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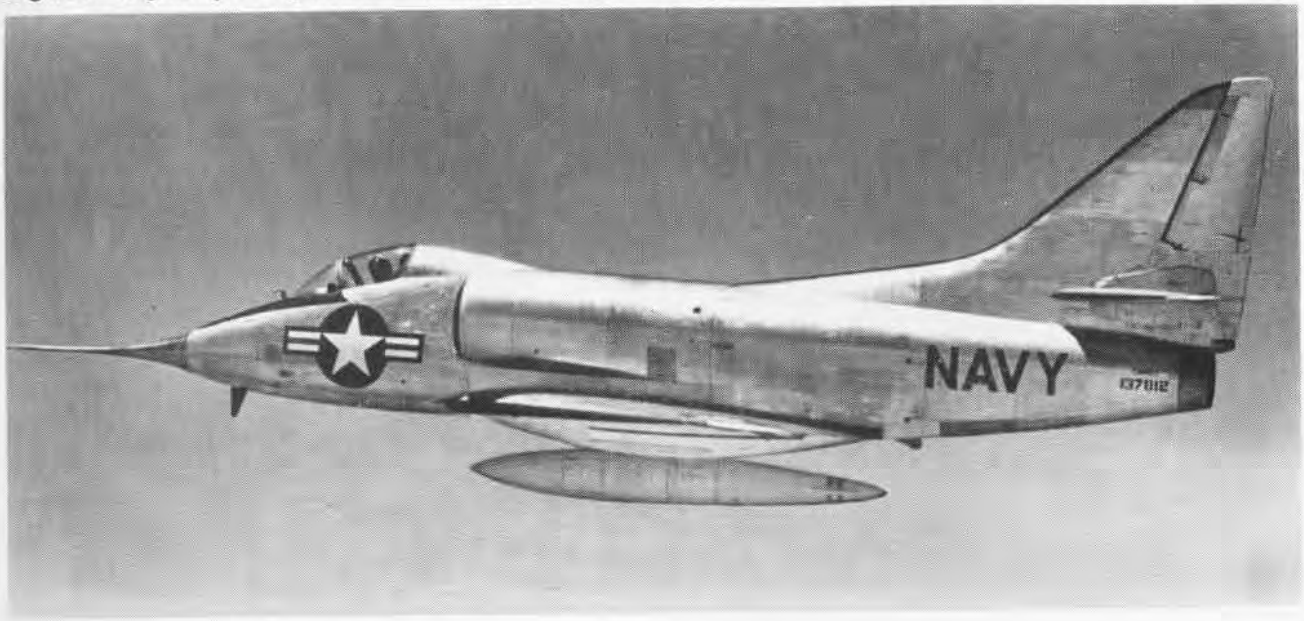
THE VIXEN AND THE SKYHAWK

The British DH-110 *Vixen* (above) is a day or night all-weather fighter powered by two Rolls Royce Avon engines. Originally designed for the RAF, it is now being set for Royal Navy use. The Douglas A4D *Skyhawk* is lightest and smallest combat jet designed to carry atomic bombs and wide variety of armament.



MATERIAL PROGRESS 1954

It's a far cry today from the early days of naval aviation in World War I when critical materials for aircraft were a simple list of six items—"spruce, fabric, tape, dope, veneer, and steel tubing." The word "crate" was not without validity. In contrast, today, a pilot flies a miracle of stainless steel, light metal alloys, and modern plastics. But it was not always so.

In his fiscal 1922 annual report, the Chief of the Bureau of Aeronautics mentioned metal construction for airplanes: "The rapid deterioration in service of the present wood and fabric construction for airplanes is aggravated by tropical conditions, and it is hoped that metal construction can be satisfactorily used in lieu of the present wood and fabric construction." The whole question needed study.

He went on to point out that while metal would eliminate much of the trouble, metal itself brought additional troubles, such as corrosion and fatigue failure. Furthermore it was a very expensive type of construction. Still, plans were being pushed to determine the possibilities of metal designs.

Today there are innumerable metals available to the aviation industry. Yet there are still problems in terms of materials that must be met, for not only are there just so many materials that can meet the stiff specifications of temperature and stress, but some of these materials are critically scarce.

It is this question of scarcity that looms large in the minds of engineers and scientists who have successfully pioneered and designed the many uses for new metals. This problem is being met head on.

ECONOMY *of engineering and manufacture is shown by major sections of honeycomb sandwich construction material for "Stinger Tail."*

JET TURBINE *blades which make a beautiful study in photographic design are made of stainless steel, vitalium, S-816 and timken alloy.*

UNCLE SAM has need of all kinds of materials, and we do not have all of them domestically. Many of them must be transported over the sea lanes of the world. Where a metal is in short supply, it is not only wise but imperative to make provision for a substitute—a substitute that will stand up to the standards of the metals it replaces. Reliability is absolutely essential.

BUAER has for years been actively engaged in metals research. New materials are being developed for special capabilities. The standards vary with the need: tensile strength, heat resistance, anti-corrosion and weight are some of the factors to be considered.

Some ten years ago, BUAER saw the tremendous possibilities of titanium and initiated a program for its development. Already it has become a "middleweight champ." It is some 60% heavier than aluminum, but only 56% as heavy as alloy steel. Since it is much stronger than aluminum and as strong as most steels, it has a wide margin of superiority over other metals in strength-weight ratio. Its corrosion resistance in salt water is well nigh unique. Titanium alloys are good up to 600°F.

Titanium can be used in a variety of ways. It can be used to construct jet engine compressor discs and blades, firewalls, shrouds, miscellaneous ducting, and forgings, etc. The possibilities of using it for such things as armor, pro-

THE LOCKHEED *P2V-5 Neptune bomber has a 17-foot reinforced plastic "Stinger Tail." The honeycomb sandwich construction consists of outer and inner skins of glass cloth impregnated with polyester resin with glass fabric honeycomb forming the filler for material.*

peller blades, landing gear and aircraft fasteners are now being explored.

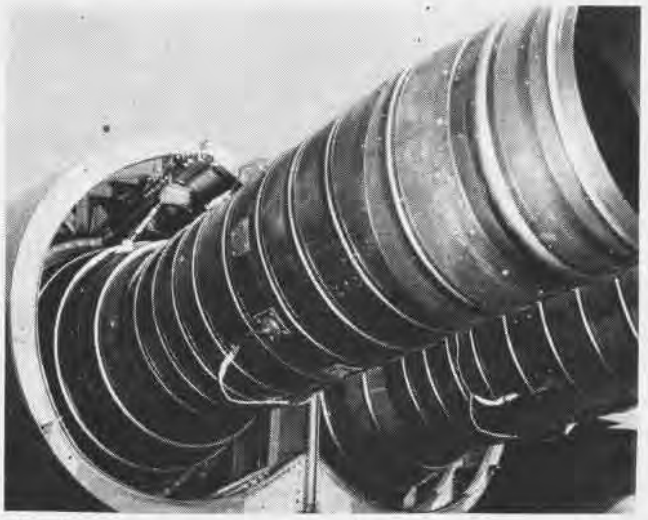
Titanium is scheduled for use in A2J, F2H-3, P2V-7, HOK-1, ZP4K, S2F-1 and TF-1 aircraft. J-46 and J-57 engines will also use titanium.

ANOTHER field in which tremendous progress is being made is in that of high temperature alloys. Gas turbine designers have been held back in their effort to push gas temperatures higher in order to develop more thrust and efficiency by the scarcity of materials which will stand elevated temperatures. Cobalt, columbium and other critical elements are generally used in the hottest parts of the turbine, but these are materials which would be critically short in an emergency.

The sole source of columbium is reported to be Nigeria. We have some deposits of cobalt in Idaho, but not nearly enough, and Africa again must be our main source. Thus there is a twofold task in materials research: developing a material to withstand higher operating temperatures and conserving critical materials.

Some of the possibilities are metal alloys, ceramics, cermets (metals and ceramics combined) and porous metals (for cooling). Metal alloys that have proved successful

AN ENGINEER *is checking the Brinell hardness of these titanium ingots. Formerly, engineers dealt in chunks of few pounds at a time.*



TITANIUM *has many uses. Chance Vought has completed experimental program and started making titanium afterburner shrouds in quantity.*

are usually based on nickel, cobalt, chromium and molybdenum.

Now there is no shortage of nickel in North America, but this metal has so many military applications that in event of an emergency, strict controls would be invoked at once, and even then shortages would occur. However, since cobalt and columbian are even scarcer, nickel is the logical substitute where material is designed to withstand high temperatures. Certain nickel alloys such as those belonging to the Inconel and Nimonics families are now being used. Other nickel alloys are being developed and are showing strength ahead of the best available cobalt alloys.

Chromium-base alloys cannot be used at the present time—though chromium has the advantage of not being scarce—because they are far too brittle at room temperatures. Right now the Massachusetts Institute of Technology with BUAER is trying to overcome this defect.

Still another pioneering field in the high temperature alloys is the molybdenum alloys. Navy has sponsored projects that have yielded materials with this base capable of sustaining strength in the 1800° F. range upward. The major difficulty is that the materials are subject to oxidation at these temperatures, so this has naturally led to the investigation of protective coatings.

With this in mind, BUAER has a program at the Battelle Memorial Institute which has as its end the determination of the most promising metallic alloying or coating elements. NAMC is also evaluating coatings. Thus far, no coatings can be said to be foolproof in withstanding the necessary combination of stress, time and temperature, but the avenues of approach are becoming much clearer.

For engine designers, porous materials offer highly desirable characteristics. Where porous materials are used, turbine components can be cooled, and this permits increased engine operating temperatures. This method is called "transpiration cooling." Porous blades made from powdered metals from wire screens or mesh are being investigated.

A recent BUAER design study has led to specifications for a hollow, porous, J-46 engine turbine test blade, based on strength levels shown to be obtainable when stainless steel powders are used.

But porous materials are not restricted to withdrawing heat from critical elements in turbines. They are also being considered in the field of boundary layer control. Here porous elements would be installed in the critical surface areas of the aircraft to reduce drag and increase lift; air would be withdrawn by suction at critical points to prevent turbulence. Data is now being gathered in order to produce the most efficient type of porous material.

ONE MATERIAL from abroad that is being favorably received here is SAP. [Nothing to do with trees or morons.—Ed.] It stands for Sintered Aluminum Powder.

CONSTRUCTION *of plastic radomes for Douglas Aircraft is an example of use of materials which give strength without weight penalties.*

Sintered simply means, according to Webster, "to cause to become a mass by heating without melting."

Credit for this new material belongs to the Aluminum Industry of Switzerland. The first sheets were imported into this country by BuAer for test, exhibit and study.

SAP is produced from aluminum powder flakes by cold pressing followed by sintering and extrusion. It is now being produced in this country as APMP.

While in some ways SAP is like a conventional aluminum alloy, its special virtues are strength properties at high temperature ahead of any other known aluminum alloy. These unusual properties are caused by a superfine dispersion of aluminum oxide and an oxide film which envelopes each aluminum powder particle. The particles strengthen the basic material. Being refractory, however, they neither grow nor dissolve at temperatures up to 1100°F.

General use of SAP or its American counterpart awaits additional testing work. NAMC is gathering high temperature fatigue data.

The potentialities of SAP have suggested to scientists and contractors the possibility of using the same principles in developing other sintered alloys. Will it work in titanium? What about present "super-alloys?" So out of the process that yielded SAP may come a new series of sintered metal powders with yet higher temperature properties.

There is a new chapter in steel research. An ultrahigh strength steel has been developed which Lockheed plans to use for R7V-2 landing gear.

By ultra-high strength steels are meant steels processed by heat treatment above 275,000 psi tensile strength as compared with the previous maximum of about 200,000 psi. By using this kind of steel, Lockheed can continue present designs, with only slight modifications, of parts now used on the Navy *Super-Constellation*, R7V-1, thus saving weight, retooling and associated costs.

For a number of years, 200,000 psi for aircraft steel was the maximum strength level permitted for aircraft construction. The high specific gravity of steel coupled with this limitation tended to decrease the number of places where steel could be used in aircraft. But then it was discovered that steel, heat-treated to a manimum tensile strength of 275,000 psi, compared favorably with the light alloys in many respects.

BuAer is going ahead with programs to broaden the base of the high heat-treated level. In these programs, the effect of adding boron on increasing hardenability and notch toughness on the strength levels in the neighborhood of 300,000 psi and higher is being investigated. NAMC is investigating the capabilities of "standard" boron steels heat-treated to these new high strength levels.

Still another area of interest for aircraft manufacturers are non-metallic materials. Certainly metal adhesives, reinforced plastics and transparent plastics offer real possibilities for construction of future aircraft.

One of the most frequently used is a sandwich material which is made by bonding metal faces to a low density balsa wood or metal honeycomb core. The former type in Navy use is the well-known *Metalite*.

The fact that sandwich construction in one form or another can save weight, improve fatigue resistance and achieve great structural rigidity is making it increasingly popular with manufacturers. Virtually every one of them is using sandwich construction at the present time. In one patrol-type aircraft, sandwich construction with a metal honeycomb core is being used in the stabilizer, the spoiler and access doors.

It is a safe prediction that industry is going to widen the uses of structural adhesives as sealants for there are a good many jobs structural adhesives can do. For example, these materials have been found suitable as a sealant for fuel, water and cabin air tightness. They could also furnish corrosion protection for the inside of integral fuel tanks.

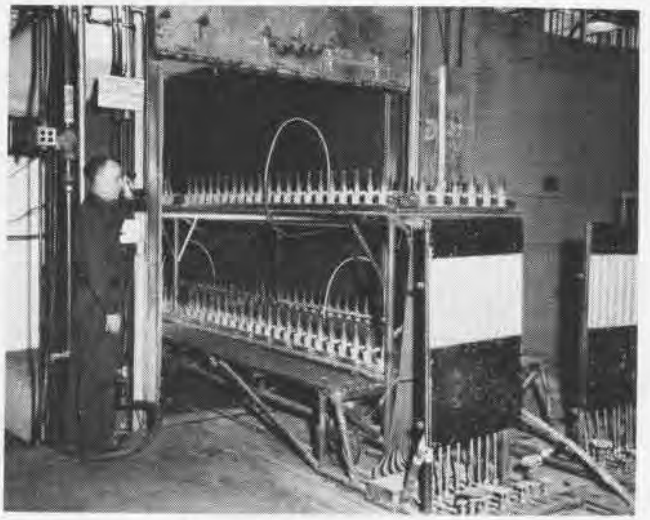
Glass-reinforced plastics have substantial present and a big future in aircraft applications. For example, the polyester laminates are finding application in a variety of structural and electronic applications. These plastics which compare favorably with light metals in strength-weight ratios, are being used in manufacturing radomes and antenna housings. They are also being used for air ducts,

HONEYCOMB, *used by Glenn L. Martin, has little stability in initial stage. With sheet metal faces bonded, it's rigid, withstands stress.*

CLEANING *process for magnesium alloy prior to bonding requires wiping with low-flash naphtha. This step is vitally important in preparing the magnesium alloy material for the Convair bonding process.*

HERE *a woman worker sprays on Metalbond. An efficient control of bonding cement can be obtained by carefully applying it to the strips prepared for the bonding process. This is crucial in making the alloy.*

A CONVAIR *workman is shown here using an assembly tool which was especially designed to insure an even distribution of pressure prior to the oven-curing stage of process. Each step is carefully executed.*



THE CURING *oven is shown open and ready to receive loaded fixture. Parts are blanketed and thoroughly cured at 300-325° Fahrenheit for 25 to 35 minutes at low pressure, and the process is thereby complete.*

fairing, backings for self-sealing fuel tanks, various missile structures, wing tip floats, wing tip tanks and jet parts. These plastics are ideal for such applications because of their ease of fabrication and their high adaptability to various shapes.

