical rocket combined with those of an atomic rocket.

If we explore the field of materials that have very high heats of formation, we find that water is one of the highest on the list. In a straight chemical rocket, liquid oxygen and liquid hydrogen would be carried in the tanks and burned in the combustion chamber to give a jet velocity of about 13,000 fps, a figure nearly twice that of the oxygen/alcohol combination of the V-2.

The primary drawback is again the very low density of the liquid hydrogen. However, with our atomic rocket, the working fluid would be carried as ordinary water. It would be pumped into the combustion chamber and heated by the nuclear energy source. If it were heated to the same temperature as that attained by the combustion of hydrogen and oxygen, it would give the same jet velocity as before, but the tank weight would be vastly reduced.

WITH A JET velocity of 13,000 fps, the rocket would still have to be approximately 90% fuel in order to reach our goal of infinite range. This means that the use of nuclear energy would have to be effected with practically no increase in weight over the best chemical rocket. This may not be possible.

However, if improved cooling techniques permit an increase in combustion chamber temperatures, something takes place that may permit a considerable decrease in fuel weight. As water is heated to higher and higher temperatures it begins to break down chemically. First one hydrogen atom tears itself away from each water molecule and combines with another hydrogen atom to form molecular hydrogen. Then the second hydrogen splits away from the oxygen atom and each combines with a like atom to produce a mixture of molecular oxygen and hydrogen. Upon further heating, the oxygen and hydrogen molecules break down into their atomic forms. The splitting of the molecule reduces the density of the gas, and at the same time absorbs heat. If



ATOMIC-POWERED ROCKET MAY LOOK LIKE THIS

the atomic mixture is then expanded through a nozzle, the atoms will wholly or partially recombine (to an extent not fully known) liberating heat which will maintain the gas temperature high and tend to counteract the increasing weight of the individual molecules as the recombination goes on.

The jet velocity attained in a process of this kind will be considerably greater than that of an ordinary constant composition expansion. Upon the magnitude of the figure and upon the weight requirements for radiation shielding will depend the feasibility of the atomic rocket. It appears reasonable to expect, for an initial temperature of 15,000 F an exhaust velocity of 25,000 fps when water is used as the working fluid.

It will probably be impossible to achieve a temperature of this magnitude by the use of the atomic pile, the only presently known means for producing nuclear power at a controlled rate. A carbon-uranium pile would volatilize at the temperature required. No news has come from the atomic energy laboratories of suitable alternate methods, but the enormously accelerated pace of nuclear research should contribute to the early discovery of a suitable technique.

CONCEIVABLY, a nuclear reaction that will take place in the gaseous phase in the presence, perhaps, of our selected working fluid as moderator, or with a relatively weak particle bombardment, would work. The working fluid would be sprayed in from the walls of the "combustion" chamber, meeting the fissionable material near the center, where fission of the "fuel" would take place with consequent heating of the working fluid. Additional quantities of working fluid would be sprayed along the walls of the reaction chamber and nozzle to maintain the wall temperature below the melting point of the wall material. The problem would be to establish a controlled temperature gradient, progressing from the very hot core to a manageable temperature at the walls.

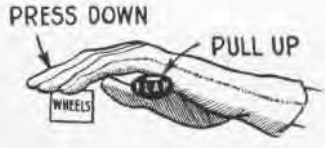
These, then, are the problems, but for the infinite possibilities presented by an atomic rocket engine, the problems are not too great.

STORAGE COVERS IN USE AT NAS NEW ORLEANS

New Covers Protect Ammo

NAS NEW ORLEANS—Here's a helpful household hint for application to any ammunition storage location in a poorly drained, low-lying area. To prevent surface water from pouring into underground storage magazines, adopt the same kind of covers as those shown in the picture. They were designed by station ordnance men and made up by station metal shop men at NAS ORLEANS (altitude 5').

Covers are readily movable when ammo is being stored or removed in large amounts. For inspection and temperature checks, the smaller hinged hatch is used.



Idea Cuts Wheel-up Errors

VA-213, PACIFIC—This squadron developed a technique which may be of value to other squadrons operating TBM aircraft.

After an experienced pilot inadvertently pulled up his landing gear on the runway, while practicing field carrier landings, a safety order was put out on raising of flaps.

This method of doing it was standard procedure among the squadron pilots, but it had not been put out in official form. The order directed the pilot to place his left hand, palm down, on the wheel and flap levers; place his left thumb under the flap lever and, at the same time, press *down* on the wheel lever with his fingers extended.

JATO SAVES DOWNED JET

AIDED BY MODIFIED JATO, FH-1 IS AIRBORNE 12 SECONDS AFTER TAKEOFF FROM SOFT GROUND

SALVAGING a jet plane after a forced landing may require a good bit of ingenuity, but it can be accomplished successfully and sometimes more quickly than recovery operations for conventional aircraft.

A case in point is the recovery of a downed FH-1 *Phantom* jet fighter which made a forced landing in an isolated area of the Dominican Republic during the Atlantic Command Exercises in the Caribbean.

Two Marine *Phantoms*, which had just refueled in Guantanamo Bay, Cuba, were en route to Roosevelt Roads when, within short intervals of each other, they experienced complete failure of both engines.

The first plane, after gliding some 20 miles, made a "wheels down" dead stick landing on a dirt strip at La Romana, Dominican Republic.

The Number Two plane, however, had to glide some 60 miles (from 20,000 feet) before its Marine pilot, Master Sergeant Lytton Blass, discovered a soft, sandy beach. He chose a "wheels up" landing to prevent a disastrous somersault from the wheels catching in the soft sand at the 70-mph.

Engine failures in both cases were caused by excessive water in the gasoline. The first plane, piloted by 1st Lt. Shirley W. Reese, was able to proceed without further trouble, after overhaul of fuel system and fuel cells.

Blass' *Phantom* was also able to fly again in short order, thanks to the use of JATO and "know how."

A conventional type of aircraft would have bent its propeller in a belly landing, straining and clogging up its engine. This would have required elaborate overhauling on the beach or removal to special service facilities.

Not so with the jet. The Marines lacked equipment to jack up the plane, so they dug holes in the sand under it, permitting the wheels to be lowered to a taxiing position. Then they cleared short runways from the holes to level ground, making it possible to pull the craft off its belly.

Two items had to be taken care of before the plane was ready to fly—an overhaul of the fuel system and changing the inboard flaps. Both jobs could be accomplished in the field. Engine damage was negligible.

After scouting around, with the aid of officials of the Dominican Republic, the Marines located the most suitable area for a take off, but it was too soft for a normal procedure.

It was decided that the *Phantom* would need JATO to assist it in becoming airborne. Information on the use of JATO for jet type aircraft, up to that time, was non-existent, and JATO information generally as well as equipment was meager. The proper type bottles (8AS-1000E) were not obtainable, requiring modification of the only available type, 12AS-1000E, as substitutes.

The JATO units weighed approximately 200 pounds each. The modifications called for (*1*) cutting off half of the base used as a stand, and (*2*), adding a two-inch extension of the forward release lug. The combination of the two allowed the JATO units to fit and made a positive release possible.

The plane was now ready to take off, with Sergeant Blass again at the controls. The two heavy JATO units had moved the center of gravity considerably to the rear, especially since the plane carried a light gas load (900 pounds) with nothing in the nose compartment except the guns (ammunition cans having been previously removed).

Blass had difficulty keeping the nose down for the take off. The main gear left the ground after about 100 feet, but the tail skid continued to drag.

The plane was completely airborne after 320 feet, with sufficient speed to remain in the air. It took a total of 12 seconds to launch the plane. The JATO bottles were dropped after they were expended and the plane proceeded to Ciudad Trujillo where it refueled.

A thorough check at Guantanamo Bay revealed that excessive water in one of the refueling trucks was responsible for the near disasters of the two jets. The cause of the forced landings was not nearly so puzzling to the Dominican natives as the take offs.

Obviously, they said, the planes could not remain airborne—they had lost their propellers.

The two *Phantoms* were assigned to Marine Fighter Squadron 122, MAG-14, Cherry Point, N.C. Out of 12 FH-1 planes which flew at Roosevelt Roads, the average availability was 11. If spare parts had been obtainable, the availability would have been 100 per cent.

AN OFFICIAL OF THE DOMINICAN REPUBLIC CONGRATULATES BLASS ON SUCCESSFUL FORCED LANDING

With President *Truman making frequent visits to Key West, Fla., and the Joint Chiefs of Staff holding top-drawer meetings, NAS Boca Chica greets plenty of VIP's; here Pres. Truman leaves his plane for a visit to the sub base.*

Battle Flag To Pensacola

Flew on *Enterprise* in World War II

The battle flag of USS *Enterprise* now flies at NAS PENSACOLA.

In a ceremony at the air station's auditorium the flag, veteran of the mighty Santa Cruz Islands battle, was presented by Cdr. Robin M. Lindsey, USN, to Capt. Richard K. Gaines, commanding officer of NAS Pensacola.

Cdr. Lindsey, who was awarded the flag when he was Landing Signal Officer on the *Enterprise*, stated in his presentation to the air station that the "Home of Naval Aviation" should be the possessor of the battle flag of one of the greatest ships that ever sailed in the defense of its country.

Helicopters Save Students

Valuable To Training Command

NAS PENSACOLA—Three helicopters recently added to the staff of the Air Training Command, one at Corpus Christi and two at Pensacola, lost no time in putting on their act.

A BTU-2 trainer from Corry field crashed on a routine flight and a helicopter piloted by Chief Gene M. Lieske landed alongside the damaged aircraft with a doctor. The pilot, Ens. Ira Blair, was unhurt and returned to Corry in the plane.

The helicopter assigned to Corpus Christi got off to a good start, making its first rescue 30 minutes after it had arrived at the station. After a 23.3 hour flight from Lakehurst, the pilot Lt. C. R. Johnson, and W. L. Smith, AMC, promptly took off to rescue a *Corsair* pilot down on Padre Island.

Midshipman W. H. Mero, the F4U pilot, was forced down by a broken oil line, frozen engine and oil over the windshield while on a gunnery hop. The instructor on the hop, Lt. J. Chevront, by flying wing on Mero and giving orders on VHF helped him make a perfect blind landing on the sand.

Train Coast Guard Airmen

Air Reserve to Provide Facilities

Aviation personnel in the Coast Guard Reserve are now able to maintain their flight proficiency at training facilities of the Naval Air Reserve.

Under an arrangement with the Commandant of the Coast Guard, the Chief of Naval Operations has extended this privilege to Coast Guard aviators and men who wish to fly on a volunteer basis.

This training arrangement is a logical one, since Coast Guard aviation in time of war becomes a part of naval aviation with specialized missions of search and rescue. Coast Guard aviators wear the same wings as naval aviators.

The training program will permit members of the Coast Guard Air Reserve to fly in plane types which they would be called upon to operate in time of mobilization. The plane types are PBY Catalinas, JRB and SNB utility and transport aircraft.

Syllabus for Coast Guard airmen includes refresher, instrument and navigation training.

Rasberry Gets Three Cheers

Striker Scores High On Wrong Exam

NAF NAHA—Killing two birds with one stone at this aviation outpost in Okinawa, Earl L. Rasberry has achieved the distinction of being the only striker to take a second class rating examination to make his third class rate.

