

NAVAL AVIATION

NEWS



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NAVAL AVIATION NEWS

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COVERS—This month's wrap-around cover, previewing the Blue Angels' new look, was drawn especially for Naval Aviation News by Mr. R. G. Smith, renowned illustrator of the McDonnell Douglas Corporation. At left, an HC-1 Det Skylab helo, operating from USS Okinawa (LPH-3), drops Navy UDT swimmers to place a flotation collar around the recently returned Skylab III capsule and its astronauts.

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EDITOR'S CORNER

"So very difficult a matter is it to trace and find out the truth of anything by history." We borrow these words from Plutarch to push a point.

Were the Wright Brothers the first to fly? The world recognizes that at Kitty Hawk, N.C., in 1903, the first major step in man's endeavor to emulate the bird was successfully accomplished. Yet, other evidence has emerged over the years, albeit without invincible supporting facts, that others piloted machines in the air before that milestone was recorded at the dawn of the 20th century.

According to *The Pilot*, a magazine published by the Aircraft Owners and Pilots Association, a New Zealand farmer named Richard Pearse was making numerous flights at treetop level for distances ranging from 100 to 150 yards at least a year before the Wright Brothers. On March 31, 1903, nearly ten months before the December 17th feat at Kitty Hawk, Pearse made a controlled flight of two and one-half circuits of a small field before 25 witnesses.

Six years before the Wright achievement, according to *The Pilot*, a railroad ticket agent in central Texas allegedly flew a ship of his own design a distance of five miles. W. D. Custead was his name and accounts published in 1897 in Waco newspapers asserted that he made a round robin between the McLennan County villages of Tokio and Elm Mott culminating in a safe landing. His air machine's power plant was built by a Mr. Gustave Whitehead of Bridgeport, Conn., who later supposedly flew an improved version of Custead's aircraft on August 18, 1901.

Astonishingly, according to *The Pilot*, another man inclined to adventure in the air reportedly flew a fixed wing aircraft 38 years prior to the historically popular birth of aviation in 1903. He was a German-born school teacher named Jacob Brodbeck. Before emigrating to America, Brodbeck expended considerable youthful effort, apparently without success, in developing a clock for the Kaiser which, with a spring motor, would operate continuously without winding. Although obligated to teaching chores, Brodbeck was fascinated by sources of energy, particularly that which powered a coiled spring after it had been compressed and released.

It was this principle of perpetual power through a spring which Brodbeck envisioned could be applied to an air machine. After his ocean transit, he settled in Fredericksburg, Texas. He later moved to San Antonio where he supplemented his teaching income by making and selling wine. The additional funds Brodbeck earned were applied to his invention. Unfortunately, there is no evidence to show on what precise day in 1865 he tested his ship. Witnesses, including one who made a written account, observed

Brodbeck take off and climb to treetop level, thus flying for a short distance.

Sadly, the spring principle which was successfully utilized in clocks and toys, did not perform as expected. The tension decreased rapidly and, as it did, the air machine sank back to earth. Brodbeck emerged uninjured from the wreckage but his aircraft was a total loss.

Sparked by hope and belief in his design, Brodbeck continued undaunted. He began a lecture tour to raise more money — an effort which did not succeed. One night, after he spoke to an audience in a Michigan town, drawings of his proposed airplane were stolen along with his laboriously compiled research notes. They were never recovered.

It has been alleged that some of those who witnessed Brodbeck's feat and later saw pictures of the event at Kitty Hawk insisted that the aircraft which swept aloft for 59 seconds in 1903 was remarkably similar to Brodbeck's.

Which brings us a long way around to that point we'd like to make. Accuracy in reporting is essential for an understanding of history. Although we make no pretense that Naval Aviation News is the repository for data of such stature of man's initial venture in flight, we do deal with day-to-day achievements in the Navy which have merited a level of importance worthy of recording if for only a comparatively limited audience.

For example, we received a letter from a petty officer second class which referred to a previously published account of a civilian rescue. Suffering from an epileptic seizure, the man had tumbled from a small boat into the water near a pier where Navy shore patrol personnel were on watch. The article credited another sailor with saving the man's life. The PO2 wrote to say that, in fact, he administered the final acts of first aid to keep the man alive while the first man left the scene. Both men should have shared credit.

Recognizing that PAO duties are more often than not collateral responsibilities, it is still important to examine and relate all pertinent details. Other areas which could be emphasized to help us serve you better are: Names — spell out the first as well as the last and ensure proper sequential listing of names in photographs. Photographs — seek imaginative views and insert support of some kind when submitting to prevent bending. Time — include dates of events rather than saying "recently." Unfortunately, we work with a minimum of a month's lead time and we need accurate dates to keep events in perspective.

We sincerely appreciate your efforts and encourage you to keep the material coming.

New Blues

This month's cover provides a first look at the proposed paint design for the *Blue Angels'* newly assigned aircraft, the McDonnell Douglas A-4F. Although much of their 1973 season was cancelled due to an accident which claimed the lives of three members, the Navy's flight demonstration team will be back in business next year. The design format may receive some



minor modification from that depicted, but none of the excitement will be lost with the team's transition from the *Phantom* to the *Skyhawk*. Powered by J52 P-408 engines and stripped of the upper fuselage electronics package, the A-4Fs will require less airspace for shows than that required with the F-4. Administratively, the *Blue Angels* also will change. A commanding officer, vice an officer in charge, will be assigned.

Slated to take over as the first C.O. in *Blue Angel* history is Commander A. A. "Tony" Less, former skipper of VA-12. New pilots assigned to the team are Lieutenants Vance Parker and John Patton. The narrator for the team will fly the two-seat TA-4J for news media personnel demo rides.