Structural plastics are slated for further development if the ever more exacting performance requirements of piloted aircraft and missiles are to be met. Already their use has emphasized their possibilities, and their area of use is bound to be extended.

Transparent acrylic plastics now being produced will greatly increase shatter resistance in aircraft canopies and similar components. In a BuAer project conducted by the Naval Research Laboratory, it has been demonstrated that acrylic sheet can be treated to make it capable of sustaining gunfire without destructive cracks at markedly higher stress levels than ever before obtained.

This investigation has in part stimulated canopy fabricators to undertake their own experiments, and they have already produced one-third to one-half scale prototypes of several canopies.

CERTAINLY the outlook for materials and their use in naval aircraft is bright. Year by year still other materials will, in all probability, be developed, and the sleek lines of glistening metal aircraft will represent yet greater advances over the days when the critical items for BuAer were "spruce, fabric, tape, dope, veneer and steel tubing."

Pilots today owe much to the increasing mastery of metals by men of science and industry. The Bureau of Aeronautics is making sure that every advantage in weight, strength, and durability is available to the men who fly.

GRAMPAW PETTIBONE

Is This Trip Necessary?

A flight of three F2H-2-type aircraft took off from Cecil Field on an instrument navigation flight to Glenview. The flight was cleared to cruise at 30,000 feet. Estimated time en route was two hours and five minutes, fuel remaining at destination estimated as forty minutes. The weather forecast for destination plus two hours was 2,000 feet broken, two miles with smoke and snow.

The flight was uneventful until Approach Control at O'Hare was contacted for a jet penetration to Glenview. All three aircraft had experienced intermittent radio difficulty during the flight, so the flight leader decided to make the penetration in formation.

Dropping speed brakes and wheels, they commenced a letdown. O'Hare Approach Control called and asked if they could make the approach to O'Hare. The flight leader, who had the only jet penetration handbook, replied in the affirmative, immediately leveled out, and put speed brakes in. One of the wingmen couldn't retract his speed brakes so became separated from the flight.

The flight leader cranked in the O'Hare range station and in so doing knocked his jet penetration handbook off his knee pad, where it became lodged out of reach beneath the seat. Then, things started to happen, which somehow no one had anticipated.

The lone wingman, in an attempt to catch up, experienced an explosion in his port engine and had to shut it down. After tooling around for an hour on one engine trying to contact Glenview GCA, he finally made a low ADF approach to the field and landed, with an assist from GCA on the final, with 100 pounds of fuel. It seems he had spent fifteen minutes reporting his altitude as 2,100 feet, when he was actually at 21,000 feet.

In the meantime, the other two pilots were jolted with the realization that

they couldn't get O'Hare GCA on any frequency. They were passed over to Glenview GCA where they were picked up, but held above 2,500 feet by the tower, because of the lone emergency. The flight leader saw the handwriting on the wall, so attempted his own approach by letting down in the clear over Lake Michigan and trying to get back to the field beneath the overcast.

The weather had deteriorated to 400 feet, ¼-mile visibility. He called the tower for permission to come in below 2,500 feet, but was refused. He climbed back to 2,500 feet and, at this time, he noticed he was shy another wingman. He then proceeded to O'Hare on ADF, dropping down to 300 feet. He passed over the edge of the runway and was able to effect a safe landing. His fuel state was 400 pounds.

The GCA at O'Hare tracked another jet over the field behind the flight leader. It circled the field three times then took up a heading of 170° and disappeared. The next day, a forward internal fuel cell identified as standard F2H-2 equipment washed ashore near Gary, Indiana. The ill-fated wingman has never been found.

Grampaw Pettibone Says:

Well, if that doesn't take the rag off the bush! Just about 99% of the accidents that happen on cross-country flights, during lousy weather, run the same pattern as this. From all outward appearances, a combination of unfortunate circumstances is responsible for the resultant fatality or bad crash.

When are you lads going to learn to anticipate trouble, especially when flying instruments? When are you going to realize that time is of the essence, when flying jet aircraft in inclement weather? Let me give you a rundown of the circumstances uncovered in a separate investigation of this accident and you can decide how much of the bad luck was asked for.

- **Weather briefing was given by a third-class petty officer.**
- **Alternate airport requested was Truax AFB, which had below minimum weather. The flight leader was unaware of this.**
- **Alternate weather placed on the flight plan was for Moline, Illinois. The flight leader was unaware of this.**
- **There is no evidence that the two wingmen had received any weather briefing.**
- **Only the flight leader had a jet penetration handbook, atlhough the squadron was on the distribution list for 20 copies.**
- **The flight leader was unaware that Truax AFB had no published jet letdown.**
- **The flight was approved by squadron authorization to be flown airways. It was not so planned, nor did there appear to be any indication of intent to follow the approved flight plan.**
- **No attempt was made during the flight to obtain destination weather.**

It's a lead-pipe cinch that the penetration was started with only one thought in mind—that all they had to do was get below 2,000 feet within two miles of the field and they had it made. They didn't expect deteriorating weather, they didn't anticipate any emergency situation de-

veloping, and they just weren't ready when it happened.

There is nothing that gets a pilot tightened up quicker than finding himself in the soup, low on fuel, with no chance of landing immediately. The old force of self-preservation comes to the fore and it's every man for himself. Crank in an extra complication, like loss of two-way communications, and anything can happen.

It seems the old warning, "Keep your head, when the going gets rough", just doesn't fit the bill anymore. My advice is to *use* your head *before* the going gets rough and you won't run into such difficulties.

While you're at it, you might make a quick mental calculation of everything that could happen, if weather should sock in at your destination, and maybe you'll decide that the trip isn't necessary. I'm sure Mabel will see eye-to-eye with you on the subject, if you take the trouble to call her up instead.

Don't Look Now!

An AJ-2 pilot made his eighth approach during carrier qualification landings. As the aircraft approached the ramp, the pilot was given a high dip, which was not answered, followed by another high dip, which was answered, and a cut. The aircraft contacted the deck, nose wheel first. The main gear hit slightly starboard gear first, rocked over and caused the port gear oleo to depress more than the starboard oleo.

The aircraft caught No. 6 cross-deck pendant and bounced back into the air. After pulling out about all the wire that could be pulled out, the plane was slammed back to the deck on the nose gear and the port main gear where it came to a stop. Here we take up the pilot's statement:

"The aircraft was inspected by the deck crew and no visual discrepancies were noted. I completed my check-off list and prepared for take-off.

"The launch and climb-out were normal except that I required more right rudder than usual. While climbing out, the ship called me and said they suspected that I might have hit my port propeller on the deck on my eighth landing. I made a visual in-flight check of my port propeller and observed from the propeller arc that the tips had apparently been damaged.

"Further inspection revealed a six-inch skin crack on the upper inboard side of the port nacelle. There were also popped rivets and a small tear on the fairing between the nacelle and wing structure. As there was no abnormal vibration and all engine instruments were indicating properly, I elected to continue to the beach. A safe landing was executed upon arrival there.

"It is noted here that on my landing roll-out my port main landing gear oleo strut was flat. In my opinion, the subject carrier landing was not abnormally hard. However, it was definitely a nose-wheel-first landing. I believe that my port main landing gear oleo strut had lost enough pressure to 'bottom' on impact, allowing the propeller to strike the deck. I do not believe this landing would have caused any structural or propeller damage, if the port landing gear oleo strut were maintaining pressure properly."

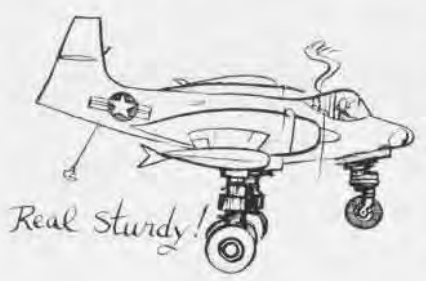
Grampaw Pettibone Says:

Now, let's just slow down a minute, buh? It seems to me that you're getting the cart before the horse in this case. Just how much harder would you have to dive into the deck, before you'd call it damage as a *result* of a landing? They build 'em pretty strong these days, but not that strong.

What gets me is how an airplane can get half-way into the wardroom on a carrier landing in front of a few dozen observers and get launched after a cursory inspection. After striking the deck twice with loud unusual noises, causing debris to fly all over the place, the aircraft looked just as sound as it did after the first landing. At least everyone hoped it did.

The port main gear inspector claimed the oleo looked normal to him after the landing, yet the board concluded that the primary cause of the accident was a low port oleo resulting from a leak in the "O" ring seal. They admitted that there might have been a little pilot error in the landing.

To me a "little pilot error" is like a little smell of garlic. There ain't no such thing. It oughta be standard practice to shut down and inspect an airplane, after an abnormally hard landing. Wishing away structural damage, won't make it so, especially when you know deep down that the possibility exists. The old axiom, "What you don't know won't hurt you," doesn't apply in aviation. A little more "know" and a little less "hope" will save us a lot of airplanes and pilots, not to mention a higher state of morale for the next-of-kin.



Gaipoline?

After twelve hours of work without relief, a driver of a fuel tanker stopped at the fuel farm to top off his truck. A combination of fatigue, poor lighting, and inadequate fuel markers caused him to inadvertently fill the tank with jet fuel instead of 115/145 gasoline.

The next day a line of AD's were refueled from the truck. A short time later four of the AD's were manned for a flight. Three of the AD's aborted their take-offs due to detonation on full-power turnup. The fourth became airborne, but, fortunately, made it back to a safe landing on the field before rigor mortis had a chance to set in.

Grampaw Pettibone Says:

Great balls of fire! What kind of a fueling system will allow such goings on? It's not enough that pilots have to depend on their own ability to get their flying machines out and back. To crank in the hazard of inevitable engine failure is just going too far.

It's a sad operation if pilots are forced to look into their fuel tanks before each flight in order to assure themselves that they won't wind up in the boondocks off the end of the runway.

The next thing you know an outfit like that will have a sign on the line shack door which reads: *"Please return flashlights and/or match boxes after checking fuel."* That would be an earth-shaking development to say the least.

Whiting Hits 31,616 Hours

Students Fly 11,000 Scheduled IFR

Pilots of Whiting Field broke all previous records for the station recently when they compiled 31,616 hours of flying time. Of the grand total, over 30,000 were flight syllabus instructional hours. It is at Whiting that the Navy's future fliers make their first solo flight.

In achieving this record, each of the two primary flight training units flew nearly 11,000 scheduled IFR's to better a high previous record of 28,072 hours flown in October 1953.

To attain the new record instructors flew an average of 3.4 hours with student pilots averaging 1.6 hours each flyable day. A statistical breakdown of the accomplishments that went into making up the record month of June includes a total of 302 students successfully completing the primary phase and progressing to Saufley for further training. With approximately 1200 students undergoing flight training at Whiting and less than 400 instructors and planes, the station took on the appearance of rush hours at Grand Central Station.

Of the 22 working days in June, five were lost to bad weather, hence the record was accomplished in 17 flyable days. Rounding out the year's totals, fiscal 1954 saw 240,857 instructional hours flown with 2,722 future naval aviators completing training phase at Whiting Field in Pensacola.

SHARPSHOOTING SKELLY CLIMBS INTO F2H

Grim Reapers Shoot "E's"

Banshee Squadron Wins 32 Awards

Pacing the "Grim Reapers" of VF-101, Lt. Leroy W. Skelly fired a score of 78% at 25,000 feet during recent aerial gunnery exercises at Guantanamo Bay, Cuba. All 18 participating members of the Fleet Air Jacksonville squadron won individual "E's" during the competition. Fourteen of the straight-shooting *Banshee* jetsters wrapped up double "E's" for fine shooting.

Skelly, who has been with the "Reapers" since their commissioning in May 1952, has earned the distinction of winning six awards in weapons competition during one year. His 78% mark is mighty close to the 78.4% of NANEWS *Shootin' Match* individual honor man, LCdr. J. W. Lankford.

THE INITIAL *flight of the Army-Navy sponsored twin-turborotor helicopter recently took place at Kaman Aircraft. The twin turbines, which produce 380 hp., are mounted side-by-side. The* HTK-1 *can be flown with turbines operating simultaneously or separately, providing twin-engine reliability through single engine performance. In actual operation, both turbines are used for vertical take-off and hovering with heavy loads, while in forward flight at cruising speed one turbine is off effecting considerable economy in fuel consumption. Two Boeing-502-2's power it.*

Glide Bombing Record Set

Barnard Misses Target by 50 Feet

Streaking out of a cloudless Florida sky in AD-4 *Skyraiders,* pilots from VA-105 released a torrent of bombs on Spencer Target last month to establish a new Atlantic Fleet Air Force glide-bombing record.

The pilots, calling themselves *Mad Dogs,* totaled an average error of 98.1 feet using the new 3,000 foot minimum recovery altitude. Ens. John C. Barnard, only ten months out of flight training, topped the field in the egg laying maneuvers with an average drop error of 50 feet. His skill has been rewarded with a hard-to-get Navy "E."

Close on the heels of Ens. Barnard, 19 of his fellow pilots made top qualifying scores to catapult their squadron to its phenomenal all-time mark. VA-105's new record betters the efforts of all other Atlantic Fleet jet and prop plane squadrons.

"It was only through the combined efforts of all hands that this record was made possible," points out LCdr. R. S. Reeves, squadron CO. "It's a tribute to the cooperation and enthusiasm shown by the supporting activities as well as the squadron personnel."

Life of Mitscher Published

New Book Tells of Air Pioneer

The life story of the late Adm. Marc A. Mitscher, commander of famed TASK FORCE 58 during World War II, will be published in October by W. W. Norton Co.

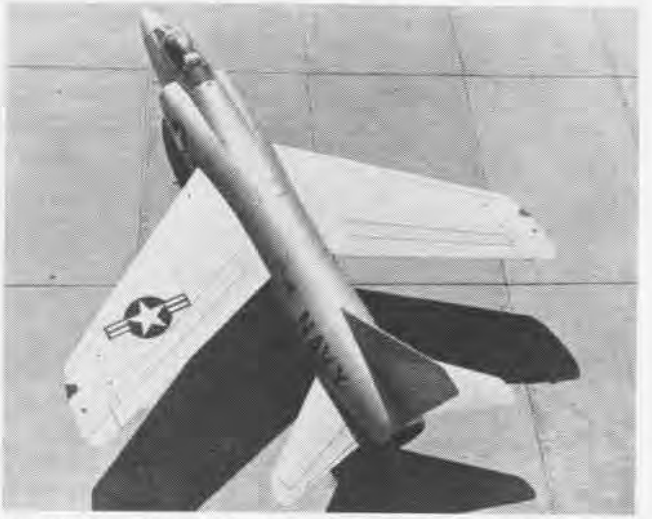
A pioneer naval aviator, Mitscher commanded the USS *Hornet* in the historic Doolittle raid on Japan in 1942. He was also Commander, Aircraft, Solomons, when allied forces shot down the plane in which the Japanese supreme commander, Adm. Yamamoto, rode. He was in command of the carriers during the "Marianas Turkey Shoot" in 1944 and finished his combat career in 1945 with the Okinawa campaign.

These and other highlights are dramatically recounted in the book *The Magnificent Mitscher,* written by Lt. Theodore Taylor. The biography is illustrated with photos which date back to Mitscher's early days with the Pensacola pioneers.

The foreword to the book is written by Adm. Arthur W. Radford, Chairman, Joint Chiefs of Staff.