Due to a mix-up in examination papers, striker Rasberry was given the examination for aviation metalsmith, second class. Although he was only going up for third class he decided to take it anyway to see what he could do.

Rasberry made such high marks in the higher examination that he is now held up as an example for all potential strikers by his commanding officer.

In the Navy less than three years, Rasberry is a graduate of recruit training at NTC BAINBRIDGE, Md., from which he was transferred to NAS YONABARU, Okinawa. He attended the Aviation Metalsmith's School at NATTC MEMPHIS, Tenn.

It will be something of a pleasant anti-climax when Rasberry has enough time in to go up for his second class rate.

Navy Airlift Men Decorated

Wilkes Gives Awards in Germany

VR-6, GERMANY—Four Navy airmen flying with squadron VR-6 in the Berlin Airlift were honored recently in special ceremonies at the Rhein/Main air base. Admiral John Wilkes, Commander U. S. Naval Forces in Germany, decorated three of the men for wartime

ADM. WILKES CONGRATULATES VR-6 PERSONNEL

service in the Pacific, and the fourth received a letter of commendation for a courageous crash rescue while on duty.

LCdr. Robert G. Lowrie received the Distinguished Flying Cross for "heroism and extraordinary achievement in aerial flight during operations against enemy Japanese forces in the Pacific war." Lowrie is now a plane commander on the *Vittles* run.

LCdr. Elmer F. Williamson received eight stars to add to the Air Medal he had been awarded previously for missions in the Pacific area. Williamson is operations officer for VR-6.

The Air Medal was awarded to Hewitt P. LeBlanc, ADC, for "meritorious achievement in aerial flight" as an aircrewman of a patrol plane during operations against enemy forces in the Pacific area. Chief LeBlanc is assigned to aircraft maintenance for the Airlift.

The letter of commendation for Sidney P. Pointer, ADC, recognized his courage and presence of mind in saving the life of Air Force Capt. Armand I. Grenadier, a check pilot, following the crash of an R5D in Berlin on 15 November 1948. The plane overshot the Tempelhof landing field, crashed into an embankment and burst into flames. As the crew crawled from the plane and made their way to safety, Pointer, a crewman on the flight, noted that Grenadier had fallen into burning gasoline and rushed to his aid.

Pictured with Adm. Wilkes in the accompanying photo are (left to right) Williamson, Lowrie, LeBlanc, and Pointer.

High Power Gas Saves F4U

Catapult Accidents Hit Squadron

VMF-211, RENDOVA—Two flyoffs from catapult position, without benefit of catapult power, were made during one cruise by this Marine fighter squadron operating around Okinawa.

A squadron pilot flew his *Corsair* off the port catapult when the hold-back ring broke. Only a few weeks before a similar successful "launch" was made from the starboard catapult. It is believed that the 115/145 octane gasoline currently used afforded the extra power necessary to make these launches.

NAVY FOLDS OKINAWA AIR BASE

NEWS ITEM—Owing to budgetary limitations, the Navy plans to close down a number of its overseas air stations, among them the naval air facility at Naha, Okinawa. The following story is an echo of this news, written in nostalgic style, from "The Rock."

NAF NAHA, OKINAWA — There comes a time when a naval unit receives the dread words "prepare to inactivate." In all instances, this means the ruination of plans and ideas of its personnel for having a unit of which to be proud. These words were received here and they sharply brought to mind what had been planned and accomplished.

First, dependent housing, which was considered just about the best on the "Rock." Here the Navy was taking care of its own. The majority of housing was built from invasion material. On this project many seamen and junior petty officers were acquiring skill and ingenuity in respect to their rates. Due to lack of certain materials, much improving was required to accomplish the tasks at hand. They were learning the fundamentals of the art of leadership and an understanding of other races by supervising native labor during construction. They were acquiring mutual respect for another race's knowledge and skill.

Next, the gym. It had to be rebuilt after being wrecked by typhoon *Libby*. Here the plans were to make it the finest on the island, as it was already the largest. There was room enough to fit the athletic requirements for all, and a location close enough to avoid sloughing through gumbo enroute.

Plans for a swimming pool were in an advanced stage. It would have been the first and probably the only one on the "Rock." Its size would have given all hands plenty of swimming room. And it was practically a necessity due to the nearest beach being 30 miles away. Bowling alleys had reached the buying stage. Plans were afoot to organize teams, ladies' afternoons, challenges to other services and activities, inter-area competition—in fact, the works.

The "O" club had a nest egg of $80,000, which it had planned to use to improve the club and other recreational facilities and to provide other means for enjoyment of the lighter side of life.

By having established friendly relations with other activities, the chiefs had managed to acquire sufficient material to build a club. The club would have consisted of a bar of solid mahogany imported from the Philippines, dance floor of oak, lounge, and kitchen. Indirect lighting and native mural paintings also had been planned. Through negotiations with the Army, the club would have been located just over the border from NAF territory.

Last, but by far not least, a general improvement in this facility's operational buildings and areas, was in the process of achievement through painting, minor construction and repair and landscaping—"erosion control" to BUAER, and accomplished through allowing natives to take away trash. By doing all of the above, the unit would have been the finest on the "Rock," as it already was the envy of other service activities, in which we take sufficient pride and satisfaction to overcome our inactivation blues.

Fighters Win Golf Tourney

Alameda 'Choppers' Slash to Victory

VF-182, ALAMEDA—By turning in a winning score of 434 "chops," this squadron recently won the "Choppers Open" golf tournament staged at the municipal golf course against all NAS ALAMEDA comers.

There were 212 duffers ranging from seaman recruit to admiral and, as the name implies, there were "choppers" by the score. From the edges of the fairways the spectators, taking their lives in their own hands, viewed hooks, slices, a *few* straight drives and tons of flying turf.

The air was so filled with shouts of "fore," that it sounded like the African Ubangi tribal war chant. A good time was had by all.

WILD WAVES WRECK WEEKEND

ORDINARILY the crew of a drone target control unit operating on board an AVR has an unromantic job, reporting for work every morning, putting in an honest day's toil and sitting down to supper with the little wife promptly at 1830 each evening.

But listen to what happened when Mother Nature threw a curve at the crew of KD Unit 21 operating out of the net depot at Seal Beach, Calif.

One bright but slightly breezy morning the boat departed and headed out to sea to rendezvous with a ship for some drone firing exercises. On the way out the seas were somewhat choppy, but nothing to worry about, for the 63 foot AVR's could take it.

All went well and the services were completed on schedule. Nothing to do but head for home. ETA at Seal Beach was 1800.

After 15 miles on course the wind freshened to gusts of about 25 knots. There was still nothing to worry about. Speed was reduced in the rough sea and some individuals started to feel concern about what the wife might say and how to explain to the girl friend why she was stood up.

By 1730 the wind force reached 50 knots and speed was again reduced. By this time the crew was hanging on for dear life and giving each other funny looks. A good sailor would never admit he was worried about a little sea. Or would he?

By radio VU-3 was informed that the ETA at Seal Beach was changed to 2400. The Duty Officer was requested to check with the wind guessers at El Toro on the condition of the weather. That produced the information that the wind in the boat's area was 25 knots. Actually, it was found later that it was 65 knots.

The AVR by that time was taking a hard pounding, and after a short conference, it was decided to head directly into the wind to reduce the danger of capsizing. The new course was directly in line with the nearest land, an estimated 20 miles.

An attempt to contact base failed. Water had been shipped aboard in such quantities that the dynamotors had shorted out. Morale of the crew at this point did not rise.

The AVR held together, however, and a cold, wet and hungry crew arrived at Newport Beach at 2200, far from home. Hamburgers and coffee improved the situation.

The next day at noon, just 18 hours over the original ETA, the AVR returned to Seal Beach, with many crew members wondering what foot tapping they would have to face.

From Marine *private to aviation cadet, Rollin Mielke SK2 (right) tries a Nav-Cad jacket for size on Pvt. Russell E. Hawkes, Marine Corps Reservist, while Sgt. James C. Oliver waits his turn and M/Sgt F. S. Fitzgerald, Glenview supply noncom, casts an appraising eye. Hawkes and Oliver are first enlisted Marine Air Reservists in Chicago area to qualify for air training in the Navy.*

FAW-17 CO PRESENTS SKIPPER M. S. RAGAN WITH AIR MEDAL AND DFC

JUST BEFORE VJ DAY, ATZENWEILER'S CREW DOWNED TWO JAP FIGHTERS

VPB 119

MORE THAN half of them veterans of previous combat tours, members of Patrol Bombing Squadron One Hundred Nineteen were among the first pilots to fly the new pride of the skyways, the *Privateer*. Commissioned 15 August 1944, VPB-119 was composed, for the most part, of old hands at the game of stalking the enemy and knocking him out.

The commanding officer, Lt. Cdr. Raymond C. Bales, had been executive officer for VB-106 during her first tour in the Solomons and New Guinea, and eight other officers hailed from the same outfit. Three others had been members of VB-104 when that squadron won the Presidential Unit Citation in the Solomons. VP-101, VB-105 and VP-71 likewise contributed distinguished alumni to the newly formed squadron. Just returned from Russia was Lt. J. W. Holt who had served as pilot for Admiral Stanley while he was Ambassador to the USSR.

Training had practically been completed by the end of November, and on 15 December 1944, the first crews departed for Hawaii. By the 26th, the full complement—18 flight crews, 16 ground officers, 4 ground chiefs and 15 PB4Y-2's—were at NAS KANEOHE.

Ordered to Midway, VPB-119 arrived at that island 4 January 1945 and set out on offensive searches the following day. Since most of their flying was done at night in weather described as "adverse"—far too mild a word in view of wing icing and 90-knot winds — the pilots might have supposed themselves assigned to the impossible task of "hunting in a dark closet for a black cat that wasn't there."

Flying conditions were so bad that simply to fly the planes was an achievement. Visibility, lack of, was such that it would have been impossible to spot a submarine, and it is questioned if a submarine laboring through such high seas would have surfaced for more than a short time. Radar bombing at night was practically eliminated by the fact that enemy shipping could not be attacked without first sending a contact report and obtaining permission from the area command, since at night it would have been impossible to determine whether a radar contact was an enemy submarine or friendly shipping. At any rate, all the radar blips noted proved to be caused by rain squalls. The only pleasant aspect of the problem was that VPB-119 was recalled after nine days and sent to the Philippines.

Arriving at Leyte, they were sent to Los Negros in the Admiralty Islands until Clark Field was ready to receive them. Then on 1 March while tanks were still rumbling along the road to Fort Stotsenburg where, just beyond the Zamboles Hills, the infantry could be seen fighting day and night, VPB-119 flew to Clark Field, the first squadron to land heavy bombers there.

The evening of that day the pilots were briefed on the long sectors of the search plan which, during the next month of operations, netted them destroyers, freighters, oilers, planes and land installations. Highlight of the first day of operations was Lt. Holt's tangle with a small convoy off northeast Okinawa. Sighting three destroyer escorts and three merchantmen, he dived through antiaircraft fire to strafe at masthead level. Though his bombs missed, his tracers hit pay dirt, setting off an explosion that sank one merchant ship. He thereupon managed to set one escort ablaze and started a fire in the superstructure of another merchantman. Only lack of ammunition caused him to break off.