SUB-STALKER, FIGHTER, AND CVA SHOWER BATH

BELL'S *ASW 'copter, HSL-1, flew 1,500 miles from Fort Worth to Patuxent River. Equipped with dipping sonar, it's undergoing tests.*

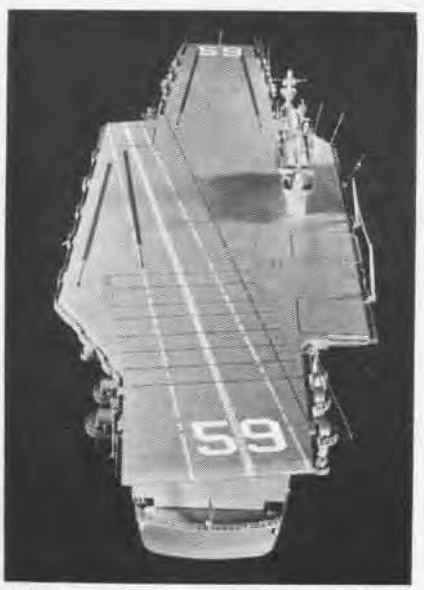


NEW *fighter will probably be named "Tiger". Note indentations in fuselage—"coke bottle" area control—to reduce high speed drag.*

LATEST member of the "cat" family is the Navy's newest fighter, the F9F-9, which flew last month for the first time. Although originally conceived as an improved *Cougar*, the new aircraft, a high performance day fighter, incorporates features which place it in a design category much advanced over the F9F-6, -7, and -8.

A single-seat, swept-wing fighter, Grumman's newest design has been planned with a view to providing a substantial increase in performance while keeping the airplane small and light. In order to achieve the high performance required of a day fighter, many design refinements were made in the interest of reducing weight and size without detracting from the service suitability of the airplane.

In the matter of design, one of the most interesting features of the F9F-9 is what is called the "coke bottle" fuselage. This phrase applies to the indentation in the region where the wing joins the fuselage, and is a design refinement known as "area control." The purpose of this indentation is drag reduction at high speeds. The airplane is powered by the J-65 jet engine and is expected to fly at supersonic speeds.

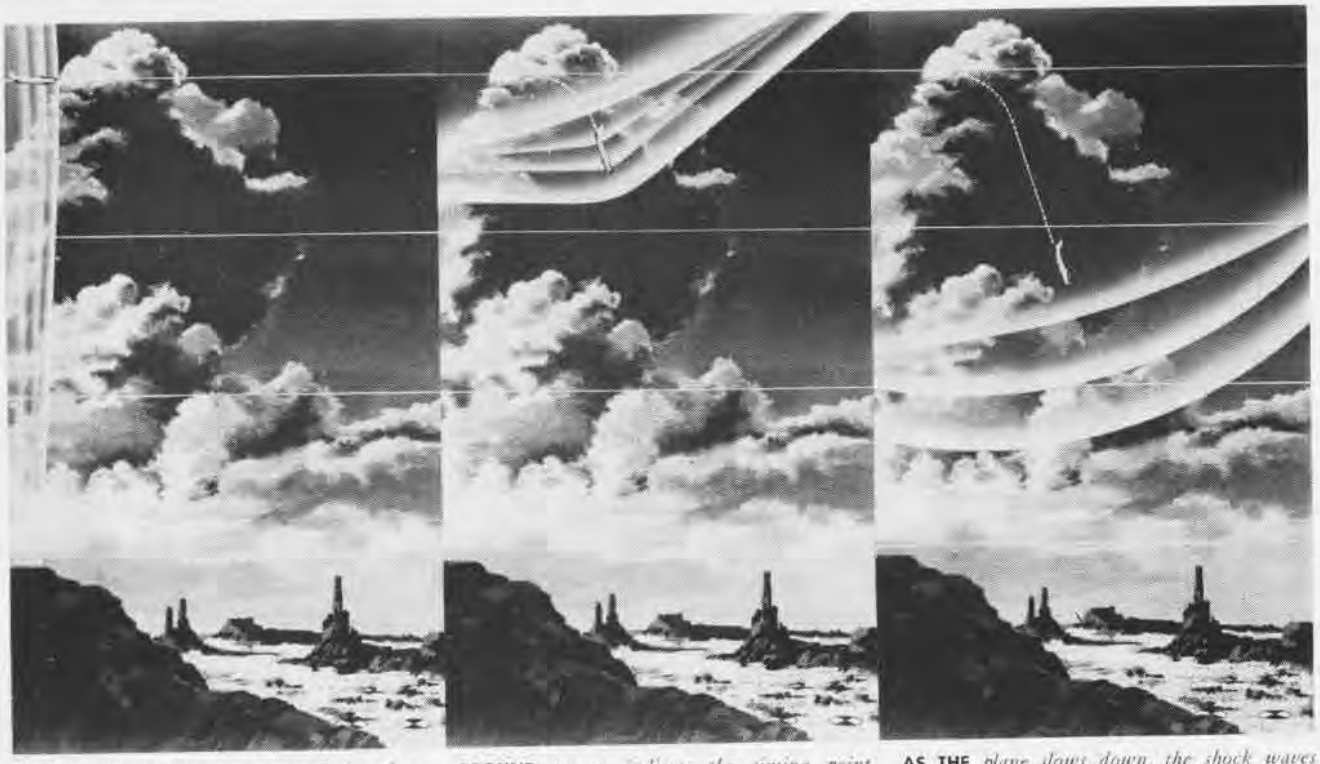


DUE TO *be "launched" in a few months is USS Forrestal, CVA-59, shown in model form.*

THE FIRST helicopter built specifically for anti-submarine service with the fleet, the Bell HSL-1, recently flew almost 1500 miles, from Fort Worth to NATC, PATUXENT. Test pilots will give the craft complete and rigid testing, not only for its flying qualities, but for its capability of doing the job it was designed for, that of tracking submarines. The tandem-rotor 'copter is equipped with dipping sonar and lightweight homing weapons.

Still another development made headlines. A "washdown" process received an accidental, but actual test recently when a chance wind shift made half a dozen ships operating near the Marshall Islands a target for radioactive dust and mist from a radioactive cloud. Radio warnings of the changing course of the cloud reached the ships in time to close hatches and ventilators, pipe all hands below decks, and turn on the sprinkler systems, which wash all exterior surfaces with clean sea water before radioactive gamma particles can contaminate the painted steel on the ships.

USS *Shangri La tests "washdown" while on maneuvers, designed to combat atomic fallout.*



SEVERAL *shock waves are caused by plane flying at sonic speed. Bow wave, wing and tail.* **GROUND** *targets indicate the aiming point (left) of plane, (right) where sound hits.* **AS THE** *plane slows down, the shock waves travel ahead at plane speed before slowing.*

THE SONIC BOOM, A SHOCK WAVE PHENOMENON

AN EARTHQUAKE cannot be encountered 5,000 feet above the ground, but it felt like one to a VP-56 crew recently while practising steep turns above Norfolk. The air had been as smooth as glass, but suddenly a severe shock jolted the P5M, followed by several bounces from rough air currents.

LCdr. C. E. Olsen took over control of the plane from Ens. D. A. Pimm, who had been flying, and gingerly tried out the controls, but the responses were normal. His first thought was that a hatch or piece of cowling had blown off and he ordered an immediate inspection, but negative results were returned.

A landing was made shortly at the seadrome for a more thorough inspection, and it was found that personnel on the ground had experienced a shock from a jet pull-out at the same time the shock was encountered in the air. LCdr. Olsen joins with the other squadron pilots in the plausible theory, based on this experience, that it would be possible to engage enemy aircraft in combat without firing a shot. Mass flights of jet aircraft crashing the sound barrier above formations of enemy bombers could knock them out of the sky with structural failures created by the shock wave. Soundness of the theory could only be revealed by experimentation, but it is well known that a shock wave, created by supersonic aircraft can create a certain amount of damage on ground targets.

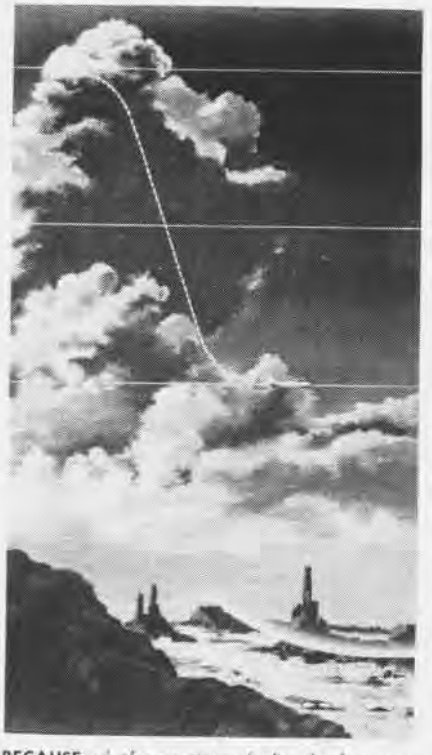
A very clear explanation of what causes the sonic boom appeared in the Miramar *Jet Journal* of 7 May 1954, and the following is a condensed version of the article.

Sound is the effect of pressure waves striking the ear. This process has often been described as similar to the waves which are seen when a rock is thrown into a still pond. The water waves represent the pressure waves in the air which are interpreted by the ear as sound. Ordinary conversation is actually a series of pressure waves which are interpreted by the ear as varying sounds. A very loud sound, when there is a very great difference in pressure on either side of the wave, is an explosive sound.

A loud explosive noise can be created by a dynamite blast. Violent pressure disturbances are caused by this release of energy and these pressure waves move outward, away from the center of the blast. Pressure waves are also called compression waves or shock waves. The loudness depends on the amount of pressure built up by the shock waves.

When an aircraft flies at speeds faster than sound, it creates shock waves in the air just as a motor boat on a still lake creates surface waves, or as the dynamite creates shock waves. Under certain atmospheric conditions, these shock waves created by the aircraft reach the ground and are heard as explosive noises or sonic booms. These sounds will become more intense as the speeds of aircraft increase, because the shock wave which causes the sound will also increase in strength as the aircraft speeds are raised.

Most of the booms which have been heard so far were caused by diving



BECAUSE *of the curving of the shock waves, the "boom" is loudest ahead of aiming point.*

aircraft. In the typical dive, an aircraft is pushed over into the dive from level flight near 40,000 feet. As it accelerates from below the speed of sound, a pattern of shock waves is formed by the aircraft and moves toward the ground in the direction of the flight and at the same speed.

In addition to the shock wave pattern attached to the aircraft, there is a trailing tail wave attached which is shed from the aircraft as it passes beyond the speed of sound in its dive. During that portion of the dive which is greater than the speed of sound, there are five or six waves of varying intensity, springing from the wing, canopy, trailing edge, and tail. These are in addition to the bow wave formed at the nose and the trailing tail wave.

As the pilot begins to pull out of his dive near 20,000 feet, he reduces speed, but the shock waves do not; they continue onward from the aircraft toward the ground. A change in the shape of the shock wave begins, now that they are no longer "pushed" by the aircraft. Originally, they are cone-shaped, but as they travel away from the plane they become distorted rapidly and assume a ball shape. Just as a dynamite blast cannot be heard if it is far enough away from the listener, the intensity of the shock wave is reduced by the spreading out of the wave, if the aircraft is high enough. Dust particles in the air, scattering effects of air currents, and atmospheric turbulence cause additional reductions in the strength of the shock waves.

Assuming the aircraft pulls out of the dive at 20,000 feet, the shock waves travel on toward the ground and as they do, the stronger waves absorb the weaker ones, thus the original groups of six or seven waves are collected into one, two, or three, which cause the booms when they strike the ears of the listener.

The loudness of these explosive sounds depends upon the maximum speed of the aircraft in relation to the speed of sound, plus the rate at which it reduces speed in pulling out of the dive, and the altitude at the bottom of the dive.

Since the shock waves are strongest near the centerline of the aircraft, and since the central portion of these waves travels along the path of the aircraft, booms are heard loudest in the region ahead of it in a dive.

Temperature differences at varying altitudes will cause the shock wave path to vary. Ordinarily they will curve upward from a diving path, but if there is temperature inversion (a layer of warm air at high altitude) the path of the shock wave will travel downward. Although the changes in atmospheric conditions from day to day make it difficult to predict the intensity of the sonic booms, they can actually be aimed by the pilot at a ground target with fair accuracy after studying the current temperature sounding of the atmosphere over the target area.

In a low altitude pass at a speed over that of sound, the boom will not be heard until the aircraft has passed the listener. This is because the shock-waves "bend" backward, behind the aircraft, and will reach the observer after the aircraft has passed. Since the shock waves will be traveling at the same speed as the aircraft, the interval between the aircraft's passing and the arrival of the shock wave will be very brief, and of course will be dependent upon the altitude of the aircraft above the observer. The loudness of this boom will be dependent upon the size and speed of the aircraft and also the distance from the line of flight to the listener. Studies have indicated that the boom is very loud at distances less than one mile.

The force of these shock waves is not surprising when you consider that an appreciable part of the tremendous horsepower required to drive a jet aircraft through the air at speeds greater than that of sound is expended in the formation of shock waves.

Based upon the knowledge we have today, and as a measure of safety and courtesy, supersonic speeds should not be made within one mile of other aircraft, personnel on the ground, or ground installations. Over residential areas, level supersonic flights should not be made below 20,000 feet. All dives exceeding the speed of sound should terminate at or above 20,000 feet and should be done offshore, if possible. With these simple precautions by pilots flying the supersonic range, these pressure waves will be no more than interesting phenomena heralding the achievement of supersonic flight in the development of modern aviation.

ILLUSTRATION *shows how the path of the waves curves upward. The gray area is the area of greatest sound intensity. Under conditions of temperature inversions, shock wave pattern bends down.*

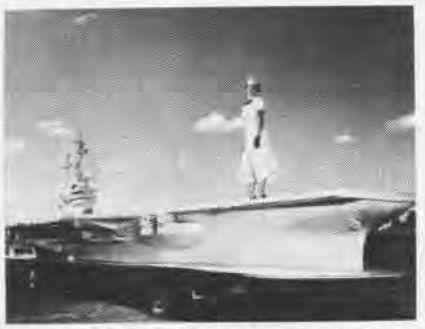
Memphis Launches Model

Pint Sized Carrier Built to Scale

With the tinkling of a broken champagne bottle, Mrs. J. R. Diffley christened the vessel USS *Forrestal, Jr.*, CVA-59. As the glass clinked, the National Ensign, the commission pennant, and the admiral's pennant were hoisted to the 18 man salute of Memphis Navy's own "Flying Rifles." Thus the work of three-and-a-half months was culminated in the ceremonies presided over by RAdm. W. G. Switzer, CNATechTra.

Propelled by a 1949 Ford engine, the 45-foot scale model is the result of the combined efforts during off-hours of a group of personnel of the modification division of NAMTD. Authorized under SOP Notice 5720, *Old Never Sail*'s keel was laid amid proper pomp and ceremony in March. T. D. Coover, DM2, began the painstaking job of computing and drafting the actual dimensions down to the scale to be utilized at NATTC.

After the Superintendent of Construction had been changed a couple of times, due to transfers, Mr. C. V. Kirkland constructed a smaller scale model to be used as a guide for the larger powered model. Under the critical eye of Lt. N. M. Chandler, C. C. Brummer, ADC, began to scrounge surveyed material for the construction of framework and metal covering.



ATTRACTIVE D. LYONS GRACES FLIGHT DECK

With the hull taking shape, W. L. Lee, AN and E. H. Harding, civilian, teamed with J. L. Easley, DCC, to put the finishing touches to the framework, flight deck and catwalk. Using a surveyed propeller, Mr. W. B. Gray handtooled a pair of anchors.

Old Never Sail was completely outfitted with an electrical system by R. G. Jorday, CE3, H. Knight, AE3, and W. L. Thomas, AEC. This intricate layout included animated gun mounts and radar systems activated by windshield wiper motors. A surveyed electric motor raises and lowers the carrier's elevators.