THEN 20 days after the squadron began spreading destruction at or near Hong Kong, Amoy, Swatow and Foochow and were gradually beginning to think of themselves as new China hands in the form of clenched fists, Lt. (jg) James Evans and his crew were forced down after a successful attack right at one of the worst points on the entire coast, not over a mile from the island of Amoy, the most heavily fortified Japanese stronghold between Shanghai and Hong Kong. Of the 13 aboard the *Privateer*, seven including Evans and Don Bell, Mutual Broadcasting System commentator, were rescued.

Only the month before, Bell had been released from the Japanese Santo Tomas prison where, with his wife and two sons, he had endured three long years incarceration after his capture at the fall of Manila. Released from prison, he returned at once to his work as war correspondent. He asked for the chance to go on a 14-hour trip to China and boarded the ill-fated *Privateer* which crash-landed in a place hardly calculated to return any aboard to safety. But miracles happen occasionally, and this was one of them.

BELL DESCRIBED the knock-out blow as follows: "The pilot had started

evasive maneuvering, was at the top of a 500-foot leap-frog and going down, when we were hit. It probably knocked the tail off our plane, but we kept right on gliding down at the rate of 160 knots. At about 200 feet, the pilot discovered he had lost his elevator control and couldn't pull out. He did have time to straighten out the wings—and then we hit. The bounce probably broke the plane in two at the waist (because we never saw that part of the plane again), but the bounce must have saved some of our lives. The next time we hit, the nose dug right in and stayed down. What was left of our PB4Y-2 burst into flames immediately."

Fortunately the survivors were able to board a raft which Lt. Evans discovered floating nearby and inflated. Hidden from the enemy by the flaming plane, they were able to get under way. Using three paddles, of which one was broken and using "all hands" in the literal sense of the phrase, the seven survivors managed to escape to the mainland and friendly Chinese despite the fire of Japanese forces. Their Chinese rescuers took them to a U. S. naval station 27 miles away. From there the seven took a rugged trip of walking and riding by jeep and plane to Kumming, from where they were finally returned to Manila. Throughout the ordeal, Lt. Evans led the group who warmly described his meeting of the situation from crash to rescue as "4.0."

On 23 March, Lt. (jg) William Lyle flying at 1,000 feet sighted two *Oscars* flying off the northeast coast of Formosa just under the overcast at 3,000 feet. Lyle pulled up to their level and then let down under the enemy planes which immediately headed for antiaircraft protection on the coast. Lt. Lyle's plane opened up on the first *Oscar* from bow, starboard waist and top turrets. The *Oscar* turned, drove past the PB4Y-2 and blew up about 400 yards below the port wing. Then Lt. Lyle brought all turrets to bear on the second *Oscar* which went into a power dive, hit the surf near the beach and exploded. Four bursts of AA from shore batteries just missed the tail of the *Privateer* as it left the area.

DURING APRIL the big guns of the squadron really opened up. Lt. Holt, Lt. (jg) Walter Vogelsang and Lt. Frank Murphy seemed intent upon sinking the entire Jap fleet single-handed. These three pilots consistently flew aggressive and action-filled patrols, and two of them were eventually lost to enemy action.

On May 10, Lt. Vogelsang really pummeled the enemy in the Canton area, initiating his attack by burning and beaching one riverboat, blowing up a locomotive and damaging 16 railroad cars. He then strafed three riverboats thoroughly, and left two of them burning. Next on the list was a locomotive which was knocked off the tracks with damage to the seven cars it was hauling. Vogelsang followed this up by setting afire 14 trucks in a railroad yard, firing a warehouse and setting a large storage tank blazing. He took a strafing run on several *Sugar Dogs* and riverboats. As he departed the area, three enemy planes took off to attack. But it was too little and too late. The *Privateer* escaped into the overcast and flew safely back to base.

But there was not always this happy ending. VPB-119 lost many outstanding pilots. On the very first day of action, March 2, Lt. L. J. Reichert was killed in his plane as another aircraft overshot on landing, crashing into the *Privateer*. In April, Lt. Cdr. Bales and Lt. (jg) Aubrey Althaus failed to return from patrols. On May 1, Lt. Holt was missing on a patrol in Indo-China, and three weeks later Lt. (jg) Vogelsang was added to those already missing. During the entire tour, VPB-119 lost 75 officers and men.

On 17 June, Lt. Murphy was on patrol over the Luichow Peninsula when he saw a truck going down a main highway. Murphy made a strafing run on it. The truck which carried a machine gun returned the fire and smashed Murphy's windshield. That did it! Lt. Murphy lost control of the plane and crashed near the highway. He and four of his crew escaped just before the Japanese arrived. The grounded airmen made their way into guerilla territory where they were cared for by the Chinese. Two days later, they were spotted and arrangements were made to have them picked up by an Army plane.

ON THE 24th, Lt. Comstock working in conjunction with the Army plane and flying cover for the operation was attempting to show Lt. Murphy's party the path they should take to the rescue point by a series of buzzes in that direction. Suddenly Lt. Comstock's plane went out of control while in a turn at 200 feet altitude and crashed a thousand feet from the party. All aboard the plane were killed including two passengers and a flight surgeon. The rescue of Lt. Murphy was completed, Lt. R. M. Atzenweiler taking over the assignment.

During the last months of the war, antishipping patrols found the hunting difficult. The ships of the Japanese Navy and merchant marine—carrier to riverboat—that had escaped the clutches of American seapower and air power were few and far between. But even then VPB-119 compiled a great record in four and one-half months of operations. It had sunk 78,325 tons and damaged 55,755 tons of enemy shipping in addition to effective action against land targets and Japanese airplanes.

When Japan surrendered, VPB-119 could be proud of its part in victory.

★ THIS IS the seventeenth 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).

AT HAINAN, JAPS OFFERED TO GUARD LT. CDR. H. D. ALLEN'S PLANE

VPB-119 HIT THIS JAP GUNBOAT AND SENT ITS CREWMEN TO ANCESTORS

A FLIGHT of F6F's piloted by Organized Reserves was engaged in a camera gunnery exercise when the type training officer noticed erratic action on the part of one of the planes. He immediately called the plane by its voice call but received no answer. The type training officer continued calling and finally received an answer after using the pilot's name. The answers received were often unintelligible and gave evidence that the pilot of the erratic plane was definitely without complete possession of his faculties.

After assuring that the ill pilot had on his oxygen mask and was taking oxygen, the type training officer assigned another pilot to take over the job of staying near this plane and coaching the pilot. He then took the lead and led the pilot to the nearest airport.

On arrival the responses from the pilot indicated that it would be dangerous for him to attempt a landing at a strange field, so the flight continued to the home field about 40 miles away. Constant coaching was necessary to keep the pilot on course and in a safe attitude. The home field was alerted, traffic was cleared from the area, and preparations were made for an emergency.

In the course of the landing it was necessary to tell the pilot when to turn to each new heading, when to lower his landing and flaps, what throttle settings to use, nose up or down, when to cut the throttle and when to flare out for the landing. The plane was landed successfully and the pilot indicated that he had recovered sufficiently to taxi safely. He responded well to tower instructions until he neared the aircraft parking area where the plane appeared to go out of control and the pilot no longer answered.

In response to a warning from the tower bull-horn, an alert Aviation Machinist's Mate jumped on the wing, cut the switches and brought the plane to a stop without damage. The pilot was unconscious. He was removed from the plane and taken to the dispensary.

Investigation revealed that this pilot had reported to the dispensary on the previous day complaining of a bad cold. He had been given some medicine which contained opiates and was directed regarding its use. He was warned not to fly. However, his commanding officer was not notified and a grounding slip was not issued.

In the interval between this visit to the dispensary and the near tragic flight the pilot had not only taken the prescribed medicine, but had obtained a patent cold medicine which he also consumed. He was feeling "better" and when he found himself on the flight schedule he decided to take his hop. He has little memory of the flight and says that the F6F must have landed itself since he is positive that he contributed little or nothing to that evolution.

Unfortunately we can't all expect to be as lucky as this fellow was. It's not hard to imagine what would have happened to him had he been on a single plane flight when he first began to lose consciousness.

You are *not* required to fly when you are feeling below par. If you have any doubts regarding your physical condition, take time to look up the flight surgeon. You may be pretty sure that you are not sick enough to bother the "Doc," but remember it's a lot easier for him to treat a cold than it is to repair broken bones and fill out a form 339B.

TECHNICALLY SPEAKING

Rivet Bearcat Wing Tips

A UNIQUE feature of the F8F *Bearcat*, the jettisonable wing tips, is being abandoned.

When the fighter first was introduced, it came out with about three feet of each wing tip designed so that it would pull off if the pilot exceeded operating G restrictions by a significant amount during violent maneuvers. The wing tips came off all right, but sometimes only one would break off. This led to a momentary uncontrollable roll and subsequently made it a little difficult to fly the airplane.

Later, a dual-jettison feature, consisting of a detonating cap and length of prima-cord was put in each wing tip. It was installed so that if one tip failed the cap and prima-cord would be fired on the other tip, thereby weakening it so it also would fail. A number of pilots have made landings safely in *Bearcats* with the tips off, although a bit "hot" because of reduced wing area.

Difficulties were met with maintenance of the jettisonable wing tip, coupled with the mental hazard of having an explosive charge in the wing. After slightly more than four years of service experience it was decided the disadvantages outweighed the good points of jettisoning. Change #90 was issued directing operating activities to remove the charge and increase the riveting on wing tips of all F8F's.

A typical pilot's statement involving the breaking-off of wing tips was reported recently by VF-61. In this case the pilot got back aboard his carrier without accident after losing both wing tips in a rocket-strafing run.

"The accident occurred while making a combination rocket and strafing run on a towed sled. . . . I was wearing a G suit, but did not have it connected. When I started my run, I was steep, I should estimate about 70°. I cut back to 24" at 2200 rpm and made a fairly normal dive, planning to start my pull out at 2800 feet or sooner if speed should become excessive.

"My plane was in trim, my speed was 340-350 and my altitude 3,000 feet when I commenced firing. As I fired my first burst, my right wing dropped. I felt as if I had hit bad slipstream. I kicked left rudder and full aileron. The wing came up and I started a pullout. Recovery seemed normal. I was straight and level at 1,200 feet and indicating about 350 knots. I did not gray out during the pull out. I started my climb.

ARROWS MARK SHEAR LINE OF WING JETTISON

At about 5,000 feet I looked back and noticed my left wing tip missing. I checked and found my right wing tip missing also.

"My G meter indicated 8.2 G's (well above the operating restrictions for the F8F). I informed my flight leader of my condition. He instructed me to stall-test the plane. I flew clear of the force and jettisoned all of my ammo except one rocket from which the pigtail was missing. I then climbed to 8,000 feet and commenced tests, retaining my belly tank on instructions from the leader. Tests indicated 85 knots with wheels and 45° flaps, 88 knots with 15° flaps.

"I had good aileron control. I felt quite comfortable at 100 knots, in turns up to 25°. I returned to the task force and awaited Charlie. My engine started missing and the rpm surged slightly so I called and requested a deferred forced landing as soon as possible.

"I was brought in after two emergencies. On my downwind leg first pass paddles directed me to drop my belly tank. I did, manually, and decided not to continue the pass, but to set up again. I made a wide gentle pass—had 100 knots at the 90° point. The pass felt very little different, just a little fast. The landing was normal with quite a bit more shock on catching the wire."