With a fresh coat of paint, the finest vessel ever constructed in Tennessee was ready for her big day.

Monterey Landing Record

CVL Claims Top Number In One Day

With perfect weather and wind conditions, and the full cooperation of all hands concerned, the training carrier *Monterey* achieved what is believed to be an all-time high in the number of arrested landings on a carrier in one day. On 25 May, the 779th landing was made just fifteen minutes before sunset, completing a day's operation which started at 0500.

Two minor accidents marred the otherwise perfect safety record of the day when an aircraft damaged a propeller in a barrier crash, and another experienced a power failure on takeoff. There were no injuries to personnel.

The 779 landings broke what was believed to be the previous record made by a Marine air group in 1945 aboard the escort carrier *Matanikau*, which made 602 landings in one day.

During the day's operations, 129 pilots made the six landings each required to qualify as Naval aviators.

Big Carrier Named Ranger

Newport News Construction Site

SecNav Charles S. Thomas has announced that the third Forrestal-class carrier will be named the USS *Ranger* (CVA-61). She is now under construction at Newport News, Va.

There have been seven ships in the U. S. Navy named the *Ranger*, the first a Continental frigate which sailed under the command of John Paul Jones. She was built at Portsmouth, N. H., in 1777.

The seventh *Ranger* (CV-4), also constructed at Newport News, was the first U. S. ship designed and constructed as a carrier. She was launched on February 23, 1933, and performed both escort and training missions in the Atlantic and Pacific during WW II. The *Ranger* participated in the landings at Casablanca in 1942 and in the Norway raid of 1943.

Later she sailed to the Pacific to qualify pilots in carrier operations during 1944 and 1945. She was sold in 1947 to the Sun Shipbuilding and Dry Dock Co. of Chester, Pa.

The USS *Forrestal* (CVA-59) and the USS *Saratoga* (CVA-60) are the names of the other two Forrestal-class carriers now under construction. The 60,000-ton ships will be capable of operating more than 100 carrier-based planes.

RED RIPPERS, *Lts. K. A. Horn, D. R. Reilly and Ens. K. W. Reed, bend an attentive ear as H. E. Offenhauser, ADC, explains the intricate bomb release mechanism of the F2H-4 Banshee fighter. Following this brief demonstration, the three aviators joined their squadron in a competitive bombing run on Switzerland Target that netted the Red Rippers the best bombing score ever recorded by a jet squadron in the Jacksonville area. The Red Rippers are members of VF-11.*

MARINE FURIES AND THEIR DEATH ANGELS

SLEEK *FJ-2 Furies roar along in perfect echelon over Southern California as VMF-235 pilots acquaint themselves with the sonic fighter plane that gives the Marines first-line strength.*

GUADALCANAL, Bougainville, Rabaul, Okinawa were areas where Marine fighter pilots met the best the enemy could offer and decisively pinned his ears back. With the end of the war and the restricted budgets of peacetime, emphasis was placed on the perfection of close air support, and the lessons of Foss, Smith, Carl and the other Marine aces were relegated to the background.

In Marine ready rooms around the country, these fighter pilots do not refer to themselves as *Tigers*, *Leathernecks* flying the new swept-wing *Fury* jet are aching to prove a point, the point that they're not only "first on land and sea," but "first in the air" as well.

With the advent of the swept-wing *Fury*, Marine aviation is in the front line of the fighter business. Flying for the first time in many years, a plane devoid of racks and rails, Marines weaned on the doctrine that "an unescorted bomber is cold meat" eagerly and carefully prepared for this opportunity to demonstrate again their worthiness in aerial combat.

Tough Marine aces, like LCols. Don Sapp and John Howard and Major Johnny Vance, fidgeted until the new fighter completed tough carrier suitability trials and was declared ready for active duty with their squadrons. Veteran aces who had chased Jap *Zeros* across the Pacific in WW II and mounted close air support missions in Korea had a way of angling transfers to VMF squadrons 122, 235 and 451. It was no secret that these were the first Marine outfits pegged for the sleek fighters which could push their way through the sound barrier.

Many of these hard-fighting Marines had tried out the Air Force F-86 *Sabrejet* on exchange duty in Korea and were hot to get the *Fury* developed by the same factory, but designed to operate from either carrier or land bases.

Veterans of the Pacific and Korean campaigns knew that the effectiveness of close air support hinged on keeping enemy fighters off their tails during bombing runs. The pilot who constantly had to check his rear was about as effective as a 30-30 rifle at 5000 yards. With the transition into the FJ-2 *Fury* series, Marine pilots now know they have a plane comparable to any flying today.

When the *Furies* began to stream off North American production lines, Marine pilots from VMF-122 at MCAS CHERRY POINT, 335 and 451 from MCAS EL TORO were on hand in flight gear to fly them to their respective bases. VMF-122 was the first to take delivery on an FJ-2 with west coast squadrons right behind.

At El Toro, VMF-235, under Col. Sapp, a WW II double ace and Navy Cross holder, had an organized plan in operation which gave each pilot six familiarization flights the first month

LCol. *D. Sapp, CO, gets checkout in new Fury. He's WW II Navy Cross holder with 11 kills.*

the *Furies* were on the flight line.

"The transition from our old aircraft to the *Fury* was as smooth as Tsingtao silk and our maintenance crews are the ones most responsible", he declared. "They have given us a remarkable in-commission rate."

WITH 2000 hours under their belts, most VMF-235 pilots have a high experience level. Captains and majors fly wingman in the *Fury*, but wouldn't change jobs with commanding officers of most other Marine squadrons.

Sgt. *Fayt lends a hand to Capt. Breeze in connecting oxygen just prior to a hop in the FJ.*

Thorough preparation was evident in the selection and composition of the first squadron to receive the *Fury* in AirFMFPac, VMF-235. This outfit had won five safety records and amassed over 10,000 accident-free hours in the air since its reactivation. Veteran pilots were carefully picked for the assignment to these coveted billets and the squadron boasted five Navy Cross holders in its ranks plus many aces of WW II.

One of the Navy Cross holders who, until recently, flew with VMF-235, was Major Bob Klingman. He won his Navy Cross by bringing down an enemy plane during WW II without firing a single round of ammunition. While flying from Okinawa, Klingman watched a Japanese photo plane making off into the blue with vital information on film. His guns were frozen, but he continued making passes at the snooper until his prop cut off the stabilizer of the Jap.

He says of the incident, "My engine was running rough as a cob on the way home that day, but I made it. We found two feet of my prop gone and pulled pieces of that Jap plane out of my wings for weeks." He grinned, and continued, "Say, I won't have to pull a stunt like that again now that we have the *Fury*, will I?" He's currently serving as CO of the Marine Barracks, NAATC CORPUS CHRISTI.

TSgt. *Clements, in the engine shop, keeps details of engine in best operating efficiency.*

NOT content with the laurels and know-how of the past, aviators who had completed jet tours with the RAF and Air Force were added to the roster. Still others were sent to Fleet and Air Force gunnery for the latest word there.

Command of this first class fighting team was vested in Col. Sapp, a veteran of many aerial combats in the Solomons. He is credited with 11 kills and five probables.

Perhaps never before in Marine aviation has there been such technical preparation as that which preceded the delivery of the first *Fury*. Maintenance personnel attended factory schools on both the airframe and the engine while manufacturer's representatives held classes in the squadron area for all hands.

Long before the pilots had viewed more than a photograph of their new aircraft, they were graduates of a week-long course in its operation at a mobile trainer set up and manned at El Toro by naval personnel from NATTC. This school also featured a longer, more specialized course for maintenance crews attached to the squadron.

Even while flying the F9F-2's, before delivery of the *Furies*, the pilots began practicing the tactics evolved from aerial combat in Korea. Capt. "Ding" Wade, credited with a *Mig* kill while on exchange duty, briefed the *Death Angels* on the latest formations used by the *Sabres*. America's leading jet ace, Capt. Joe McConnell, flew to El Toro on a personal invitation to brief VMF-235 pilots on *Mig* tactics.

Terms that had little or no meaning before, now assumed the importance of life and death and were bandied about the ready room in every conversation. "Con layer," "Mach roll," "yo-yo" were now all tools of the trade.

TSgt. *McCann works on the check crew maintaining the FJ in top safety flight condition.*

WHEN Lt. W. W. Sheehan of VR-31 delivered the first *Fury to* VMF-235, he probably thought that a special court had convened to try him by courts martial or to pin some kind of medal on him. Every man in the squadron—all hands, chiefs, Indians, photographers—was on the line to greet him and give the *Fury* the once-over. The only courtesy not extended the lieutenant was side-boys, and this oversight was explained away as—"Who knows how many side-boys a lieutenant rates?" No one did. So, no side-boys.

Sgt. *Sharp crawls into air intake of a Fury to check air cooling vents of 20 mm cannons.*

The first FJ-2 had barely been chocked when maintenance crews began swarming over it to complete its acceptance check. Delivery of the remaining complement of planes was rapid, but the ground crews kept ahead even though many long night hours were required. Shortly after the twenty-fifth plane was delivered, the mechanics proved their point by getting 17 *Furies* airborne for a fly-by over the squadron area.

Sitting in on briefing and de-briefing for the squadron fly-by, it is easy to understand the esprit-de-corps that prevails in Marine Fighter squadrons. Col. Sapp could not conduct the de-briefing until each pilot had had his say. Such remarks as, "How did they ever get into such close formation?"; "They aced me in and I had no place to go;" and "I thought that the CO had a 10-degree bank, after passing the field, I'd swear it must have been 110 degrees," filled the room.

Col. Luther "Sad Sam" Moore, MAG-15, and bossman of both west coast FJ squadrons, learned to fly way back in 1925 while working on plane engines for barnstormers. He chain-hopped across the Pacific Islands as a fighter pilot, flying almost every plane the Marines had committed to that theater of operation, and after checking out in an FJ, he looked more like "Laughing Luther" than "Sad Sam."

Never letting his pilots forget their mission, Col. Sapp stressed from the very beginning that there is no successful air support without air supremacy and fighter tactics. These were the sole order of the day, for that day and many more to come, until one day became days. Every hop, with the exception of GCA and FCLP, was flown, at extreme altitudes with the emphasis on high mach and formation integrity. The sky over El Toro was a quiltwork of contrails with *Sabres* from neighboring Air Force bases providing positive proof of the validity of the squadron's tactics and training.

The *Fury* turned out to be all that the pilots had anticipated and, in most cases, more. The plane handled well at every speed and altitude and was far superior to any that the Marines had flown. Once again, as in the heyday of the *Corsair*, they were masters of all they surveyed and their fancy-painted *Furies* were second to none in the air.

El Centro was the scene of the final acid test as the *Death Angels* deployed for a week on the Chocolate Mountain gunnery range. Would the new guns and fire-control systems live up to their expectations? Without racks and rail to hamper them, the pilots' only reasons for existence were the four cannon designed to shred enemy aircraft thousands of yards away.

Figures told the story of the designer's dreams and the ordnanceman's sweat. In five short days, with flying curtailed by range availability, desert heat and poor tows, the guns burned 23,760 rounds of ammunition. Although this was the first test of their new installation and ordnance training, many pilots fired out and the general percentage of rounds fired was equal to or greater than any other type in the pilots' experience.

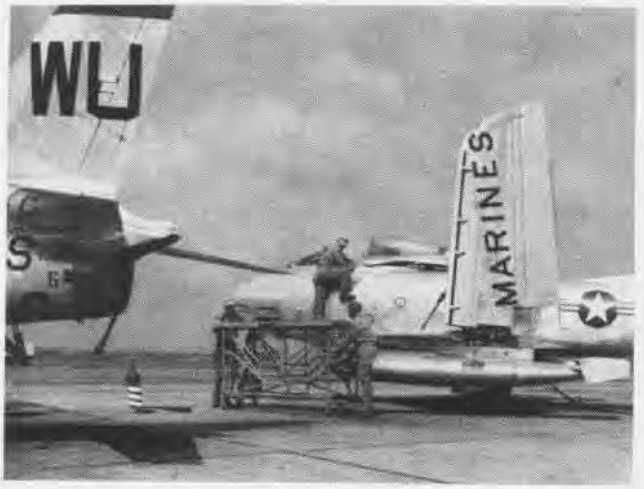
By now the general complexion of the squadron was changed, and with many of the more senior officers transferred to other billets, their places were being filled by the newly commissioned second lieutenants. Some of these "new boys" moved through the familiarization to the gunnery range in the fast tempo of the five days at El Centro, and still proved they could hit the banner when it was flagged before them.

When the new second lieutenants reported aboard for duty with the squadron, each was anxious to be assigned a *Fury*. Although all were not immediately given a plane, 2nd Lt. W. H. Foy, Jr., was the first one to be assigned a *Fury*. It appeared that he had checked in just minutes ahead of the other nine who arrived that day, thereby making him the senior 2nd Lt. of the group.

Intensive training paid off. The squadron's 24 2nd lieutenants were quickly welded, with the remaining older hands, into the "fighter team" that carries out the squadron's tactics.

Motivated by a desire to increase their abilities as top fighter pilots, VMF-235 aviators do not object to the strenuous routine they have been placed under. The *Fury* has proven its worth and to belittle the plane is asking for trouble—trouble from one or all.

Scheduled for still more gunnery in the near future, the squadron hopes to set new gunnery records which will put Marine fighters at the very head of the air-to-air team of naval air.



VMF-235 *maintenance men roll platform into place to check a new Fury, as the man atop the plane completes preliminary engine check.*

WINGS *folded, Fury is towed to VMF-235 hangar for a periodic engine check. Maintenance personnel schooled at company plant for FJ.*

EJECTION PROCEDURE

CATAPULT seat ejections from jet aircraft have been done successfully so often that they are now a standard and reliable procedure for emergency bailout from highspeed aircraft. Because of this impressive record of survival, pilots are reminded that most of the failures recorded are attributable, at least in part, to faulty procedure on the part of the pilot and maintenance personnel.

The accompanying ready reference check list of procedures is offered as a guide to basic procedure. It is not intended to replace or to contravene, in any way, the detailed instructions contained in aircraft handbooks and other official sources. For convenience, and to facilitate wider dissemination, it is suggested that this "center spread" chart be placed on ready room bulletin boards.

General Ejection Information

1. Know the ejection equipment for *your* airplane . . . controls and procedure for particular aircraft may vary considerably. The importance of periodic drills and "dry runs" is apparent.

2. When confronted with an ejection situation, if time permits:

- Reduce airspeed as much as possible.
- Disconnect oxygen and radio leads.
- Stow loose gear.
- Actuate bailout bottle if above 20,000 feet.
- On separation from seat, delay five seconds or more before pulling ripcord to avoid collision with seat and reduce opening shock of parachute.
- If at high altitude, freefall to a safe altitude before opening parachute to avoid effects of anoxia and cold.

3. If 2,000 feet or below, before ejection, release belt, oxygen radio leads.

4. Do not pull ripcord while in seat.

Note: It should be noted that a freefall of 5,000 to 10,000 feet would be even more practical. The opening shock of a 24-foot canopy at 20,000 feet is 13.5 "G's." At 7,000 feet, this would be reduced to 9.5. With a 28-foot canopy, the reduction would be from 12 "G's" to 7.5. It would be practically impossible to judge an altitude of 20,000 feet and a pilot in the primary stages of anoxia would be in serious trouble, if he opened his 'chute much higher. The average pilot is familiar with appearance of landmarks from 5,000 to 10,000 feet and would receive less injury from opening shock.

F9F

Note: F9F Aircraft Service Bulletin No. 169 (19 Feb 1954), when incorporated, will include installation of the emergency safety-pin handle release.

1. Pull pre-ejection lever inboard, push it down hard, then push it outboard to lock. This jettisons canopy, bottoms seat, positions knee braces, levels stirrups, arms firing mechanism.

2. Clearance between canopy and pilot's head is critical. Make certain head is below operational path of canopy before pulling pre-ejection lever.

3. Place feet on footrests.

4. Sit erect, head against headrest.

5. Reach up, grasp face curtain handle, elbows together, thumbs in, palms out. Pull down *hard* over face.

Note: On planes without arming handle, ejection seat couldn't be fired until pre-ejection lever was actuated and canopy jettisoned. Present arming handle control (left side of headrest) provides for ejection under extreme "G" forces which might prevent reaching pre-ejection lever and will permit ejection through, if desired. Control only arms seat; it doesn't lower seat nor release knee braces.

F7U-3 PILOT CAN'T EJECT THROUGH CANOPY

FJ-2

1. Body erect, head against headrest, feet in stirrups, legs against braces.

2. Keep elbows inboard, pull face curtain down to eye level and check that canopy jettisons.

3. After canopy jettisons, continue pulling face curtain down, *hard*, over face. Final travel ejects seat.

Note: If canopy does not jettison as face curtain is pulled to eye level, *pull canopy emergency release handle*. After canopy jettisons, continue pulling face curtain down over face to eject. If use of canopy emergency release handle fails to jettison canopy, pull handle to left of headrest and then pull face curtain down over face.

Warning: If necessary to eject through canopy, be certain *canopy is fully closed*.

F2H-2, -3, -4

1. Place feet hard aft in foot stirrups.

2. Pull either or both leg braces.

3. Sit erect, head pressed against headrest. Grasp face curtain, elbows together, thumbs out, palms in. Pull down *hard* over face.

Note: If canopy remains fully closed and ejection through canopy is desired, pull safety pin handle prior to pulling face curtain.

Pilot's pre-flight check should include: Visual check that white lines

ALL MODELS OF F9F AIRCRAFT, LIKE THE F9F-8 ABOVE, WILL HAVE EMERGENCY SAFETY PIN HANDLE RELEASES INSTALLED

painted on left side of seat frame are parallel for proper engagement of hold-back hooks and that canopy stripper "hawkbill" is rotated aft and down to prevent loss of canopy on normal opening. Loss of canopy in flight leaves seat armed. Immediately after landing, install new safety pin in seat catapult firing mechanism.

TV-1, -2 (up to BuNo. 136793)

Note:

- Bailout preferable to water ditching.
- Rear seat procedure same as for pilot except he will leave immediately after canopy jettison at pilot's command.
- Locking of shoulder harness restricts reach to some switches. Therefore, cut all necessary switches before moving lock control to locked position.

1. Jettison canopy by pulling canopy release handle.

Note:

- May not jettison if canopy is unlocked. Right arm rest must *not* be raised first or canopy will not jettison. Canopy jettison handle cannot be activated with armrest in up position.
- If unable to jettison canopy normally, attempt to jettison by placing canopy open switch to "open" position or by using hand crank. *Caution:* Bottom seat before attempting this.
- Rear seat occupant expects severe forward air blast as canopy is jettisoned, making it hard to sit back in seat.

2. Hook heels in foot rest, raise both armrests. Avoid pulling trigger on right armrest on raising.
3. Sit erect, head back on headrest.
4. Squeeze right trigger to eject.

TV-2 (BuNo. 136793 and subsequent)

Note: On aircraft BuNo. 136793 and subsequent, no interlock mechanism is provided between seat ejection and canopy system to prevent seats from being ejected before canopy is jettisoned. Therefore, seats can be ejected without first jettisoning canopy or positioning jettison lever.

Pre-flight inspection should be made to insure that the interlock mechanism (on early aircraft), including sear safety pins, are properly installed. To eject through canopy (recommended only as last resort after attempts to jettison canopy have failed), bottom seat to permit greatest head clearance and, if canopy lock handle is not in full unlocked position, entire canopy electrical system may be inoperative.

F7U-3 (BuNo. 128467 and subsequent)

1. Reduce airspeed as much as possible.
2. Hook heels on footrests.
3. Disconnect oxygen, radio connections at couplings near clip on left-hand shoulder harness strap, if time permits.
4. Pull face curtain handgrip forward, freeing curtain from retaining clips. Seat returns to full cruise eye level.
5. Sit erect with head back on the headrest.
6. Pull face curtain down. Safety harness will lock, canopy will jettison.
7. After canopy jettisons, keep pulling curtain down. Seat will eject.

Warning:

If seat does not eject when face curtain is pulled, reach up to left of headrest and pull *catapult safety pin manual release handle*. Do not fire ejection catapult unless canopy has been jettisoned. Interference between seat and canopy pressure bulkhead would result in serious injury if ejection through canopy were attempted.

F3D

Note: Air escape from F3D-type differs from normal jet aircraft procedure in that an escape chute is used rather than the ejection seat.

1. Reduce airspeed. (If airspeed is 175 knots or more, upper escape hatch should be kept closed to eliminate air pressure which would otherwise restrict opening of lower escape chute hatch.)
2. Pull lower door emergency handle.
3. Enter chute feet first, facing aft.

ALL COLONELS, SOUTHERN, THAT IS, SUH!

VMF-312 Boasts All Cols.

Members Join Confederate AF

Although familiar with island-hopping, few if any are familiar with rank-hopping, but such is the case with pilots of famed VMF-312, the *Checkerboard* squadron.

The pilots recently stepped forth and became the first jet-age squadron to be accepted as "Colonels" in the CAF—Confederate Air Force. Officiating at the ceremony held on the flight line of VMF-312 was Mr. A. T. McSorley, Acting National Commander of CAF.

The *Checkerboards*, which gained renown during WW II and in Korea, is also the first squadron, according to McSorley, to be accepted en masse since 1948. At the ceremony each pilot received his CAF six-inch gold "wings" (decals to be displayed on car windshields) and membership cards.

The pilots were cautioned against the stringent Southern Laws that must be observed by all members. The court-martial offenses in particular were of interest. They are (1) wearing a Union suit (2) taking off from a North runway (3) sitting at the North end of a bar, and (4) leaving a bar when the wind is from the North.

IFR—IQ?

You plan an IFR "off-airways" flight. The highest obstacle within 25 miles of the intended course is 2,200 feet. If the intended course is 358 degrees magnetic, what is the minimum altitude at which the flight could be conducted in accordance with CAR part 60?

A. 2,700 ft. B. 3,200 ft.
C. 3,700 ft. D. 4,500 ft.
E. 4,700 ft.

Answer on Page 32

• NAS JACKSONVILLE—The first 14 pilots to participate in flight deck operations aboard the USS *Hornet* since her recommissioning, have qualified without a single mishap. All qualifying members were from VF-31 based at NAS CECIL FIELD. During the operations held off the coast of Norfolk, the VF-34 pilots served as a unit of CTG-181.

COMAIRPAC *Flight Safety award was made to VA-175, now attached to Fleet Air Jacksonville, as a result of their safety score while serving aboard USS Wasp. The letter which accompanied the banner shown stated that statistics show VA-175 flew 1313 hours without an accident during the quarter, earning a score of 100 in competition with similar units in Air Force Pacific Fleet.*

NELSON (R), WELDON MODEL OLD AND NEW

Alters Parachute Harness

Life Raft Changed to Seat Pack

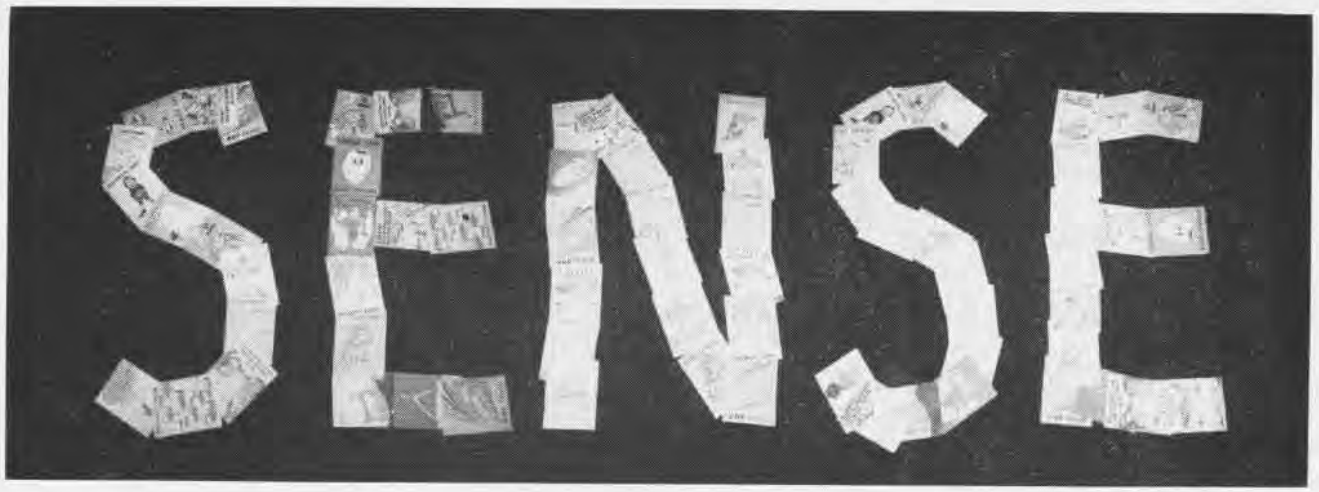
The imagination and ingenuity of M/Sgt. Verl K. Nelson of VMIT-20 has led to the development of a new parachute harness.

The new harness transfers the location of the bulky life raft kit from the check pack to a position where it may be used as a seat pack. Worn on all over-water flights, the individual can quickly bail out and descend in a sitting position rather than hang by the harness straps as with the old type. After hitting the water, this new installation is easily disassembled, allowing the man to move about quickly and efficiently.

M/Sgt. Nelson, serving as NCO in charge of VMIT-20's parachute loft, received a letter of appreciation from MGen. C. C. Jerome, CG AirFMFLant, for the development of this safer and more mobile-type harness.

Modification designs were sent to BUAER which turned the new harness over to the Naval Parachute Unit for test and evaluation. Changes will be made in the near future.

• USS ORISKANY—VF-192, a component of CAG-19 training at NAS MOFFETT FIELD, was recently awarded a trophy for completing 1,004 carrier landings without a single barrier or barricade engagement while on an eight-month tour off Korea. The only time the nose of a VF-192 *Panther* touched the nylon straps was during the filming of a staged scene of "The Bridges at Toko-Ri" when the barricade was lowered gently on a plane flown by Lt. Brubaker, alias William Holden, the popular movie actor.



UNDER the daring title, "Sense Pamphlets," in the Naval Aeronautics Index is listed what 11 years ago began as a new venture in pilot training. "Let's talk sense" is usually the prelude to straight, unvarnished ways of calling a spade a spade, and while it makes sense, it isn't interesting. But the Sense Pamphlets are anything but unvarnished; in fact, they have invariably a high polish.

The opening months of World War II found Naval Aviation Training facing a number of problems, and one of the most acute was this: How do you get The Word through to thousands of young Naval Aviators on such things as flying Aleutian weather, plane-ditching and flat-hatting, etc.?

The difficulty was that many of these young pilots had become pretty war-weary and war-wise individuals, with a tendency to feel that only those actually fighting the war knew the score . . . i.e., *themselves*. Under the circumstances, this was a pretty human and understandable attitude, but a dangerous one, because it blocked the receipt of information which could save lives, planes, and man-hours.

One of the answers to this problem, as Aviation Training Division Director, Admiral (then Capt.) Arthur W. Radford, RAdm. (then Cdr.) Harold B. "Min" Miller, and others saw it, would be to dream up some sort of vehicle with an armor-piercing head to penetrate the aforementioned attitude with a payload of essential information.

The device evolved to meet these specifications was a new type of pamphlet distinguished by some of the funniest and shrewdest cartoons of our time, and by a prose which could convey the stripped-down "sense" of a body of information with an informal, soft-shoe phrasing, and humor peculiarly American.

Termed a "sense pamphlet" for obvious reasons, this new type of training publication was an immediate success; and today it is fireballing faster than ever.

The first pamphlets set the pattern. Here, for example, is the opening of *"Flat-Hatting Sense"*:

"Flat-Hatting is a form of flying that discourages longevity. . . . The line we are going to take in this manual is that Flat-Hatting is a no-good way to fly. In other words, don't do it. Not only will it get you nowhere, it will get you killed. There are many ways to Flat-Hat, all of them bad, and we shall attempt to deal here with the most poisonous ones."

Illustrated by the creator of Grampaw Pettibone, all 38 pamphlets owe their success to the genius of Robert Osborn and to the writing that, however it may glitter, has never been easily or casually done. The writers and the illustrator had one aim—to penetrate the mind of the neophyte so that it would not lose the sense of the tactic or method described.

SO LAUGHTER was combined with learning. Incidentally, these civilians in uniform borrowed from John Paul Jones and announced as their slogan, "Surrender? Hell! We have just begun to write!"

The Sense Pamphlets continue to make sense. Dilbert, whose long career in naval aviation has only been made possible by the fact that he is the perennial fall guy in the mind of his creator, plays his part in showing what is not to be done.

The roll call of the authors of the pamphlets include writers of no mean accomplishment. Roark Bradford, late author of *Old Man Adam and His Chillun*, the basis for the dramatic presentation *Green Pastures*, has naval renown as the author of *Shark Sense*. He also contributed much to *Manners Sense*. These, along with *Dunking*

Sense, G Sense and *Aleutian Sense,* were the opening rounds in a type of training material that has become increasingly popular.

Robert Lewis Taylor, special writer for *The New Yorker,* whose biographies of W. C. Fields and Winston Churchill have put him in the front rank of contemporary American letters, did a number of pamphlets, but his colleagues believe that none is likely to be more unforgettable than *Flat-Hatting Sense.*

The origin of the term "flat-hatting" is described in this fashion; "The wheel of a low-flying plane struck a pedestrian on the head and crushed a new top hat he was wearing. Besides being grounded for quite a stretch, the pilot had to buy the pedestrian a new hat, costing $12.50, including tax. Hence, the name 'Flat-Hatting'—which is probably as good a name as any."

It is also pointed out that the Germans had a word for flat-hatting—*Flugenkerflatzmittendorfergesellshafftvereingang.*

Still another writer was Lawrence E. Watkin who, as scenarist for the Disney Studios in the last few years, has done the screen plays for *Treasure Island, Robin Hood, The Sword and the Rose,* and *Rob Roy.* Watkin, with Hannibal Coons, writer for *Colliers* and *Argosy,* and Russell Thackrey, now executive secretary of the Land Grant Colleges Association, turned in sense pamphlets on such varied subjects as *Support Aircraft Sense, Taxi Sense* and *Carrier Sense,* and *Recognition Sense.*

James Anderson Smith, called Ack-Ack because of his previous war record as head of an AA crew on a Murmansk-run destroyer, was another pamphleteer. After the war he did a Sense Pamphlet called *For Gardeners Only . . . and Lazy Lawnkeepers* for the Plant Food Division of Swift & Co. Swift credited the book with being a major aid in winning back the Long Island sales market.