Cloth Hood Helps Training

VF-132 — After trying out the amber canopy-blue goggles and the head shield-goggles type of equipment for instrument flying, this squadron developed a cloth hood which it believes is far superior.

CLOTH HOOD SHIELDS PILOT WHILE TRAINING

All 16 of its F8F's were fully rigged for instrument flight in less than one day by a parachute rigger. Work required to accomplish this was installation of a row of snap fasteners on the instrument lights reflection hood and a corresponding row on a white cloth hood.

When the pilot desires to simulate instrument flight he simply removes the cloth from the map case, snaps it on, draws it over his head and flies instruments. It has the added advantage of ease of installation so that the pilot can pair off on return from a gunnery flight and fly instruments back to his base, thereby gaining maximum training for the time actually airborne.

▲ *CNO Comment*—**The final answer for instrument flights is still being sought. Activities which try the above idea are requested to advise Aviation Training Division, Op-542D, on what they think of it.**

Tank Cleaning Causes Fire

NAS ALAMEDA—Cleaning and handling of steel auxiliary fuel tanks can be dangerous, the O&R shop found recently after a sudden fire and explosion which luckily did not injure anybody.

Rust had been removed from a tank and a final drying rinse of isopropyl alcohol was being applied. Workmen noted the fire in the vicinity of the alcohol that had been spilled on the wooden floor grating. A possibility exists it was caused by spillage of the alcohol onto scattered dry chromic acid flakes.

The fire traveled through the tank processing grating and reached the infrared baking oven where an auxiliary tank, just coated with aromatic fuel resistant lacquer, exploded violently. The flames were extinguished immediately.

Denatured alcohol specification AN-F-18 is suggested as the preferred material for processing these tanks in accordance with T.N. 10-47 as it reacts less violently with chromic acid.

▲ *BuAer Comment*—**T.N. 10-47 is being revised to use potassium chromate to replace the chromic acid. Chromic acid containers are labeled to avoid contact with organic materials. It will flash and cause a fire when small amounts of alcohol, lacquer solvents etc., contact crystaline chromic acid.**

Area Familiarization Eased

MAG-11, CHERRY POINT—New pilots of VMF-224 now find it easier to familiarize themselves with the Cherry Point area by means of a picture-map combination which has been posted in operations.

A three foot square portion of a sectional aeronautical chart is mounted on the wall and surrounded by photographs of local outlying fields and bombing and rocket targets, with each picture connected to its position on the map by a black string.

FIREWORKS ON THE LEASH

ONE STOW OF 500-LB BOMBS IN CRANE HIGH EXPLOSIVES MAGAZINE

WHEN Congress appropriated $5,000,000 in 1940 to provide additional stowage facilities for naval ammunition, $3,000,000 of this was earmarked for a stowage depot for the Atlantic Fleet. For reasons of security and safety, a site was chosen west of the Appalachian chain, in Indiana, and away from large congested areas.

On 1 December, 1940, the depot was commissioned Naval Ammunition Depot, Burns City, but this soon was changed to Naval Ammunition Depot, Crane, in honor of Commodore Montgomery Crane, who served as the first Chief of the Bureau of Ordnance.

The slim chances of its being reached by enemy aircraft, its two main highways and one main railway line, plus the sparsely settled vicinity, made Crane an ideal spot. Other assets were a large lake with adequate water supply, accessibility of electric power, and terrain well suited to abutment and deflection in case of an explosion.

During a construction period lasting two years, 2,462 buildings and magazines, with a total floor space of approximately 9,000,000 square feet, were erected. Construction included 156 miles of railroad, 349 miles of paved and unpaved roadways, 100 miles of water mains, and the stringing of over 100 miles of telephone wires.

A Navy low-cost housing project, located outside the fenced-in area, consists of 576 steam-heated housing units. Serving this community are a cafe, drug store, barber and beauty shop, grocery store and variety store. The modern community house contains a moving picture theater, and adjacent to this center of activity may be found the sheriff's office, doctor's office, post office, and Western Union facilities. Twenty-two modern housing units were erected on the depot, and nine farmhouses, originally situated about the area, were reconditioned as quarters for officers and key civilian personnel.

The mission of the Naval Ammunition Depot, Crane, is to supply ammunition and ordnance stores of all forms, ready for use by the Navy, Marine Corps Coast Guard, and such other activities as the Navy Department may direct.

With this mission in mind, the depot is completely equipped for the receipt, stowage, preparation and assembly, loading, preservation, shipment, breakdown and overhaul of all types of ammunition and inert ordnance stores.

SECURITY of the depot is accomplished by a Marine guard. A 24-hour watch is set on entrances, and Marine-manned vehicles patrol the entire area day and night. Both vehicles and sentry gates are equipped with two-way radios, thus giving the sergeant of the guard and the Navy officer of the deck periodic checks on activities throughout the station.

The depot is under the military and coordination control of the Commandant of the Ninth Naval District, and under the management and technical control of the Bureau of Ordnance. Under the commanding officer, the depot is organized into eight separate departments: administration, security, ordnance, public works, supply, fiscal, medical, and industrial relations. The larger departments are broken down into sub-groups each headed by an officer and a civilian technical adviser. For example, under the ordnance officer fall production, stowage, inspection, stock control, torpedo repair, overhaul, and surveillance.

Overall planning is accomplished and long-range policy determined by a board composed of the ordnance, fiscal, supply and public works officers, and a civilian management analyst.

At present the depot is in a reduced operational status, with many of its production buildings laid up for preservation and others under stand-by orders. The current complement is 24 naval officers, 15 enlisted personnel, and approximately 2,700 civilian employees. The security force consists of 4 Marine officers and 113 enlisted men.

ONE OF TWO AREAS DEVOTED TO HANDLING AND POURING OF CAST EXPLOSIVES; DEPOT SITE WAS CHOSEN FOR REMOTENESS FROM POPULATION CENTERS

AREA AROUND PYROTECHNICS PLANT BRISTLES WITH LIGHTNING ARRESTERS

EXTERIOR OF TYPE OF MAGAZINE USED FOR STOWING BOMB-TYPE AMMO

Many of the production buildings were constructed for specific jobs and contain permanently-placed machinery for this purpose only. Others, however, are of a more versatile nature, and it is here that special work, much of it for naval aviation, is carried on.

THE MODERN and complete pyrotechnics plant produces many signaling, identification, safety, and lighting munitions for naval aviation. With its complete machine shop and highly skilled and trained personnel, almost all inert component parts of these pyrotechnics are turned out on the spot. Hundreds of precision machines equip this plant either to make minor changes on stock parts as directed or to fashion new parts from stock materials much faster and more cheaply than an outside contractor could.

In addition to its work for the surface and sub-surface Navy, the pyrotechnics plant turns out large quantities of equipment for use on planes and carriers. Among these are aircraft parachute flares, target identification bombs, drift signals, and all the various types of identification flares. An experimental program, designed to perfect new and better safety devices, is being carried on by this activity.

In the torpedo repair shop all types of torpedoes are broken down, altered in conformance with the latest directives, and their component parts tested.

ASSEMBLY ROOM PACKING OF MK 8 PARACHUTES

They then are reassembled and actually run to test their performance before being preserved and stored, ready for almost immediate use. Although the greater part of the torpedoes are designed for submarine and destroyer use, many of the aircraft type are included.

Early in December 1944, the commanding officer of NAD CRANE, received a letter from the chief BUORD which began: "The rocket program is now this Bureau's most urgent . . ." From that day until the present this depot has assembled a large percentage of the rockets used by the entire service. This applies to aircraft rockets as well as the barrage type.

In this department also continuous experiments are being carried on seeking to eliminate all possible sources of error. This work includes the production of rockets to be test fired by various other activities and the almost weekly firing schedule on the range that the depot maintains.

BOMBS of all kinds, armor-piercing, semi-armor-piercing, general purpose, and depth, are loaded at Crane, where two large areas, each containing several buildings, are devoted to the blending and pouring of cast explosives. Almost the entire output, except for surface ship depth charges, is for naval aviation uses. At present only one of these activities is in operation.

Facilities also are on hand to load mines and torpedo warheads. The last pouring job done at the plant was the loading of aircraft depth bombs. Stored at the depot are bombs ranging in size and type from 100-lb. water-filled practice to 1600-lb. armor-piercing.

Two other munitions common to naval aviation that are stored at Crane are catapult charges and .50 caliber ammunition. Although neither have, as yet, been loaded at the depot, facilities are available for loading the catapult charges. This operation is comparable to the loading of propelling charges of certain types of guns, a job which the depot has handled by the thousands. A recent project order called for the repackaging of .50 caliber ammunition.

The Naval Ammunition Depot, Crane has an important supporting role to naval aviation and lives up to its slogan: "Produce and pass the ammunition to our fighting fleets."

PART OF BIG SEWING ROOM WHERE PYROTECHNIC PARACHUTES ARE MADE

UNPACKED 16-FOOT PARACHUTES USED FOR MK 8 MOD 2 AIRCRAFT FLARES

MECH GETS PINCHED IN CANOPY

ALL AIRCRAFT mechanics who work on the F4U-5 should read and profit from this story about the MAG-11 mech at Cherry Point who got the tight squeeze from the cockpit canopy and narrowly escaped worse injury.

The "striker," not too familiar with the plane, attempted to close the canopy the "easy" way. While standing with both feet on the step just below the cockpit entrance on the starboard side, he reached into the cockpit and flicked "On" the battery and auxiliary hydraulic pump switches.

Leaning across the cockpit, he then moved the canopy control lever forward to the "Close" position, apparently intending to turn the battery switch off before the canopy closed completely. It was his intention that after having turned off the battery switch, the canopy would continue to close as a result of the pressure built up in the system during the time the switch was "On."

Before he could remove his arm and head from the opening, however, the canopy moved forward rapidly from its half closed position, pinning his chest and head between the canopy and the wind screen. As most of the force was concentrated on his chest, he was able to extricate his head almost immediately, but was unable to remove the rest of his body.

Due to his position during the time he was pinned in the opening and also from the terrific pressure on his shoulder and chest, he was unable to reach either the battery or the auxiliary hydraulic pump switch. He therefore was trapped in this position until another mechanic, working nearby, came to his assistance and pulled the external manual release handle.

Though the injuries sustained were only minor abrasions, it is felt that he could have been badly hurt.

▲ ***BuAer Comment*** **— With more and more aircraft becoming equipped with power-operating canopy this sort of thing will be frequent. Mechs and pilots alike should beware and save a few crushed bodies. This Marine must be a cousin to the other Cherry Point mech who got himself locked in the baggage compartment of the F4U-5.**

FLAP ON TIRE CATCHES WIND, CAUSES TURNING

Tires With Flaps Save $$

An idea about which some controversial opinion has revolved—pre-rotation of large tires before touch-down on the runway—apparently has won converts, as BUAER has announced it would stock such tires for use by P2V squadrons.

The idea is to have rubber flaps on the tire sidewalls which catch in the slipstream as the wheels are lowered and start them revolving. In the case of large, heavy aircraft, pre-rotation is believed to result in some conservation of rubber. Aviation Supply Office, Philadelphia, stocks the tires for issuance to requesting P2V activities.