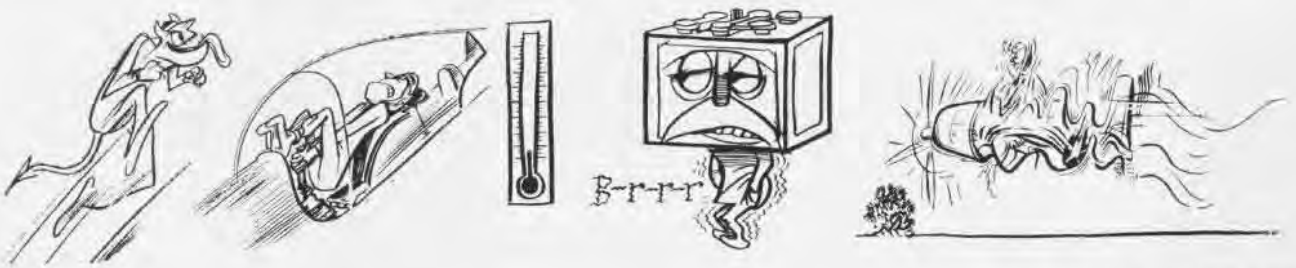
Still another writer was George Foster who, in the early years of the war, was an air combat intelligence officer with a PV squadron. He continues to write new pamphlets for the Navy in addition to being a college professor at Washington and Lee. He too has worked for Disney Studios. He has the proud record of having produced more Sense Pamphlets than any other writer connected with Training Lit.

In *Taxi Sense,* encouragement is phrased lightly. The author in stressing the importance of the signalman put it this way, "Helping an airplane get itself parked is like helping your rich Uncle George to a seat—you are rendering an important service to a valuable object . . . Have you always wanted to be a pilot? Well stop wanting—you *are* a 'pilot.' You're a pilot with quotation marks, which is even better. It's like being given the Order of the Bath, With Soap."

In *Radio Discipline Sense,* sarcasm is used effectively. Pilots are cluttering the airways with chatter, some of which would be an excellent break for the enemy. The writer reminds pilots what a noisy Dilbert can do. "The number of fine upstanding characters who fail to distinguish between interphone and broadcasting could be laid end to end and massaged with a bulldozer, as far as the communication officers are concerned. Among them is the pilot sent out to photograph an island held by the Japs but scheduled for an early visit by the boys in green. Never quite sure about the little knobs on his transmitter, he thought he was talking to his navigator when actually the whole world was listening as he murmured, 'It sure looks peaceful down there, but wait until our Marines get in tomorrow.' The island, by the way, was Kwajalein."

Despite the light touch, the Sense Pamphlets are not comic books. As sophisticated as *The New Yorker* on occasion, the pamphlets always have a serious purpose. To take information of some technical difficulty—pilot ejection seats and how to use them, night vision and how to preserve it, aviator's vertigo and how to avoid it, air controllers' duties and how to perform them—and present such information so that the material can be mistaken for spare-time reading and yet give precise data in accurate form, is no simple task. It requires a special skill.

The record of Sense Pamphlets in the past 11 years shows that this kind of material takes experience, talent and time. There is no obligation put upon the reader. The burden is on the writer and the illustrator. It is up to them to make the pilot find the reading of a Sense Pamphlet such a



pleasure—never a duty—that he will read on to the end.

Something of the problem in getting the material from the proper authority was indicated in the "Editor's Note" at the end of *Shark Sense*: "The above information has been obtained from a complete reading of all published material on sharks as well as consultation with shark and sponge fishermen throughout Florida. Discussions were also held with the Senior Ichthyologist of the Fish and Wildlife Service of the Department of the Interior, as well as the Chief Ichthyologist of the American Museum of Natural History, and other scientists." Before he started writing that pamphlet back in 1943, Roark Bradford had done everything but talk with a shark.

The same thoroughness was required in *Helicopter Rescue Sense*, recently completed. The writer had to make a visit to the rescue squadron at Ream Field, San Diego, and develop an understanding of helicopter flight. The writer read and discussed actual rescue cases. He had to work out a method of presenting to a prospective survivor an understanding of the way helicopters work and show him how he could help save himself. He passed the word of experts along.

Through the years, Sense Pamphlets have served a variety of purposes. They have put down what must be remembered when you are forced to crash-land, parachute to earth, or land on a carrier. One reading of *Oxygen Sense* is guaranteed to make the pilot know that, unless he uses due care

DILBERT WEARS JET HELMET NONCHALANTLY

and puts on the mask on schedule, his next deep breath may be his last.

Sometimes a Sense Pamphlet has been used to prepare pilots psychologically for a new development. *UHF Sense* was designed to pave the way to an acceptance of a new kind of radio with a few obvious disadvantages over the old. *Jet Sense*, written when Navy jets were being introduced, was a deliberate effort to play down the sensational stories about the strain of jet flying and explain the jet engine.

In writing *Shoot Seat Sense*—the book on pilot ejection—it occurred to the writer that the sequence of motions the pilot must follow in those harried seconds before he shoots clear of his disintegrating aircraft could be translated into a single coined word that would help him remember everything he needed to do. BuAer technical experts were delighted with the results.

The success of the Sense Pamphlets was not limited to the aeronautical organization. So impressed were certain officers in the Bureau of Naval Personnel that they decided to bring out their own series. These included *Discipline Sense, Shipboard Training Sense, Education Sense* and *Conference Sense*. USAFI also jumped into the field with a sense pamphlet entitled *Stay in School*.

BuPers received an overwhelmingly favorable response on all levels of government, private business and civilian education. The demand for *Conference Sense* was so great that the Superintendent of Documents requisitioned reprints for public sale.

Sense Pamphlets are still coming out through the efforts of OP-561. Those due to appear shortly are *Instrument Flying Sense, GCA Sense, Swept and Delta Wing Sense*, and *Night Flying Sense*.

Dilbert will still be the fall guy, doing everything wrong, getting his signals mixed and losing the small pieces of his mind that are left. But he serves as a warning.

The light touch has brightened the word on flying safety and know-how. The illustrations and the text of many a Sense Pamphlet have made memorable some note of warning that might otherwise have gone unheeded. Dilbert flies again—and again—so that naval pilots may continue to fly safely.

NAS ATLANTA DYNAMO FOR WEEKEND WARRIORS

ANNUAL *Military Inspection brings 1500 NAS Atlanta Reservists out in force to participate. They march in under Confederate flag and stand at attention during rendering of National Anthem.*

HUMMING on weekends with all the activity of a beehive, NAS ATLANTA is one of the Reserve's air training facilities that serves the southeastern section of the United States.

The air station had a history of training control tower operators and pilots in all-weather flying during WW II. Constructed in 1942, it now houses part of the Southern Technical University, a junior engineering school of the Institute of Georgia Tech. During WW I, the site served as an Army training camp for soldiers going to France.

Supporting 17 naval Reserve units and two Marine squadrons, 1500 naval and Marine air Reservists march onto the station under the Confederate flag and take over for weekends.

To keep the rebel warriors skilled in musket marksmanship, Capt. J. H. S. Johnson, station CO, deploys the air units to Pensacola and Columbus on some weekend training drills. This deployment provides airway instrument training for the pilots while flying to the gunnery, bombing and rocket range areas.

The Third Army gunnery ranges near Columbus are used for gunnery exercises and strafing training flights and the Pensacola site is utilized for air-to-air gunnery. Utilization of these two ranges on weekend training drills has improved the squadron's combat readiness, as it permits the units to complete this phase of combat training and cover other phases during the two-week active-duty training cruises.

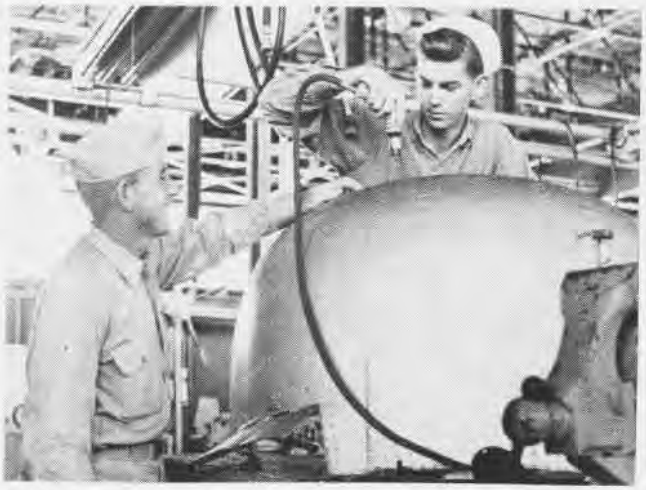
In the interest of promoting aviation education, NAS ATLANTA is regarded as the "Air University of the Southeast" by model plane and scouting enthusiasts. For the second consecutive year, the Southeastern Model Plane Meet was held at the air station.

AAU-674, an outlying Reserve unit in Knoxville, won the Noel Davis Trophy for 1953 as the most outstanding AAU unit of NARESTRACOM for the year. The trophy was awarded the unit last April.

The rebel Navymen are also very charity minded. Each year at Christmas, a needy family or two are adopted and provided a real old fashioned Christmas. An orphanage group is also taken under the care of station personnel for this holiday for dinner and party. Station personnel have also led in armed forces contributions to recognized charity funds in Atlanta.

RESPONDING *quickly to appeal for assistance, NAS Atlanta's fire eaters roared to Decatur, Ga., to put out dangerous chemical fire.*

WHILE F4U *Corsairs turn up in background, Weekend Warriors from NAS Atlanta check target sleeve minutely for evidence of gunnery hits.*



CHIEF *Rainey, who plays a dual role as padre and structural chief, points out proper way to drill cowling. He's a deacon in church.*

EX-WAVE *Helen Clayton, star of Victor Herbert's "Sweethearts," is the recipient of F7U model given by NavCad Sparling and LCdr. Rymar.*

Niagara Reservist Lauded

The crash crew from NAS NIAGARA FALLS earned the heart-felt thanks of local residents recently when they extinguished a dangerous oil fire which threatened their homes.

The fire was caused by the collision of a commercial tank truck and a private car. The truck, loaded with 5,500 gallons of fuel oil, overturned and caught fire three miles from the air station.

A private plane spotted the blaze and contacted the air station tower, which notified the crash crew. Five minutes after receiving the alarm, a fire engine, commanded by R. F. Young, BM3 was on the scene pumping smothering foam on the fire. Local companies, equipped only with high pressure hose, were unable to make headway against the burning oil and had to concentrate their efforts on restricting the fire's path by wetting down nearby buildings.

The Navy crew pulled in between the oil and the threatened buildings and kept the fire from advancing in that direction. While fighting the fire, they often waded in several inches of burning oil with streams of water playing on their legs to keep them from being burned. They used 418 gallons of foam.

Young and his crew received the thanks of grateful residents who said that their prompt action had probably saved their structures.

Stationkeepers who helped put out the fire were D. J. Clutterbuck, AO3; M. J. Gutowski, AD3, E. C. Kellner, Jr., AD3, and J. J. Wolfgang, airman.

Olathe Host to Opera Star

Miss Helen Clayton, now a Broadway star and feminine lead in Victor Herbert's operetta, "Sweethearts," took time out between acts at the Starlight Theatre in Kansas City, Mo., recently to meet a new member of the Naval Aviation Cadet Program. Richard Sparling of K.C. was the honored NAVCAD and he and Miss Clayton had a lot in common to talk about. Miss Clayton is an ex-WAVE.

During her tour with the Navy, she served as a control tower operator. After her discharge, she sang with the New York City Opera Company for several years and starred in Bizet's "Carmen." For the past two years she has had the leading roles in musicals throughout the U. S. and Canada.

UNIDENTIFIED *plane, men, location, camera and girl. But, gee, what a picture it is.*

LCdr. J. W. Rymar, CLO, NAS OLATHE, introduced the new production model of the F7U *Cutlass* to Miss Clayton and she agreed that she had nothing like the F7U to control during her tour of duty with the Navy.

Serving God and Country

P. H. Rainey, AMC, NARTU MIAMI's structural chief, once thought he'd go into the ministry, and studied for two years at Stetson University after being discharged from the Navy following WW II. After much thought, he decided that he could serve better as a layman, and in 1946 he returned to active duty.

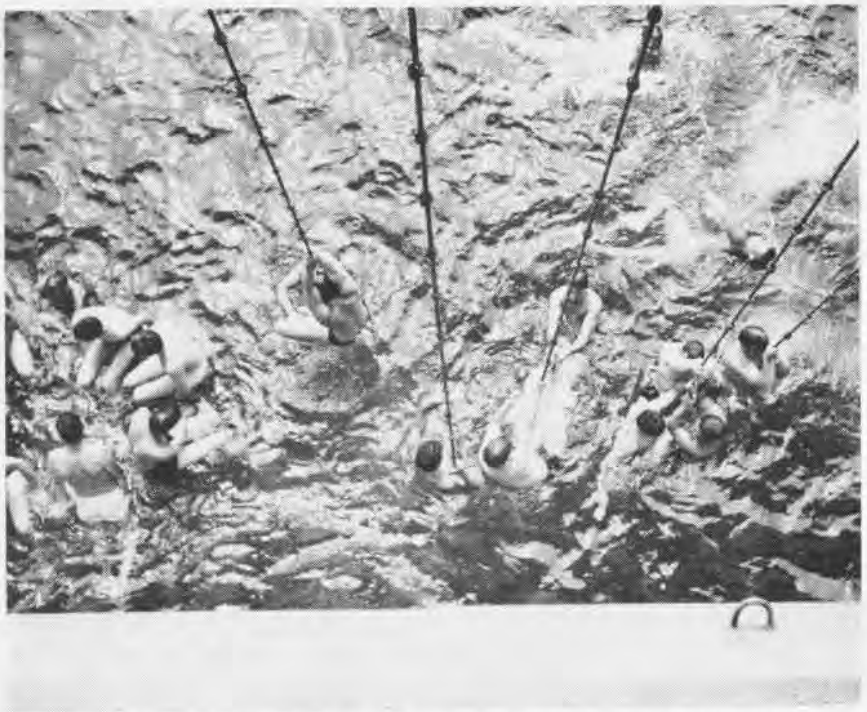
In spite of a busy schedule which requires working on Sundays, Chief Rainey manages to serve as a Deacon of the Biscayne Gardens Baptist Church and director of the Adult Training Union. He has also conducted services.

In addition to this, he is the janitor of the church and gives the money allocated for the janitor to the building fund. Well liked by the men who work under him, Rainey often helps his crew solve difficult problems of all kinds.

Rainey points out that the Chaplain Corps is a vital part of the Navy, but on many small activities there is no regular chaplain aboard. This gives real opportunities to the average layman to serve both God and country.

● NAS PENSACOLA—N/C F. T. Sullivan became the first Naval Aviation Cadet to complete the flight training syllabus of BTU-1C at Corry Field in Florida.

RANDOLPH TAKES TIME OUT IN MED



SWIMMERS PADDLE INDUSTRIOUSLY WHILE MARINES GUARD AGAINST POSSIBLE SHARKS

ENJOYING the benefits of "Old Sol," and the warm, clear waters of the Mediterranean on a Sunday are the officers and men of the USS *Randolph*. Swimmers jumped from the lowered elevator and ladders on the side of the ship or proceeded to lie on the flight deck and get a "suntan." The only things left out to make the scene look like Coney Island are the beach umbrellas, sand, and girls. Standing by were Navy men who volunteered as life guards and Marines who watched the water for sharks. After a day of relaxation like this, the men resumed the operational schedule with increased pep.

SUNBATHING ON "GRILL'S BEACH," NAMED AFTER LT. GRILL, FLIGHT DECK OFFICER

Riding an Air Force Bull

Exchange Pilot Meets the F-86D

A Navy lieutenant on exchange duty with the USAF likened his first flight in the F-86D to a ride on a "Wild Brahma Bull." After three-and-a-half months of schooling, working with the simulator, pilots handbook, safety bulletins, receiving briefings, instructions and warnings, and two months of aircraft grounding, he came to "Dog" day. In his own words, the story goes like this.

"I made my pre-flight and cockpit check O.K., and then fired her up with an instructor pilot supervising. I made my auto lock-up check, gave my supervisor my last will, poured on the coal, engaged the nosewheel steering and there I was in take-off position. After making my emergency fuel check, I went into afterburner (which just about flattens the front tire). I released the brakes and the next thing I knew I was in the air going straight up.