Some aircraft have built-in rotation, small motors turning up the wheels until their speed approximates the rate they will turn when the plane hits the runway. The R60 *Constitution* is an example of this type of rubber-saver.

R5D Cable Ends Up In Reno

NAS ALAMEDA—A lot of material goes into the making of an airplane.

During a recent overhaul and repair job on an R5D, the cable shop discovered that a new set of cables is two and one-quarter miles long.

Broken down into individual wires, the cable would extend from Alameda, Calif., all the way to the Reno, Nev., city hall.

At a cost of approximately 10 cents a foot, including the price of fitting, the completed cable work averages about $1500 per aircraft (which, incidentally, is well above the cost of a deluxe divorce).

Device Checks Camera Gear

The Navy has developed a new electronic shutter analyzer which it believes will be a boon to scientific checking of camera shutters and solenoids.

The new device, shown at the recent photographic exhibit at Naval Photographic Center for the Armed Forces Communications Association, employs a two-gun cathode ray oscilloscope with two photo electric cells. It is designed to permit rapid analysis and solution of numerous problems of photography, including: *1.* shutter operation and efficiency; *2.* shutter-flash synchronization; *3.* shutter solenoid delay; *4.* flash gun-switch-solenoid-shutter delay; *5.* internal shutter switch contact time; *6.* switch or electrical contact efficiency; *7.* diaphragm calibration; *8.* duration and intensity of flash bulbs and gaseous discharge tubes.

Triumph Manufacturing Co., Chicago, was awarded the contract for developing and constructing the tester for the Navy.

OSCILLOSCOPE GIVES QUICK CHECK ON CAMERA

VR-6, GERMANY—When this squadron, flying vittles to Berlin, wanted to have a well-earned squadron party, VR-8 pilots volunteered to fly their Berlin trips on their off-time. Later VR-6 pilots repaid the debt so VR-8's men could relax.

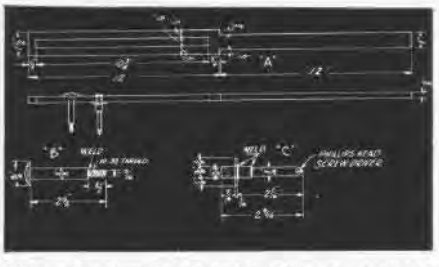
Nice dolly *is designed by Master Sergeants C. C. Smith and H. Pidgeon at MCAS El Toro. A portable propeller dolly, it carries props in horizontal position. A similar design has been constructed for three-bladed propellers. Majority of shops prefer to carry propellers in a vertical position through the shop to save space while in transit.*

Scheme Helps Remove Screw

VA-114, PACIFIC—To overcome the difficulty experienced in removing the Phillips screws on AD aircraft, a screw remover was designed by George W. Bennett, AM3, which saves considerable time.

In removing an inspection plate, for instance, at least one screw must be removed to operate the Phillips screw remover. *B* is inserted through the opening in *A*. *B* is screwed into position of the removed screw. *C* is placed on the screw that is difficult to remove while *C* fits into the opening of *A*. With pressure applied on the handle of *A*, a ½" rachet is inserted in *C*. The screw then will be removed easily.

A is made of ⅜" plate. *B* is manufactured from an aircraft bolt with $^{10}/_{32}$" screw welded to it. *C* is a ½" drive socket welded to a Phillips screw driver. A steel washer is welded to the socket.



SCREW REMOVER SIMPLIFIES WORK ON AD PLANE

Gasket Board Is Time Saver

NAS ST. LOUIS—The silhouette gasket board shown in the picture is a time-saving device employed by men in the stock issue room at this station. Mounted at the issue window, the board shows white silhouettes of all gaskets in use at this activity superimposed on a black background.

Each silhouette is numbered to correspond with the gasket part number. To draw a gasket, the mech compares the worn gasket with its corresponding silhouette and calls for it by number.

BOARD SHOWS WHITE SILHOUETTES OF GASKETS

Trailer Hauls Air Bottles

SMS-33, EL TORO—This service squadron has developed a bomb trailer which makes it easier to haul low pressure oxygen cylinders around to refuel MAG-33's transport aircraft.

With the transfer of VMR-152, which formerly did the job, this command had to find another way to do the job. T/Sgt. Ralph E. LeClair constructed the equipment.

A bomb trailer is used with an iron rail constructed to carry six 210-cu. ft. cylinders. The oxygen manifold is made of brass pipe and connects to all cylinders. An oxygen regulator is attached to one end of the manifold to insure correct and even filling.

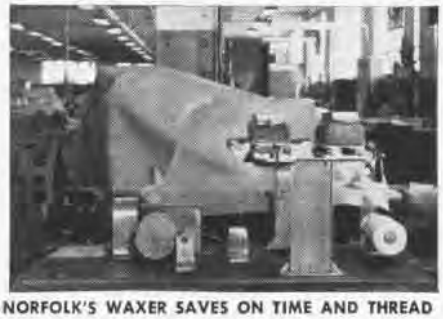
An oxygen drier with flexible hose and quick disconnector is attached to the forward end of the trailer and hooks up with filler plug on the aircraft being serviced. This equipment has proved highly effective and due to its simplicity of design can be made in a short time.

▲ ***BuAer Comment*** **— The bureau has prepared a specification covering six cylinder oxygen recharge trailers and maintenance has been requested to procure trailers for service use. Inasmuch as it will be some months before trailers are available, field activities may want to manufacture their own. The proposed trailer appears satisfactory for the intended purpose.**

Machine Speeds Waxing Job

NAS NORFOLK—A power-operated thread waxing machine has been developed by an O&R employe, W. D. Archer for applying wax to cotton and linen threads used in hand sewing and rib lacing of fabric-covered wing and control surfaces.

Prior to development of this improved method, it took two employes full time to hand-wax the various threads. This machine takes only one hour a day for a man.



NORFOLK'S WAXER SAVES ON TIME AND THREAD

An electric motor pulls the thread through two separate blocks of wax, held in containers which allow them freedom of movement on a track. Weights on the containers hold the wax against the thread as it is slowly drawn through. A leveling device evenly distributes the waxed thread on a receiving spindle.

Not only does this idea save 80 man-hours of work a week but it saves thread by cutting out knotted or kinked thread so often a product of hand work.

Slipstream Starts Bearcat

VF-193, PACIFIC—There is more than one way to skin a cat—or start an F8F engine—this squadron discovered while doing rocket-firing at Fallon, Nevada, in temperatures as low as minus 15° F.

One morning all efforts to start a plane failed since the auxiliary power unit was not generating enough power to turn the engine over. After several tries were made, the idea was conceived to utilize another F8F-1 turning up in front of the plane that wouldn't start, hoping the slipstream would speed up the already slowly-turning propeller enough for the engine to fire.

This plan was put into effect and with the plane ahead employing 1800 rpm the balky engine started without difficulty.

The idea is somewhat like one tried by a PB4Y-2 squadron which started an engine by taxiing fast on three engines.

COLD WEATHER FLYING TESTED

VA-155, PACIFIC — During minor cold weather operations aboard the CV *Boxer*, this squadron found out some things about this kind of flying which other squadrons may profitably use.

Pilots found that to operate efficiently in cold temperatures, it was necessary to sound flight quarters as much as two hours in advance of launching time. This time was needed to give the aircraft a thorough warm-up period, return to the ready room and get into the Navy's new rubber exposure suit just prior to launch. The exposure suit could not be worn more than a few minutes, since high compartment temperatures caused pilots to perspire.

Emphasis was placed on survival, search and rescue facilities and procedures. Aboard were two HO3S helicopters which were maintained in readiness during all flight operations. Survival lectures were given by pilots who had attended the Navy-Army Arctic Indoctrination School at Nome, Alaska, and by the group ACI officers.

Each pilot maintained a small personal survival kit made up of items not included in the paraft but which would be necessary for Arctic land survival. Such kits included: candles, waterproof match case, small hand compass, vitamin pills, lip ice, knife, gum and/or candy, fish hooks and cigarets.

In summary, cold weather operations for the carrier squadron will be of necessity slower and maintenance difficulties will be increased. But it is believed that with proper indoctrination and technical knowledge, operations in cold climates and water area will be effective and efficient.

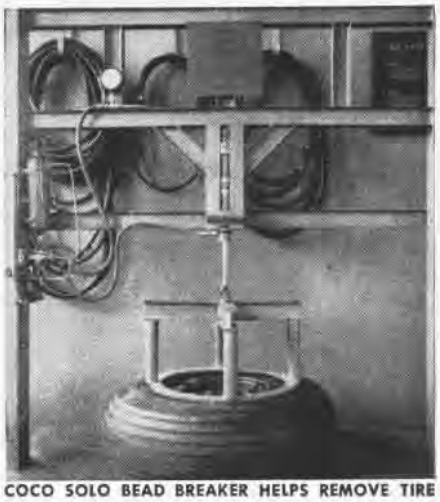
Another problem arose when the snowplow at Fallon broke down one morning when the taxi strips were under three to four inches of powder snow. This made taxiing impossible not only because of the danger of skidding on the slippery surface, but also because edges of the taxiways were obliterated.

The problem was solved by having the lead plane turn up and proceed cautiously along the taxiway, fishtailing and allowing the slipstream to blow the snow clear. This procedure proved very successful in the dry powdery snow and greatly reduced possibility of taxi accidents.

Panama Idea Saves on Time

FASRon-108—A hydraulic tire bead breaking device has been constructed by this command which not only saves time but cuts the possibility of damaging the tires. Made from scrap material, it is capable of breaking with ease tire beads up to and including 56" tires.

▲ ***BuAer Comment*** **— This idea is all right but ASO item #R41-M-290 is preferred for this work as it removes and puts tires back on without damage to tire beads.**



COCO SOLO BEAD BREAKER HELPS REMOVE TIRE

PLANE TIRES CAN TAKE IT

SKYROCKET'S SMALL NOSE WHEEL CARRIES TINY TIRE WITH HIGH PRESSURE FOR FAST LANDING

ANYONE who watches our faster jet aircraft come in for landings rarely thinks of the important role tires play in making these landings possible —and without incident. Sometimes a puff of smoke on contact with the runway evokes a comment but more often it was just "a darned good landing." That "puff of smoke" means just a little more rubber that's gone from the tires and those black streaks on the runways give you some idea of how much rubber is scuffed off. Pre-rotation tires are being used on a few of our aircraft (P2V, R6O) in an effort to minimize this scuffing action and to make smoother landings.

Little do most of us realize the problems that have been overcome by the aircraft tire engineers and the aircraft designers in making it possible for planes to land on such small landing gear—particularly the tires. Because on the smaller high speed aircraft, the landing gear must be retracted in very restricted space—tires must necessarily be small but yet strong enough to withstand the loads imposed under high pressures. "Bounce drills" and field carrier landing practices during training exercises are real tests of the ability of these tires to 'take it'! Aircraft tires smaller than the average passenger car tire must be able to withstand loads and pressures eight times greater than the latter!

These same aircraft tires are a vital factor in high speed takeoffs as well as landings since a tire blowout at high speed does not give a pilot the control he would otherwise have in the case of an engine or brake failure.

Tires really appear small on our giant long-range bombers, transport and cargo aircraft—and here again they take the spotlight because the use of multiple tires and wheels on both nose and main landing gear insures greater safety (in case of a flat tire), better stability and naturally greater comfort. As you can see from the photographs on this page, there can be a lot of difference in tire sizes.