"After getting the gear and flaps up, I leveled off at about 1,500 feet to pick up climbing speed. At about 8,000 feet at mach 0.8, it happened. Not real sure how I got into it, but it was just like the boys said, only more so. Up until then I'd wondered what the term 'J.C.' meant. (Pilot-induced oscillation.)

"After it was all over, I was sure He was with me and had helped me out. I believe I rolled in a little back tab (which is delayed). I didn't get an immediate response, so I eased back on the stick, and at the same time the trim took hold. As this was too much back stick, I pushed it forward rapidly and there I was.

"If you've ever ridden on a wild Brahma bull, you'll have some idea of a JC in a Dog. There were only four or five violent oscillations, but they were enough to send the accelerometer to minus two and to plus eight G's, and lose about 4,000 feet of altitude.

"When I recovered (by coming out of afterburner and turning loose the stick), I was upside down in a nose-down attitude. Being so big, I can reach almost everything in a cockpit with the shoulder harness locked, and so I'm in a habit of always flying with it locked. I believe it really paid off this time. I was literally thrown all over the cockpit and sore for a week afterwards. Had I not been securely strapped in my seat, I surely would have been severely beaten up."

OXYGEN MAY SAVE YOU IN A CRASH LANDING

EVEN IF NORMAL ESCAPE FROM THE AIRPLANE IS IMPOSSIBLE, BY KEEPING OXYGEN EQUIPMENT ON, THE PILOT CAN MAKE ESCAPE

You may think it can't happen to you, but someday you may find that you are about to be the victim of a crash landing in the water. Think twice before you discard your oxygen equipment.

That's the advice of the School of Aviation Medicine at NAS Pensacola. It may save your life.

Nearly two years ago, LCdr. A. L. Hall, MSC, theorized that aviation oxygen equipment could work successfully under water. With the aid of assistant Lynn A. Alford, HM1, Hall constructed an experimental rig from standard aviation oxygen equipment attached to an airplane seat and began a series of tests in Pensacola Bay.

The rig was carried out into the bay and lowered over the side of a boat with a man in the seat. Various combinations of equipment were used, including the A–13 and A–14 masks with all service-type aviation oxygen regulators.

All possible attitudes of the seated body in relation to the surface of the water were made by means of lines attached to the bottom of the seat. The depth of the regulator in relation to the man's body was also varied. Each of eight subjects was submerged to a depth of 33 feet on one occasion and 65 feet on another.

By varying the position of the regulator, LCdr. Hall found that when the regulator was above the base of the neck, negative pressure was built up inside the mask. This caused the subject to have trouble inhaling. When the regulator was lowered below the base of the neck, positive pressure was built up and caused the subject to have trouble exhaling. The best position of the regulator was found to be as near the base of the neck as possible.

There's a possibility that some men might develop oxygen poisoning if they breath pure oxygen at depths greater than 40 feet for over one-half hour. This oxygen poisoning is more severe if heavy exercise is undertaken at greater depths. However, the possibility of non-lethal oxygen poisoning, compared with the certainty of drowning, leaves little choice.

Commenting on the results of the experiments, the School of Aviation Medicine concludes, "This study shows that if the pilot keeps his oxygen mask on and connected to his aircraft oxygen supply with his regulator on "diluter off" (100 percent oxygen) when a water landing is imminent, his oxygen equipment should protect him for an extended period if *normal escape from the airplane is impossible* for mechanical reasons, physical injury, or if he loses consciousness on impact." The implication, of course, is that normal escape should be used if possible.

If the pilot is in water less than 100 feet deep, he would remain alive for an average of 31 minutes longer (514 cu. in. oxygen cylinder) than without the oxygen. If he lands in deeper water and normal escape is impossible, several more minutes would be available for escape while the airplane is sinking.

Here's some of the advice the school offers to pilots and aircrewmen using aviation oxygen equipment under water:

- Always wear a mask that fits properly. Although water pressure tends to keep the mask on, an improperly fitted mask may leak.
- If a water landing is imminent, turn the regulator to 100 percent oxygen.
- Don't try to use the H_2 bailout equipment.
- Don't get panicky.
- Keep the safety belt fastened until the canopy is opened.
- When rising to the surface after escaping from the airplane, gradually vent the oxygen from the lungs.

LCdr. Hall warns skin diving enthusiasts, "This equipment is not recommended for underwater fishing. It's not practical because the salt water corrodes the regulator and deteriorates the rubber diaphragm after the initial use. Also the cost and duration of the oxygen supply and equipment would not be economical for skin diving." But pilots in crash landings should heed LCdr. Hall's sound advice.

FALLON···BIGGEST LITTLE AIR STATION

TWO MEN *from FASRon-8 check towing bar on air-to-air gunnery target. The targets are towed by JD-1's like one in the background.*

CREWMEN *of VA-65 from NAS Alameda repair a rocker arm cover while on operations at "the biggest little air station in the world."*

It was no April Fool's joke, when NAAS Fallon celebrated six months of existence on 1 April 1954. In one-half year the station had shown an amazing growth. In recognition of its record of accomplishment and as a toast to the friendly neighboring city of Reno, station personnel adopted the slogan: "The biggest little air station in the world."

Originally conceived as a CAA project for the furtherance of safer air transportation across the western states, the reestablishment of NAAS Fallon was ordered by SecNav on 10 August 1953. Its mission was to provide facilities to support regular operations of aircraft rocket, gunnery, bombing and night FCLP training operations.

NAAS Fallon was reestablished, rather than established, on 1 October 1953, since it had been an NAAS in 1944 and 1945. Originally, it consisted of two radio signal towers for commercial aircraft guidance and two airstrips for emergency landings. Undoubtedly, it might have remained just that, but WW II and the expansion of the Pacific Fleet necessitated the building of an air station for the advanced training of carrier pilots.

The geography of Nevada was ideally suited for such a training program. Here, in the vast desert area, bombing and strafing targets could be carved out with little danger or inconvenience to the civilian population. In addition, the climate was perfect. As the local Chamber of Commerce boasts, "There are 229 cloudless days in a year and 360 days annually suitable for flying."

During WW II, squadron after squadron spent two to eight weeks at Fallon, practicing torpedo runs, bombing and gunnery tactics. At the time, the base had a complement of 2,500 officers and men. After the war, Fallon was decommissioned. It carried only enough personnel to maintain facilities and equipment in condition so that, with additional personnel, they could be placed in full operation with the minimum of delay in case of an emergency.

In the winter of 1949, an emergency arose which placed Fallon back in the newspapers all over the country. Thousands of snow-bound cattle were dying for lack of feed.

It was the coldest winter on record. Veterans of the Air Force, piloting *Flying Boxcars*, termed the weather conditions worse than those encountered in Alaska. Highways and roads were blocked. Snow drifts were up to 20 feet deep and cattle were dying out in the snow-covered meadows that normally made excellent winter pasture.

The Navy volunteered the services of the Fallon base in *Operation Haylift*, the Army furnished the aircraft and the neighboring towns sent out volunteer workers to clear the runways. Within hours, hay was being unloaded from large and small trucks into the rear doors of the planes, operations headquarters were established and communications systems were set up.

The situation became so critical that a national emergency was declared and Gen. Mark Clark was put in charge of operations. After days of fighting bitter cold and heavy snows, the roads were finally cleared.

Fallon settled back into another lull which continued until Korean combat broke out. Then it was decided to activate the base again as an ALF to NAS Alameda. The potentiality of the area for weapons training was recognized and Congress appropriated $5,000,000 as the first increment for a completely new permanent air station. Construc-

AN ORDNANCEMAN *from VF-63 loads ammunition in a Panther for gunnery practice.*

tion is expected to get underway by this fall.

But NAAS FALLON didn't wait for the new facilities in order to commence expansion. Under the command of Cdr. Harry E. Cook, Jr., former Operations Officer of ComCarDiv One, every structure that had been left standing after the 1945 decommissioning was utilized to the fullest.

Warehouses were converted into enlisted barracks and a BOQ. A 10,000-foot runway, one of the longest airstrips in the west, was completed. A permanent modern aviation fuel farm and a permanent large-capacity ammunition storage area were completed and placed in operation.

From support of one squadron in October, the station expanded until it supported the entire group of CAG-9 from February to March. During the month of March, the station pumped 1,817,240 gallons of aviation fuel (more than the average monthly rate of NAS MIRAMAR) and issued 932,872 pounds of ordnance.

PERSPIRING *freely, ordnanceman counts remaining rounds of ammo after gunnery runs.*

As the station grew, housing became more and more of a problem. The Fallon area has now been declared a critical housing area and through the personal efforts of Cdr. Cook, 50 relocatable-type FHA houses are being moved from neighboring Naval Ammunition Depot, Hawthorne, to Fallon. The project is humorously called "The movement of the mountain to Mohammed."

Realizing the value of public relations, the young station held an open house and air show on 17 and 18 April that proved to be an outstanding success in acquainting the state of Nevada with the mission of Fallon. The show included a static display of the Navy's latest combat and logistic-type aircraft and featured a rocket and napalm attack by *Panthers* and *Skyraiders* from VF-151 and VF-194. Gov. Charlie Russell of Nevada flew in the *Blue Angels'* TV-2 and made several low passes to the delight of his constituents.

Both the skipper and Cdr. Stanley R. Holm, the exec, are well-versed in carrier aviation and understand the problems of the fleet squadrons. During Cdr. Holm's tour as CO of VF-121, his squadron engaged in the Navy's only full-scale dogfight with *Migs* and scored two kills, one probable and two damaged with no losses.

UNDER *the steaming Nevada sun, a crewman in a Frank Buck helmet gases a VF-64 Panther.*

It is the firm conviction of Cdr. Cook that Fallon possesses some of the best target facilities in the world and, thus, is an ideal location for eventual permanent basing of four Air Groups. Four target areas on Navy property are within a radius of 31 miles.

These target areas comprise 66,200 acres, are of the most modern design and are equipped to handle all types of ordnance and weapon runs, including that of the latest high and low altitude special weapons. Two excellent gunnery areas of over 1,000,000 acres are available for air-to-air gunnery.

NAAS FALLON figures it's here to stay. It would take more than an earthquake to put it out of commission. At 0415 on 6 July, Fallon was the epicenter of one of the strongest earthquakes to hit the state of Nevada.

While the personnel were asleep, the earth commenced to tremble, lockers began to fall, men were thrown from their bunks to the decks of the barracks where heavy steel lockers fell on them. Electric wiring began to pull apart from telephone poles making a ghostly glare outside the barracks to add to the nightmare.

SOBRASKI, *AO2, puts a projectile on a rocket. Container is called a "folding fin aircraft."*

Men ran from the barracks, believing they were under attack from an unknown enemy. Many thought that the Naval Ammunition Depot 75 miles away had blown up. After the initial shock had ceased, the station picked itself up and went to work. Although 14 men were injured, water mains broken and electricity and communication facilities disrupted, the field was open within five hours.

Civilian electricians who lived off the station arrived to aid in restoring power. Damage was much less than expected. Broken water mains, broken windows, damaged merchandise in the Navy Exchange were all of minor importance. The one major problem was caused by extensive damage to the water supply system. The large storage tank had been shattered and the filter system jolted out of operation.

IN SPITE of the earthquake, in contrast to coastal areas, the excellence and convenience of these target facilities, plus the weather factor that permits continuous training operations, point to a much more economical method of training air groups. The inevitable question in the minds of everyone at Fallon is, "Will the biggest little NAAS be a full-fledged NAS in the not-too-distant future?" Perhaps it may.

Almost FORGOTTEN EVENTS

CENTER *section of the USS Shenandoah lies twisted and broken after it settled to earth in Ohio. Note vintage of racy roadster in lower left hand corner.*

'Daughter of the Stars'

On the afternoon of 2 September 1925, the sleek USS *Shenandoah* slipped her mooring and cast off from NAS Lakehurst.

The great rigid airship rose slowly, and gracefully pointed her bow westward. The *Shenandoah*, "Daughter of the Stars," was enroute to Dearborn, Mich., to conduct mooring tests at the Army's new mooring mast. Enroute she would conduct training exercises, and give the citizens a look at the latest addition to America's air arm. Well groomed and fully manned, she was prepared for a five or six day flight.

With LCdr. Zachery Lansdowne in command, the *Shenandoah* carried a full complement of 43 officers and men. Cruising at an economical air speed of 38 knots, she crossed the Alleghanies a little after midnight. The trip had been uneventful.

Uneventful, until she encountered a severe squall at 0400 on the 3rd near Cambridge, Ohio. Subjected to violent turbulence, abrupt rises and descents, the crew had difficulty controlling the airship. Drift increased, ground speed dropped to zero. The *Shenandoah* was in trouble. Releasing helium, the rises were checked but now the ship began a downward plunge at 1400 fpm for two minutes. Just as abruptly, she was caught in an updraft.

Lansdowne sent his navigator, Lt. C. E. Rosendahl, forward to supervise the releasing of fuel tanks as ballast. While in the keel passageway, the *Shenandoah* broke in two and Rosendahl found himself and seven other men in a "free" balloon—the forward part of the ship. Rising to 10,000 feet, the section was finally brought to earth by skillful maneuvering by the eight men, but not before a huge tree had torn a gaping hole in it.

Lansdowne and 13 others perished. Rosendahl, now a retired vice admiral, is still active in aviation circles serving as Executive Director of the National Transport Coordinating Committee.

NORTH AMERICAN *Aviation recently delivered the company's 20,000th fighter plane. It was an FJ3, and RAdm. T. C. Lonnquest, BAGR Central District, was on hand to accept it for the Navy from C. J. Gallant, NAA official.*

47,500 in FAWTUPAC TV-2

Midget Pilot Breaks Old Record

Recently Ens. J. L. Wright took off in a VC-3 TV-2 and after coaxing, pleading, begging, cussing and threatening, got his plane to 47,000 feet. Upon landing he made this statement: "With careful planning, two midget pilots might get another 50 feet altitude."

Ltjg. G. "BB" Jenkins, along with plane captain G. Fukuzawa, AD3, crawled into a TV-2 shortly after and took off into the wild blue. After tooling around for awhile, he headed the nose of his jet into the mid-morning sky and held her there until he reached the 47,000-foot mark.

At this point, he anxiously waited for something to happen. Expecting anything from flying saucers to VC-3 gremlins, he scanned the skies waiting for some reason why he couldn't go higher. Seeing none and being disappointed, he again put the jet trainer's nose up. After going another 500 feet the TV balked and refused to go higher and stalled, but Jenkins held her there long enough to ascertain whether there was any abnormal reaction to the plane. He found none and began his descent.

After landing, Jenkins remarked, "I could have gone higher, if I'd had less fuel. The weight of what I had held us down to 47,500 and, if I had tried to burn off enough fuel to go higher, my oxygen would have run out. I know it can go higher and one of these days I'm going to prove it."

Ens. Wright was on hand when Jenkins made this statement and scratched his head in wonderment, you see his "midget" was 205-pound, 6'3" Jenkins, who is hardly a midget.

VP-8 Hits High Mark

Half of Month Flown Under IFR

For the second consecutive year, PatRon-8 has passed the 1000 hours-in-the-air mark in the month of June. Some time before the month came to an end, Lt. C. W. Huffman, Ens. J. W. Struewing and their crew returned from a local bounce-hop to receive word that they had just added the necessary hours to push the squadron's total over the 1000-hour mark. Cdr. L. R. Burnett, CO, and LCdr. W. T. Rapp, XO, congratulated the pilots and crewmembers for totaling 1105.8 hours for June.

Last year, the 1000-hour mark was set at Keflavik, Iceland, where the squadron was deployed. This year half of total was flown under IFR.

FIRST *Marine to re-enlist under the new bonus system is congratulated by BGen. S. K. Bird and paid $1100.76 in cash. T/Sgt. E. A. Mauri will use the money to send brother to college.*

XFY-1 to Brown for Tests

Untethered Flight for Pogo Stick

The Navy's unconventional fighter plane, the XFY-1, will shortly be transported to San Diego to begin its free test flights at NAAS Brown Field.

The VTOF has been at Moffett Field for the past few months undergoing tethered test flights with "Skeets" Coleman at the controls. Current plans call for the delivery of the Convair plane to San Diego aboard a Navy ship.

Actually the new Navy fighter has flown already, though in captive state. A number of take-offs and vertical flights have been made in a Convair-designed tethering rig installed in the 184-foot high blimp hangar at Moffett.

The XFY-1 is designed to take off and land in vertical position, but to fly horizontally at speeds above 500 mph. Its power plant is an Allison T-40 turbo-prop driving a six-bladed contra-rotating C-W turbo-electric propeller.

RAYBOURN (L), SMITH FIRED NEW SCORES

VF-12 Corner's "E" Mart

Smith Fires High Score for F2H

The *Flying Ubangis* of VF-12 returned recently from gunnery exercises at Guantanamo Bay boasting a new ComAirLant gunnery record, a new *Banshee* jet gunnery champion, 13 double "E" winners and seven individual "E" winners.

A new AirLant record for total hits scored on a towed target at 15,000 feet was established by four VF-12 sharpshooters whose combined scores totalled 289. Ltjg.'s Wayne Smith with 111 hits, Huntington Hardisty with 59, Lee Raybourn with 65 and Ens. Wally Blaseck with 54, comprised this record-shattering quartet.

Ltjg. Smith's outstanding score established a new Navy record for the total number of hits made by a *Banshee* pilot. As far as the squadron can determine, Ltjg. Raybourn set another AirLant record by scoring 99 hits at 25,000.

The 13 VF-12 marksmen who garnered double "E's" for accuracy at 15,000 feet and 25,000 feet were: LCdr. H. McWhorter, squadron CO, LCdr. P. Miller, Jr., Lt. John Burhans, Ltjg's. Wayne Smith, Lee Raybourn, H. Hardisty, G. Littlehales, J. McGee, K. Moeller, Ens's. C. Ilsley, W. Blaseck, C. Harvey and H. Gautreaux.

Individual "E" recipients for the 15,000 foot shooting were: LCdr. J. Oliver, Lts. W. Bally, James Kelley, Ltjg's. G. Covington, D. May, W. Burke and Ens. O. Pearson.

COUGAR LEAVES THE SANGLEY POINT RAMP

Carrier Jets Visit Sangley

Jetsters "Make Do" on Large Scale

Airdales from Seventh Fleet carriers moved in on NAS Sangley Point in the Philippines during June to put the traditional "can do" spirit to work. Lacking line shack facilities, they built their own from old packing cases and oil drums which were handy on the station. The 36 *Cougars, Panthers* and *Banshees* aboard rolled up over 600 hours of flying time during their first 10 days there.

The station's recently acquired APL took care of the berthing facilities for the ground crews and two-thirds of the pilots. Eating and recreational facilities were more adequate. Reversing the usual procedure, spare parts for the planes were provided as required by flying them ashore from the carriers.

As an added feature, naval station personnel and their visitors from the carriers got a brief "inspection" from actor William Holden of "Bridges of Toko-ri" fame when he came aboard the self-styled *USS Shang Leigh* station.

HELLO EVERYONE *is the meaning of this apparent scribbling on the flight deck of the USS Saipan. Crew members formed the words to bid a welcome to the Japanese people as the small flattop lay at anchor in Nagasaki Harbor on Armed Forces Day. Thirteen AD's are spotted aft.*

ERODED J-42 LINER IS IN NEED OF REPAIR

DAMAGED AREAS ARE CAREFULLY REMOVED

BLACK MARKS SHOW WELDED REPLACEMENTS

SAN DIEGO SALVAGE SAVES NAVY SHEKELS

SALVAGING jet engine combustion liners is big business at NAS SAN DIEGO. In 1953 this big naval facility repaired 1350 J-42 and J-48 liners, to effect a savings in excess of $350,000. Salvage of J-34 liners was also accomplished. All this is part of a salvage program for aircraft engine parts that saves well in excess of $1,000,000 annually and is effected by smooth weld repairs.

Twelve years ago San Diego adapted the heliarc process for cast magnesium alloy repairs. During WW II, some 8,000 critically needed, corroded and damaged aircraft wheels were salvaged and returned to service. Later, in the postwar years, damaged and corroded engine cases were repaired.

In many instances replacements were unavailable and engine availability required salvage. The salvaged engines were then shipped to distant activities.

The worth of such a program is indicated by the fact that the salvage of reciprocating engine parts utilized by NAS SAN DIEGO alone realized a savings in excess of half a million dollars in 1952 and a similar sum in 1953.

One thing that has made this record possible has been the work of the Materials and Process Laboratory which has supported the O&R Department and other local departments. The laboratory has evaluated the actual serviceability and performance of numerous materials for aircraft construction and maintenance, thereby contributing to the improvement of overhaul and repair processes.

The earlier contributions from San Diego represented service improvements, rather than local cost reductions. For example, in 1936, methods of evaluation at San Diego contributed greatly to the design of aviator's breathing oxygen systems, capable of reliable operation and free from ice formation and obstruction. Still later, the advantages of newer preservatives were demonstrated, as in the case of paralketone.

An outstanding contribution has been made in the preservation and protection of aircraft and power plants by progressive improvements over the years. Another contribution, completed just prior to 1942, involved the extension of oil draining intervals for aircraft engines. This was made possible largely by the investigations carried on at San Diego.

A more recent development is set forth in NAVAER General Engine Bulletin No. 139. This is the liquid abrasive honing process for engine cylinders which has permitted almost total salvage, the reduction of re-work effort, increased cylinder life, the elimination of penalty runs, and a reduction in engine run-in time and expense.

However, the most spectacular local development has been that involving the development of weld repair methods for aircraft and engine parts, the development of inspection controls for such weld-repaired parts, and the training of personnel in these techniques.

Pictures on this page show the nature of the defects encountered in jet engine combustion liners and typical weld repairs. They get 100 percent X-ray inspection and rework until a satisfactory repair is accomplished.

SALVAGE operations at Fleet Air Jacksonville have netted a 30-pound portable hydraulic power unit that can do the work of its 300-pound regulation counterpart. It was designed by William A. Fehrs, ADC, of VF-11.

He constructed it from parts salvaged from the aileron boost control of an F2H-2 *Banshee* when the regular hydraulic power unit aboard the USS *Coral Sea* failed temporarily. Now in operation at Cecil Field, the tiny power unit more than equals its bulky predecessor.

By simply plugging Fehrs' invention into any 28-volt power source, it can supply hydraulic power whenever needed, aboard ship or on shore. Its size permits it to be moved easily as it can be carried by one man and requires no special transport gear.

ELECTRONIC DEVICE SCORES GUNNERY RUNS

ATTACKING PLANE LEVELS OFF FOR RUN WITH GUNS BLAZING

HOLES ARE COUNTED FOR CHECK WITH ELECTRONIC RECORDER

THERE'S a new device in competitive gunnery scoring that should have its counterpart where fishermen gather to tell tall tales. It is an electronic recorder for a surface target that takes the boasting out of strafing runs and at the same time hands credit where credit is due. Heretofore a successful gunner might have made more hits than he knew, since some of his shots might have passed through a hole already in the target.

This device which takes the element of guesswork out of gunnery scoring was recently tested at Pinecastle Impact Area in Ocala National Forest, Florida.

The revolutionary electronic strafing recorder was developed when a six-man team of technicians, Navy personnel and advisors from the Office of Naval Research, undertook to erase discrepancies inherent in conventional targets.

To the casual observer the material construction of the target is unimpressive. It consists of six sheets of rubber, each sheet four by six feet in size. When assembled, the sheets of rubber are divided by a piece of plywood of equal dimensions in order to stabilize the resilient sheets.

These rubber sheets are impregnated with minute particles of carbon. When energized with electric current, a steady reading is reflected on a recorder. Any variation of this constant, such as the impact of a bullet or even a sharp blow of a hammer, creates a disruption of the circuit and registers a hit. Another feature of the target is its self-sealing qualities, not unlike the tubeless tire.

Preliminary tests at Ocala made by men with hand-held guns, showed that bullets penetrated the target at a rate of 300 per second, and recorded each hit perfectly.

Still another problem had to be solved when it was observed that an excessive number of hits were being recorded on the sensitized counter. Investigation revealed that moisture was setting up a connection between the fields. This threat was countered by encasing the entire framework with ordinary rubber.

OFFICER WATCHES AFTER ORDERING START

Two squadrons from FAIRJAX, VA-105 and VF-22, did the test firing. Observers took their places in the observation tower, the target was energized and connected coaxially to the recording instrument in the tower, and the signal was given to commence the attack.

Soon a sleek fighter was hurling itself target-ward, its guns blazing, puffs of sand kicking up around the target. The airman-gunner was pouring it on. But when the run was over, the recording instrument showed comparatively few hits.

To check this differential however, a visual check was made of the target. This was the "acid test", and the accuracy of the target was vindicated—the number of hits in the target was identical with the tally on the recorder.

The best run was made by LCdr. Roy S. Reeves, CO of VA-105. He topped field with 35 percent hits. Commenting on the new device, Reeves said, "We should have had this target years ago. It is a tremendous asset to the Navy's gunnery training program."

The electronic recorder recognizes only the actual hits. Near misses mean nothing to this cold calculator. As one man put it, "This machine only deals in 'pay-dirt.' "

● NARTU JACKSONVILLE—Plank-owner Casey O. Dinkins, ADEC, recently reenlisted in the Naval Air Reserve. At present, Maintenance Chief for FASRON-741, he has not missed a drill weekend since he began attending eight years ago.

LETTERS

SIRS:

As this command is directly concerned with helicopter rescue techniques, we would like to augment the many other communications you have probably received regarding the July 1954 cover of NANEWS.

The rescuee is most certainly in the sling backwards; therefore, he is unable to help himself in entering the helicopter, he can easily fall out of the sling should he lose consciousness, and he is uncomfortable as well.

The most surprising thing, however, is the regularity with which this occurs in spite of the repeated briefings by survival training personnel and our own pilots. This command provides helicopters and pilots for survival school rescue indoctrination regularly, and our pilots invariably report not the usual two percent, but upwards of 15 percent of trainees enter the sling incorrectly, under ideal conditions, and subsequent to being briefed on the proper methods.

R. A. MAYO, CDR.

SIRS:

With reference to the "IFR-IQ?" in the July issue of NANEWS, FAWTULant teaches that an alternate is not required when the destination is reported to have a ceiling of 5,000 feet with a visibility of five miles and is forecast to remain so for two hours subsequent to the intended time of arrival.

LOWELL S. PRICE, CAPT.

Is our face red? The word "not" in the question was inadvertently omitted. It should have read "you would *not* have to list an alternate." Numerous sharp-eyed instrument pilots caught the "boo-boo" and let us know about it.

SIRS:

On a recent trans-PAC flight, VP-29 established what we believe to be a record in pilot standardization and use of prescribed cruise control. Using the weight and balance data for the heaviest aircraft, a Howgozit was worked out and followed by each plane. Some 4,000 miles later, the squadron reached its destination and landed its 12 aircraft in the space of 20 minutes. This was accomplished without rendezvous or join-up, a feat of which we are proud.

Speaking of records, here's one in the form of an open challenge to any or all squadrons:

Of the 34 CPO's attached to VP-29, 32 wear gold insignia on the left sleeve of their blue uniforms. Percentage-wise, we challenge any squadron to equal this mark, or to top the record of 558 cumulative years of service behind these men.

H. D. DAILY, JR., ENS.

SIRS:

Your "Real Ripley Story" on page 17 of your May 1954 issue may well be an oddity, but it is not unique.

On 22 May 1954, VF-92, deployed in the WestPac area, received F9F-2, BuNo. 123589, as a replacement. Now repainted and spruced up in true *Silverking* style, this Nan-tail is one of the squadron reliables.

Granted, the odds are against it, but here is a repetition of your oddity. My serial number is 123589. I am skipper of VF-92. That this should happen in two situations is even more of a "Believe It or Not."

MARCY M. DUPRE, CDR.

SIRS:

When the USS *Saratoga* sailed for Hawaiian maneuvers in late January 1933, she carried two experimental aircraft. One an XFS-1 and the other XFF-1. The XFS-1 was assigned to VS-2B and I believe the XFF-1 was assigned to VF-3B. Both of these aircraft were operated on this cruise, although the XFF-1 was damaged during a landing. Is it not possible that the XFF-1 made her first landing aboard the *Saratoga* instead of the USS *Lexington* as stated on page 16 of the June issue of NANEWS?

W. F. MCDONALD, CDR.

IFR—IQ?

According to the All Weather Flight School, answer is "D". Ref: CAR Part 60. Para. 60.44.

● VA-105—Lt. W. M. Lewallen has the distinction of making two "thousandth" landings on two separate carriers in one year. In December of 1952 he made the 37,000th landing aboard the *Tarawa* and less than a year later made the 2,000th landing on the *Randolph*.

NAVAL AVIATION NEWS

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Naval Aviation News is available on subscription for $2 a year through Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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Virgil Ballou, RD3, keeps watch on radar scope aboard the Princeton while operating against Communist forces in Korea.

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● Printing of this publication has been approved by the Director of the Bureau of the Budget, 31 March 1952.

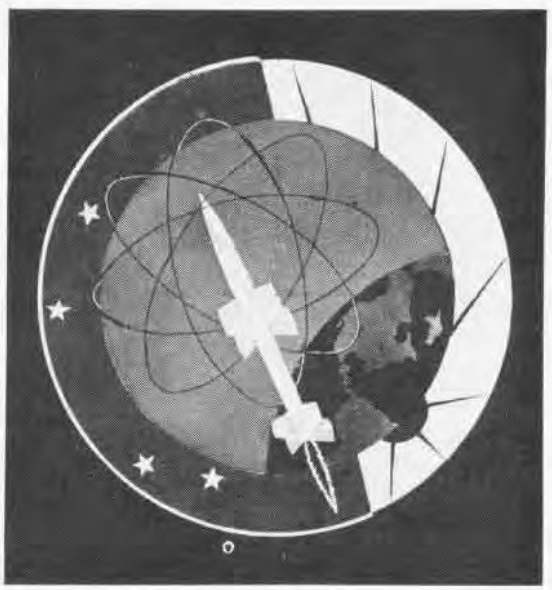
SQUADRON INSIGNIA

NEW insignia recently approved by CNO are featured this month. A map of the United States and silhouettes of the many different types of aircraft moved are displayed by VR-32. Flying *Cougars*, VF-103 uses the figure of a leaping cougar with the position of the two arrows representing the type of aircraft, and the speed and fierce attack and typical flying formation of the squadron. VP-7 has two birds carrying aerial bombs with yellow searchlights projecting from the heads, emitting a flash from the tips of the tails. Depicting its specific functions, VX-4 shows a guided missile with electron rings.

VR-32

VF-103

VP-7



VX-4

NAVAL AVIATION
NEWS

UNLIMITED *Space* FOR THE *Defenders* OF FREEDOM

A race for unlimited altitude and speed is being run by the world's air powers. America's designers must keep well in the lead, for tomorrow's front lines are straight up. Tomorrow's pilots need the best training possible. NavCads get it. Men—go NavCad. Inquire at the nearest NAS or write NavCad, Washington 25, D.C.