WHEN THE full significance and importance of aircraft tires have been realized, it follows that every effort should be made to properly maintain them in order that maximum safety for both equipment and personnel can be obtained. Given half a break, an aircraft tire will more than do its job.

Since the air pressure within the tire helps take up the shock and impact of landing as well as smoothing out the run before take-off, proper inflation is very important. Under-inflation or over-inflation can be very harmful to tires and a daily check of tire pressures will not only increase the service life of the tire but will improve the efficiency of the aircraft.

Tire damage is most prevalent during the landing of the aircraft and most of these damages are due to faulty landing technique, contact with obstacles on runway or unforeseen circumstances. Damage from malpractices used when changing tires account for the loss of many otherwise serviceable and salvageable tires. NAVAER 04-10-506 contains many helpful instructions for the care and maintenance of aircraft tires. Subjects such as tire construction, recapping, preventive maintenance, mounting and dismounting, storage, etc., are covered.

DURING THE past war, recapping of aircraft tires proved a tremendous success and resulted in a vast saving of critical war materials. Millions of flying hours were flown on these recapped tires. This policy of recapping remains in effect today and is considered both practical and economical. New and stronger materials used in tire construction assure carcasses capable of longer service and greater resistance to abrasion and cutting.

The ability of tires to "take it" has been proven, but remember there's a limit to everything—so treat 'em right! They're the only contact the plane has with the ground and they also act as

FLAPS, MOTORS PREROTATE TIRES ON THE R6O

the medium in bringing the plane to a stop when the brakes are applied. But please go easy on the brakes!

Parachute Loft Is Raised

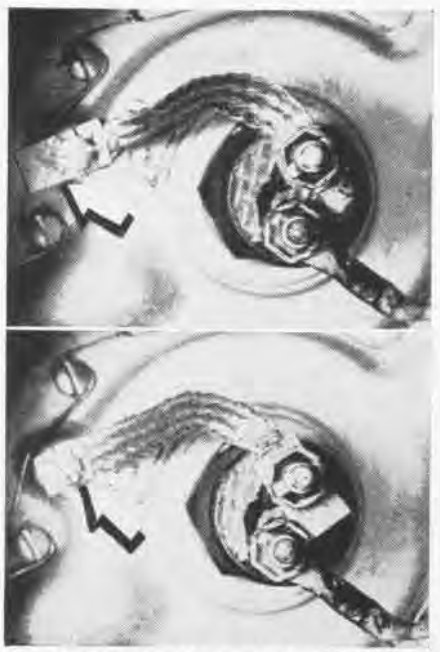
NAS ALAMEDA—They raised the roof at NAS ALAMEDA'S parachute loft. When first constructed in 1943, the loft was only 34 feet high. This was considered ample for airing and drying the 24-foot canopies handled at that time by the overhaul and repair department.

Because larger chutes now are being repaired at the station, it was necessary literally to raise the roof 10 feet. This was accomplished without interruption of regular routine work.

Proper drying facilities for parachutes are necessary for detecting tears, defective stitching and corrosion. Parachutes in service are opened, hung in the drylocker for 24 hours then inspected and returned to storage every 180 days to keep them in good condition.

That's Wrong — You're Right

VMF-211—Local cold weather flying conditions make the use of cockpit heaters and defrosters a necessity. Several heaters were malfunctioning and glow plugs were burning out. Staff Sgt. E. C. Gardner, NCO in charge of the Electrical shop, dismantled several heaters and found the condition shown in top photograph. It will be noted that in the original installation of a glow plug the long tip on the ground lead would inadvertently be shorted out against the positive lead. By clipping the tip, as shown in bottom photograph, the condition was remedied.



HERE IS HOW TO MAKE A BALKY HEATER WORK

▲ *BuAer Comment* — **It is not feasible that the short circuit was the cause of the glow plug failures. Electrical current follows the course of least resistance which, in this instance, would be through the short circuit, thus by-passing the glow plug entirely. It is probable that it was assumed the glow plugs had burned out since there was no ignition of the fuel-air mixture in the heater. It is certainly expedient to modify the lug attached to the ground terminal to eliminate the short circuit and the method of modification suggested is certainly practical.**

F4U Flies Sans Catapulting

VMF-211, RENDOVA—An F4U *Corsair* can be launched off the catapult without any push from the mechanism, this squadron discovered recently.

The plane was on the starboard catapult ready for launching when the holdback ring broke. The indicator showed 28 knots of wind across the deck. After a 91-foot unassisted run, the plane became airborne successfully.

Subsequent investigation failed to locate the missing holdback ring, but a thorough examination of all other elements pointed to this as the only conclusion. The plane had a full load of .50 cal ammunition and maximum internal gas load, bringing its weight to 12,500 pounds when it was catapulted.

NEW MK-3 SIGNAL MIRROR OUT

BUAER Airborne Equipment division is procuring a new and improved signaling mirror for inclusion in multiplace life rafts and PK-2 survival kits carried by pilots.

Fifth and latest of the line of signaling mirrors developed since the start of the war placed such emphasis on ocean survival, the new device will replace all existing mirrors which do not have reflex sighting. Three years of testing went into its design before it was accepted.

The new mirror is made of double-laminated tempered and annealed glass and is so tough it will resist heavy usage without breaking. Sighting is done as with several other of the signaling mirrors—through an aperture in the middle of the mirror. A stainless steel screen coated with Scotchlight produces a gleaming "point" for the downed pilot to aim at a plane overhead or distant ship to catch their eyes by flashing sunlight.

The Navy started the war with a simple signaling mirror made of stainless steel with a plain hole in the middle. The next one brought out was the Mk 1, featuring a plus sign in the middle for sighting. An experimental model, never produced, came next. It had a hinged inset in one end for sighting but its plastic construction did not stand up in the water so the Mk 2 mirror was brought out. This featured a black metal casing for a mirror and a fixed-hinge sighting reflector. The new Mk 3 device, with a range of 10 miles or more, replaces these.

NAVY USED MANY MIRRORS BEFORE MK 3 MODEL

Airships Make Record Flight

NAF WEEKSVILLE—Two airships which engaged in the fleet operations in the Caribbean area made what is believed to be the longest over-the-water flight for the K-type airship since the war.

Departing on 17 March, the two airships of ZP-1 accomplished for the first time a non-stop flight from NAS GUANTANAMO BAY to NAF WEEKSVILLE, N.C., a distance of 1040 nautical miles. The K-127, piloted by Lt(jg) E. A. Boyd, and the K-98 piloted by Lt(jg) Hal Lewis, left McCalla Field at 2245R and arrived at their destination the following day at 1635R, an elapsed time of 17 hours and 50 minutes.

The airships maintained an average ground speed of 58 knots. Weather conditions were quite favorable for the flight until the afternoon of the second day when a cold front of moderate intensity approached Weeksville at the same time as the airships made their appearance.

A third airship of ZP-1 which also participated in the fleet operations, the K-105, piloted by Lt Davis, returned to Glynco, Ga., at the same time.

When BuAer *places liquid oxygen aboard Navy patrol planes to replace bulky oxygen storage tanks, it will result in a great space and weight saving. This Air Force picture shows the liquid oxygen storage tank on the right; beside it are stacked the oxygen bottles required to hold the same amount of oxygen in gaseous form. Of course, the Navy uses high pressure bottles which are not quite as big.*

AVIATION ORDNANCE

Ammo Performance Reports

Many ammunition reports received in the Bureau are coming on RUDAOE's, NavOrd Form 147, which are designed primarily for equipment or material other than ammunition. (See OCL XVI-45). Although these reports are available, the Ammunition Performance Report, NavOrd Form 1444, which is designed specificially for ammunition, should be used. (See OCL A46-45).

It cannot be over emphasized that the best defense against the recurrence of improper and sometimes dangerous performance of ammunition is the prompt and complete reporting of such malfunctions to BuOrd for analysis and corrective action. Accordingly, when both ammunition and its related equipment are involved, reports on both NavOrd Forms 147 and 1444 should be submitted.

24" Gun Tests Navy Bombs

NPG DAHLGREN—A 24-inch test gun, largest known gun of its type, is in operation at this proving ground to test bombs and guided missile warheads and their fuses.

The new gun shoots bombs and warheads as heavy as 2,000 pounds against armor plate and concrete targets at supersonic velocities. The effects of the impacts on the missiles and their components will be measured and analyzed.

The gun is a sawed-off barrel of a standard 16-inch gun which had been damaged on the battleship *South Dakota* during the war. It took a direct hit from a Jap 500-pound bomb during the battle of Santa Cruz. After the war, BUORD salvaged the gun for Dahlgren to use. It is available for test firing by all armed forces of the U.S.

THIS SAWED-OFF GUN ONCE WAS ON BATTLESHIP

High Altitude Bomb Tracking

Test and evaluation of various types of bombing systems often require that accurate data be obtained relative to the time of bomb release, the bomb trajectory, and the point of impact. At the lower altitudes, little or no difficulty is experienced in obtaining the required information. As bombing altitudes are increased above 15,000 feet, the problem is complicated somewhat. The bomb cannot readily be picked up, and therefore cannot be tracked in its trajectory with visually directed tracking systems.

To alleviate this situation, Naval Aviation Ordnance Test Station, Chincoteague, Virginia, has devised two methods of keeping the bomb in sight at the higher altitudes, and, in tests conducted thus far, results have been highly satisfactory.

The first method employs a smoke trail to facilitate visual tracking, and gives good results at altitudes of 15,000 to 20,000 feet. The arrangement used for producing the smoke trail consists of a packet of three M18 smoke grenades which are secured to the tail of the bomb, and ignite at the instant of bomb release by the action of the arming wires pulling the grenade safety pins.

The trail thus generated is clearly visible from ground tracking stations, and greatly simplifies the problem of keeping the bomb in sight. An interesting feature of this method is its adaptability to different atmospheric conditions in that a wide selection of smoke colors are available. Hence, it is generally possible to obtain an excellent color-contrast between the smoke trail and the particular sky-background encountered.

The second method utilizes two electrically-ignited flares (experimental pyrotechnic igniter type 41-D-2) which produces a bright source of light clearly visible under normal conditions up to altitudes of 30,000 feet. When observed from ground positions, the light produced by the flares appears as a small brilliant dot which is ideal for accurate tracking purposes. The procedure for mounting and igniting the flares is quite simple, and consists of wiring the flares to the tail fins in a position diametrically opposite each other, and of running electrical leads from the primers to the bombing circuit in such a manner that the flares are ignited at the instant of bomb release. This method is not recommended for use with any bomb load which is carried internally because of the fire hazard which would exist in the event that a bomb failed to release. With loads carried externally, the system is considered safe, and, in the few instances where bombs have failed to release, the flares have burned out without damage to the bombing aircraft.

Although the systems described above are simple improvisations to eliminate some of the difficulties encountered in visual tracking, they are, nevertheless, of great value in saving time, the expense of needlessly repeated bombing runs, and principally in providing ground stations with a good reference for locating the target at all times.

FLARES HELP TRACK 500-POUND PRACTICE BOMB

Grenade Not For Signaling

Numerous reports of non-functioning of grenades, smoke, white, HC, AN-M8 have been received in the Bureau of Ordnance. Signals distress, hand, day and night, Mk

13 Mod 0 have replaced the grenade, AN-M8 for distress signaling purposes (See OP 998). These Mk 13 signals are now generally available in adequate quantities.

Since the primary use for the AN-M8 Grenade is now in damage control and fire-fighting training, a high percentage of performance is not considered vital. The Bureau of Ordnance is conducting quality control tests on all pyrotechnics, including these grenades, to determine the serviceability of the stocks on hand.

It should be kept in mind when using the AN-M8 Grenade for damage control and fire-fighting training that this item produces smoke which is slightly toxic in high concentrations. For this reason, the AN-M8 Grenade should be used only outdoors or in well ventilated spaces. A new grenade which can be used for these purposes in closed spaces will be available in the near future.

Cradle Screws For 20mm M3

BuOrd NAVORD OMI V3-48, dated 14 June 1948, promulgates instructions for modifying certain early production 20mm M3 cradles and states that four steel flat head machine screws, stock number R43-S-270442, should be requisitioned from the Aviation Supply Office supply system.

In view of the fact that these screws are not available in the Aviation Supply Office supply system, BUORD has procured the required quantity of screws and is stocking them at Aviation Supply Depots, Naval Supply Centers, Oakland and Norfolk, under the stock number J941-S-1267-30. Requisitions for these screws should be submitted in accordance with NAVORD OCL V2-47 dated 7 May 1947 or latest revision.

Correction

The tabulation of line maintenance parts listed in columns 1 and 2 (page 38) of the April issue of NAVAER NEWS should have appeared with the article in the 3rd column —*TO-1's Use K14B Gun Sight.*

MCAS EL TORO—A realistic touch was added to fire drills by Aircraft Engineering Squadron 21 by carefully placing smoke grenades at various stations in the area and buildings. The grenades proved an overwhelming success; personnel showed unexpected coolness and efficiency throughout the drill although none had been prewarned that it was in the air.

Hot Dimples Made To Order

NAS ALAMEDA — Latest wrinkle in hot dimpling for flush rivets and screws is a technique used by the Process Division.

This technique in dimpling has become necessary due to the development of high tensile strength aluminum alloys such as 75ST and 83O1W.

The procedure is applicable to the latest pneumatic compression riveters equipped with hot coin dimpling dies and automatic heat control regulators. It is also used with the new portable tools with automatic heat control regulators for use with hand rivet squeezers and rivet guns.

Heat the coin dimpling tools to 500°F, maintaining the proper temperature with the automatic heat control regulator. It is then possible to dimple high tensile strength aluminum alloys without fracturing the metal.

The heat control regulator assures that an even temperature is applied to the material being dimpled. Too little heat will cause fracture; excessive heat will be detrimental to the alloy.

DIMPLE MAKER TAKES SERIOUS VIEW OF WORK

The hot dimpling method can also be used on 24ST alloys, eliminating the heat treatment operation formerly required, to give the alloy an SO condition.

For emergency dimpling operations where automatic heat control regulators are not available, Tempilstick and Tempilac may be used to check temperatures and prevent overheating. In pencil form, Tempilstick melts when the temperature of metal exceeds 350° F. It is also available for 300° F temperatures.

EYES ARE GOIN BAD—YESTERDAY HE WAVED OFF A FLYIN FISH—TURNIN AT THE RAMP, HE SAID

MUSCLE SAVES DAY

ARMY HELPS NAVY MEN PULL 350-POUND LOAD UP SNOWY SLOPES OF MT. WASHINGTON FOR TESTS

IN THIS age of jet power, electricity, high speed automobiles and aircraft, the Navy and Air Force had to resort to plain, ordinary muscle and manpower to keep their jet engine research project operating on top of Mt. Washington.

For the second straight winter the project has been testing icing of engines atop the lofty New Hampshire peak, this year in cooperation with the Air Force and private engine manufacturers. The testing program on a new General Electric turbojet aircraft engine came to a halt in February when a breakdown occurred. A replacement part weighing 350 pounds was ordered.

It was planned to use a snowplow and clear the road to the summit so a tractor could haul the part to the 6300-foot summit. The plow could not handle the heavy snow and ice blocking the eight-mile road. A helicopter was considered to haul the load, but fog, ice and high winds that perpetually surround Mt. Washington during the winter made the risk too great.

The only way to repair the engine and continue the tests was by hauling the heavy craft over the steep snow-covered road by sheer manpower. Air Force and Navy engineers conducting the tests with General Electric enlisted aid of the Army quartermaster corps which had a detachment of soldiers stationed at the base of the mountain on another project.

Twenty men with ice creepers strapped to their feet and using improvised rope harnesses, succeeded in dragging the crate on a toboggan over half the way up the first day. Severe storms delayed further movement for several days, then another day of dragging brought the team to the clear windswept flats a mile below the summit. Here the Navy's jeep which had been kept atop the mountain all winter, relieved the weary men.

When the replacement part was received at the summit, repairs were made on the jet engine and the test program moved to completion.

Safety Aids Useful on Snow

VMF-323, EL TORO—During cold weather exercises held in Alaskan waters, the following observations of interest to pilots were noted:

1. Close air support problems indicated the need for colored smoke rockets for use in marking targets. The white smoke rockets were practically invisible against the snow. Orange smoke is considered satisfactory for all types of terrain.

2. Dye marker on snow is clearly visible from the air and should prove valuable in marking targets or for use by downed pilots to mark their positions or to lay out panels.

3. Strips of orange LSO cloth were placed in each of this squadron's aircraft for laying out signal panels by pilots in the event of forced landings on snow-covered ground. This cloth is clearly visible from the air.

4. Numerous articles of clothing, survival equipment, and rations were placed in the outer ammunition cans and in the baggage compartments of the squadron's F4U-4B's.

▲ *BuAer Comment*—**The neon red paulins and ponchos supplied for use in multiplace and pararafts respectively offer a highly contrasting target for use on snow, sea or land. The Mk 13 smoke signal provided in life vests and in all rafts offers a dense 20-second orange-yellow smoke also effective in snow areas. Storage of extra gear is contingent upon the aircraft and for actual combat missions could not be placed in ammo cans, which have other usages.**

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Air Force—Navy Provisions

One of the best examples of inter-service cooperation is the development of a new spare parts provisioning procedure for Air Force and Navy airframe production contracts known as Munitions Board Case 30. Close working harmony between the services in reviewing their respective procurement policies resulted in the development of this important document which presents the terms and conditions governing the selection and furnishing of spare parts for both services in *a common understandable language*. This joint document incorporates the best features and refinements of the respective provisioning procedures and will result in greater operating efficiency by reducing contractor's administrative expenses. While it is impossible to predict the actual date upon which this document will become effective, both the Munitions Board and Industry consider this a priority project and are giving it all possible expediting.

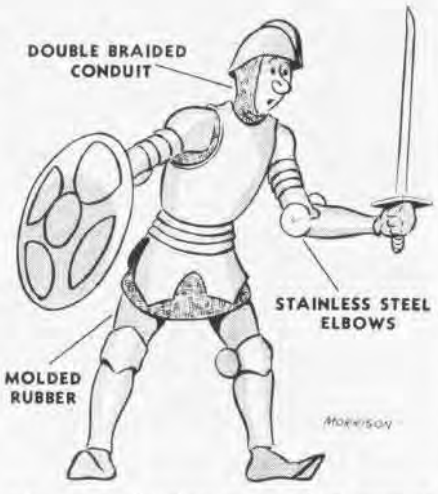
Munitions Board Case 30 was written by a panel of the supply and maintenance sub-committee of the Munitions Board and reflects considerable progress over former provisioning appendices. It is not only a *descriptive* and *informative* document, but serves also as a *primary legal document* under which the performance between the government and the contractor is clearly outlined and defined. Some of the new features of this document are:

(a) A table of contents and breakdown of provisions in a step by step outline form.
(b) A timetable approach to provisioning which defines the responsibilities of both industry and the services and prescribes the timely action required of each to insure the concurrent delivery of spares.
(c) A complete definition section.
(d) An exhibit section illustrating the forms used in spare parts procurement and delivery.
(e) A clear-cut definition of concurrency including its relation to the delivery of Navy "B" maintenance and "C" overhaul quotas.
(f) Technical documentation of the meaning of pre-provisioning, provisioning and final provisioning meeting; the membership of the provisioning team; the documentation requirements for the provisioning meeting.
(g) The procedure for handling change parts.
(h) The development of the spare parts exhibit.
(i) The delivery of spare parts, when and how made, the simplification of spare parts delivery reports.

Case 30 also provides for procurement directly from the prime contractor of initial requirements of peculiar vendor (sub-contractor) accessories, electrical, and bulk items which currently are not in the supply system. Because of this feature, newly formed squadrons will more readily obtain a complete range of material for initial operation.

It has been recent Navy practice to select technically qualified field aviation, maintenance and overhaul personnel, for membership on provisioning teams which meet at contractors plants to review drawings and select the required spare parts. The drafters of Munitions Board Case 30, cognizant of the assistance rendered by field personnel in outlining important usage information, formulized the procedure for the careful selection of technically qualified field personnel for membership on future provisioning teams. This close liaison with qualified field personnel results in a sounder provisioning program.

It is tentatively planned to supplement Case 30 with an illustrated AN document which will define to all interested personnel, the methods of provisioning and source coding of parts and its importance to the supply program.



Lockheed Uses Flat Screws

AN 509 screws can be substituted for Lockheed part numbers CT 204 and CT 205 in the maintenance of naval aircraft. Substitution of AN 509 screws should be made when CT screws are required, although Lockheed drawings indicate AN screws may not be used where external surface flushness is critical.

Economy dictates this use of CT screws and activities can readily obtain equal surface flushness in critical areas, by selecting the proper fit standard AN screws or reworking after installation to the required flushness.

Declassification of Bulletins

As a result of suggestions by field activities, ASO Technical Supply Bulletins have been declassified from "Restricted" to "For Official Use Only." This declassification should result in a wider and more effective distribution to all authorized personnel requiring the information disseminated by this media.

Technical Supply Bulletin information of a restricted nature will be published in a special TSB titled "Miscellaneous—Restricted."

New 'Uniform' for Plug Lead

BuAer recently approved a new designated detachable spark plug lead which will replace existing leads when current stocks are exhausted. The new lead uses double braided conduit, stainless steel elbows, and a moulded rubber covering over the entire length of the conduit. (See illustration)

These spark plug leads have been engine tested and meet the requirements of specification AN-I-27. The service life of this new spark plug lead is expected to be far greater than those in current use. Another good feature of this spark plug lead—it can be used interchangeably on any detachable lead installation. These spark plug leads will be issued *automatically* by ASO when existing stock of current leads are depleted.

Plain Bearings For Aircraft

The National Aircraft Standards Committee published drawings showing plain bearings used in aircraft construction. Some of these bearings are flanged on one end, while others are uniform in longitudinal and cross section. The bearing lengths are tabulated on the drawings and to simplify the stock system, 1", 1½", 2", 2½", 3" etc. lengths have been stocked.

Whenever supply activities requested intermediate lengths of bearings, the longer bearing was supplied with instructions to rework to the dimensions required. It is obvious that when considerable quantity of bearings are used in the maintenance and overhaul of naval aircraft by a station, this procedure requires considerable expenditure of manhours work. A special technique in the reworking of bearings is necessary so that surfaces do not become damaged or distorted.

Activities requesting plain bearing should indicate on a shipment request the part number required, and the end use of this material, in order that ASO can properly determine stock levels of the various sizes required.

Packaging and Preservation

Overpackaging and overpreservation of material can be just as ineffective and costly as underpackaging and underpreservation. A capacitor recently was received packed in a nailed wooden box that was almost 10 times the size required to protect the item effectively.

A condition of this nature greatly minimizes the protection afforded and causes a serious storing problem. Simple mathematics shows that needless space is being wasted when one capacitor is utilizing the storing space that could easily accommodate nine other capacitors. Sound judgment and forethought in estimating the use of proper preservation and packaging will result in a greater operating efficiency in the aviation supply system.

NAAS Corry Field—"No rest for the weary" is now the slogan for instructors. The student load is slowly increasing and a six-day week has been instigated to speed up training. Officer students also are increasing, due to influx of former shipboard officers and those accepted for flight training after graduating from college.

NEW ENLARGER LICKS VIBRATION

DRAWING SHOWS POSSIBLE DESIGN OF ENLARGER

SCENE—a carrier photographic darkroom. Occasion—the ship making 25 knots launching or recovering aircraft. Result—a shimmying enlarger and surrealistic prints,

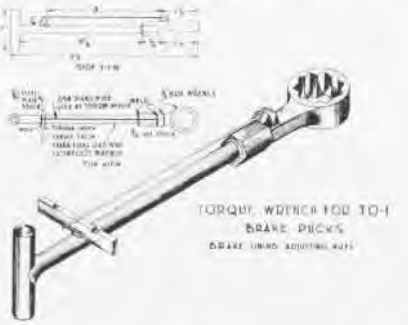
This purgatory of Navy photographers is one of long standing. It has been the cause of ulcers and hair pulling while the CO calls for pictures of a strike—in a hurry.

Such a problem demands a solution and the photographic division of BUAER is well on its way to providing it. Research is going on at the Aeronautical Photographic Experimental Laboratory at NAMC PHILADELPHIA.

APEL's approach to the problem involves use of a short duration light source for an enlarger. Normally the light of an enlarger is on for five seconds or longer while the enlarging paper is being exposed. Any vibration during that exposure results in a blurred image. With the development of stroboscopic lighting in which the light duration is about 1/10,000 of a second, the field was opened for experimentation in its application to enlargers.

Research has followed two lines. One idea involved a whole new enlarger built around the new lighting; a second replaces the present enlarger lamp with a flash head. With the latter system enlargers already in use could be adapted.

In pursuing its research APEL is trying to achieve compactness, ability to take large roll film, use of contact paper and simplicity of operating technique. Progress has ben satisfactory but much development remains to be done before a finished product is ready for the service. Actual construction of a flash head is almost completed. The time is not too far away when the captain won't have to slow the ship so his photographers can make a blow-up.



Improvised Torque Wrenches

MCAS EL TORO—The supply shortage has given birth in this squadron to an improvised tool subbing for a torque wrench. It is made from a three-quarter inch box end wrench and a few scraps, calibrated for 15 foot-pounds of torque.

The wrench (see diagram) was designed primarily for tightening the automatic adjusting nut on the brake assembly of the TO-1 aircraft, but it has other uses. Similar improvisation can easily be made for any other maintenance job requiring torque wrenches of different sizes.

OR IF YOU NEED WOODEN MANDREL, HERE IT IS

Making A Wooden Mandrel

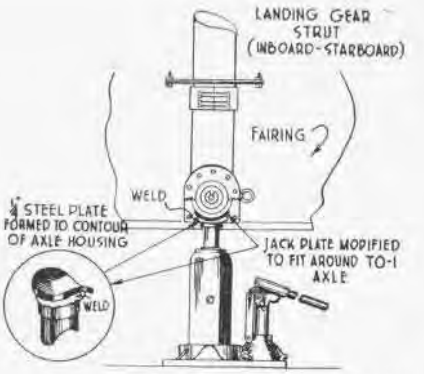
AEL PHILADELPHIA — The machine shop recently had occasion to machine a wooden mandrel, which was to be used for turning plastic cylinders. Outside diameter of the mandrel was of such size that when swung in the largest lathe, the clearance over the ways was about 1½ inches. Being unable to run the carriage under the work to make the cut an auxiliary carriage was made.

The carriage rides on one way of the lathe, incorporates a suitable tool holder, and is driven from the lead screw by an arm. The "teeth" on the drive arm are several pieces of drill rod, tack welded to the correct angle to engage the lead screw.

Wheel Changes Made Easy

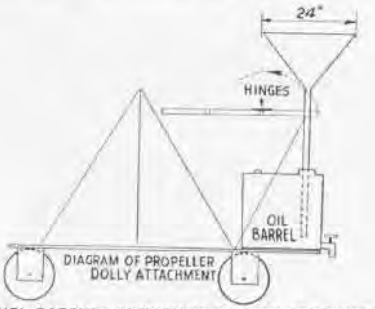
MCAS EL TORO—One man + small hydraulic jack = 3 men + jeep + wing jack + jack pad. This equation was proved recently while making a wheel change on the TO-1 aircraft.

Formerly a wheel change required excessive use of men and equipment. With a home-made adapter welded to the jack, as shown here, the job can be done with a third of the man power in less time with less equipment.



MODIFIED JACK FOR LIFTING TO-1 LANDING GEAR

The adapter is made to fit the odd-shaped hole in the axle by pressing putty into the hole and making a steel adapter the same size. An additional saving of 30 minutes per wheel change is effected by use of this jack.



FUNNEL CATCHES DRIPPINGS DURING PROP WORK

Prop Dolly Idea Catches Oil

SMS-33, EL TORO—Propeller dolly platforms, covered with oil, long have been a cause of many minor and some serious accidents. With this in mind, M/Sgt. Laurence Lancour has perfected a device to correct this working hazard.

To the normal propeller dolly platform, a hinge leaf was incorporated. Below this hinge leaf, a half oil drum was installed. A funnel wide enough to accommodate a propeller hub, and with an elevator mechanism, was attached to the oil drum.

With this funnel barrel combination, a dolly could be wheeled up to a propeller, the funnel extended while the men were removing the propeller. After oil drippings had ceased, it was lowered again for more working room on the platform.

LETTERS

SIRS:

Would you publish this notice in one of your future editions of NAVAL AVIATION NEWS:

USS *KITKIN BAY* (CVE-71)

All former shipmates from USS *Kitkin Bay* who would be interested in a reunion to hash over old times and renew old acquaintances, please contact us and have all others from the shop whom you know contact us also. Please reply.

DARREL BORDEN

1401 Clayton
Denver 16, Colo.
or: Dale E. Hurst, 422 St. Paul St.,
Denver 16, Colo.

SIRS:

There are red faces in the Marine Air Detachment at NAS SQUANTUM. Their much publicized mascot Dinty, a three-year-old English bulldog, was released to inactive duty for "flat feet."

A veterinarian, called in for consultation and diagnosis, indicated that running around on the hard pavement of the hangars and taxiways had caused his difficulty. Treatment and a 21-day sick leave at the home of Sgt. Burton Merram, pictured with "Cpl. Dinty," failed to help, so Dinty was declared unfit for service and put on the inactive list.

A true Marine, Dinty was a "Devildog" to the core. A favorite trick, and one which he carried out with dispatch and aggressiveness, was to snap at black shoes with no respect for rank or rate. Often he was momentarily frustrated when an officer in "greens" passed wearing brown shoes, but the next pair of black shoes was certain to get double punishment.

For his excellent esprit de corps, Dinty

held many honors and decorations. His steadfastness and devotion to duty won him a pair of Marine Wings awarded by none other than Brigadier General Christian Schilt.

Like many Marine warriors who have gone before him, in his heart Dinty will always be a "Leatherneck." Though inactive, he will continue to live up to the highest traditions—perhaps seeking his vengeance on the shoes of some unwary postman.

E. W. GOSHORN, LT.
PUBLIC INFORMATION OFFICER,
NAS SQUANTUM

SIRS:

Until recently, many members of VC-23 had speculated in vain on the subject of what happened to the old gosport, long used as a one-way system of communication from instructor to student in primary flight training. Since the advent of the SNJ as a primary trainer, and the demise of the *Yellow Peril*, the gosport has all but disappeared.

Had they gone to war surplus stocks to be sold to dairy farmers as tubing for milking machines? (Two Y-connections per cow.) Were they being used as economical pilots' relief tubes in aircraft with side-by-side seats? Were they being peddled on the black market to young internes who wished to appear professional? Or had they been brought up by practical jokesters who wished to squirt water from artificial flowers in both lapels.

All these and many other questions were answered when a pilot of VC-23 was attracted by the unusual actions of two birds flying in the vicinity of NAS NORFOLK last week. Upon close observation, he determined that the mother bird was engaged in initiating her progeny into the intricacies of free flight. Since he had no camera with him at the time, we are sending along the accompanying artist's conception of the scene.

GEORGE CORNELIUS, LT.
VC-23, NAS NORFOLK

VA-64—In Air Group exercises in the Mediterranean, this squadron made a good record in rocket firing. Steep angle attacks were impossible because of low ceiling, so the AD-1's made 30° attacks on a towed spar. All planes either straddled the spar or put both rockets within 50 feet, to rack up the best record for the day.

CONTENTS

● THE COVER

Two of the Navy's *Able Mabels*, the Martin AM-1 *Mauler*, are pictured on the cover, carrying sufficient armament to do quite a little damage. The lower plane has two *Tiny Tim* rockets, 12 HVAR'S and a 2,000-pound bomb. The upper one packs three aerial torpedoes and a dozen bombs, flying with a gross takeoff weight of 29,332 pounds, unofficial world's record for a single-engine airplane.

● RECOGNITION QUIZ

Top—Consolidated-Vultee's Model 7002 delta wing, designed for the Air Force and now flying at Muroc. Its sweep-back is 60°. Powered by Allison J-33 turbojet. Bottom—*First photograph of the F9F-3 in its warpaint. Pictures heretofore have been of the shiny-metal jobs. Jet aperture under tail is chief recognition feature.*

● THE STAFF

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Editor

Dorothy E. Ames
Asst. Editor

Lt. Cdr. Larry L. Booda
Feature Editor

Lt. Cdr. Rosalie W. Martin
Reserve Editor

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Flight Safety Editor

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Art Director

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Squadron Editor

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D Day Dress Rehearsal In Caribbean

ATTACKED from the air and the sea, tiny Vieques Island in the Caribbean was taken by victorious forces which quelled "enemy troops" during the spring war maneuvers of the Atlantic Fleet. U.S. Army and Canadian troops joined the Navy and Marine Corps in the dress rehearsal.

Smoke Screen laid by fighter planes on Vieques Island makes interesting design before descending on 'enemy troops' as landing craft make their approach

Red Beach is unloading point for troops and mechanized equipment from LST; Sand barrier affords some protection

Hitting the beach at different points with LCVPs, troops ready attack under protective umbrella of fighter craft

Phantom jet fighters piloted by Marines make combat air patrol over Caribbean islands during fleet war maneuvers

Skymaster transport with 'reinforcements' wings its way over historic fort of El Morro in San Juan, Puerto Rico

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