73 Winners

The CNO Annual Aviation Safety Awards for fiscal year 1973 have been announced and are as follows. NavAirLant: VA-35, VA-83, VAW-123, VF-31, VF-43, VP-16, VFR-31, VS-24, RVAH-13 and HC-6; NavAirPac: VA-97, VA-127, VA-165, VAQ-135, VAW-116, VF-143, VS-29, VP-40, VO-1 and HS-2; FMFLant: VMA-324, VMGR-252, HEDRon and HMM-261; FMFPac: VMFA-531, VMCJ-1, VMAT-102, HMM-163 and HMM-262; CNATra: VT-5, VT-9, HT-18, VT-25 and VT-28; NavAirResFor: VA-204, VP-90, VS-72, VF-302, VR-53 and HS-74; MARTC/Fourth MAW: VMA-322 and HMH-769. Naval Air Force, Atlantic Fleet, won the Readiness Through Safety Award for the third time in the seven-year history of the award. Admiral Flatley Memorial Award winners include: USS *Forrestal*, USS *Oriskany* and USS *Inchon* for CVA (Group I), CVA (Group II), and LPH (Group III) categories, respectively. Runners-up were: USS *Enterprise*, USS *Roosevelt* and USS *New Orleans*.

Thaw for Deep Freeze?

Lt. Ann E. Coyer is the first woman to report for duty with the Navy's Operation *Deep Freeze*. She will serve as administrative officer for the U.S. Naval Support Force, Antarctica and will spend the polar summer at McMurdo Station. She'll have more than male company during NSFA's 19th year since four other women, civilian scientists, will also be there.

Marines Open Show

Pilots from VMA-513 provided the opening punch for the 1973 Canadian International Air Show held last Labor Day weekend in Toronto. Commandant of the Marines, General Robert E. Cushman, Jr., officially announced commencement of the show after which Squadron Leader Kenneth B. Latton, a British exchange pilot with the Marines, and Captain Newton A. Collyar demonstrated the *Harrier's* skills.



Big Milestones

NAS Saufley Field's VT-1 reached an impressive goal last September when the squadron passed 50,000 flight hours without an accident. The feat was accomplished by students and instructors in T-34s. VT-1 skipper is Commander Charles A. Grandjean. . . . VS-33 achieved a first, also in September, when the squadron, which operates with S-2 *Trackers*, passed the 13-year mark without a major mishap. It is believed to be the first carrier-based squadron to have gone this long without an aerial accident.



Mod Mentor

Beech Aircraft Corporation, builders of the T-34, has contracted to modify two *Mentors* with P&W PT-6-25 turboprop engines. The power plants will be rated at 400 hp which is a substantial increase over the 225 hp generated in current T-34 engines used in the training command. Modification will also include new landing gear, brakes and wings, increasing gross weight from three to four thousand pounds. Most of the additional weight will be in the wings which will carry extra fuel. Pilots from the Naval Air Test Center are scheduled to test the plane this month. If successful, the new *Mentor* may replace the older version and possibly the T-28. This would result in a revised primary and basic instruction syllabus and decreased cost for training pilots without sacrificing the quality of training.

Filming the Land of the Midnight Sun

From the platform of their RA-3B, Lt. Mike Clark, OinC, and his VO-1 Det shot thousands of feet of film during a six-week Alaskan deployment. Flying out of Eielson Air Force Base, the unit was assisting the Office of Naval Research, the Army Engineers Topographic Laboratory and the Department of the Interior in making studies of Alaskan coastal terrain along the North Slope and the Barrow and Mt. Hayes quadrangle.



One for Guinness?

Det 110 of HC-7 lays claim to having been deployed at sea longer than any other similar unit. In ceremonies aboard USS *Hancock*, the Det celebrated its sixth anniversary in the Gulf of Tonkin. Flying *Sea Kings* the unit supported Seventh Fleet combat operations and accounted for 140 successful rescues of downed flyers. Winner of the Presidential Unit Citation, Det 110 is especially proud of former member LCdr. Clyde Lassen, who was awarded the Congressional Medal of Honor for his daring night rescue of a pilot shot down over land near Haiphong Harbor. During the six years, the Det cross-decked, on a continuing basis, with various Yankee Station ships to remain at the heartbeat of the action.

On the Burners

Some of the latest technological innovations we may see more of in the future include: a compact, high-powered *electrochemical battery* which lasts many times longer than conventional dry cell types. The Office of Naval Research has revealed that the battery does not deteriorate when not operating and could last for several years in flashlights—a certain

boon for night flyers who occasionally forget to check that vital piece of equipment; *ARIS* (airborne range instrumentation system), in development by Litton Industries, is designed to evaluate the performance of various airborne weapon delivery systems. With all-weather day or night capability the system will incorporate an aircraft-mounted pod which works in conjunction with sensors on the ground near practice targets; *Remotely piloted vehicles* (RPVs), which are under study for possible use on selective missions from carriers. ONR is investigating the feasibility of using RPVs for reconnaissance, search, radio relay and ASW missions. Some efforts have already been made in this area but not to the sophisticated extent currently being employed. It is envisioned that a pilot-controller aboard ship would be able to track the RPV on a computer-assisted display panel, monitor its performance and eventually guide it to touchdown aboard ship; a *graphite-epoxy composite material* for wing structure which was successfully tested at Point Mugu on a BQM-34E *Firebee II* and may be implemented in manned aircraft in the future. The Naval Air Development Center, Warminster, Pa., is working on the project which would sharply reduce wing weight with no sacrifice to strength. In addition, the composite material would resist corrosion and fatigue.

WAVE for VP-19

Ens. Beverly A. Burns is greeted by VP-19 C.O., Commander L. V. Rabuck, as she arrives to join the squadron in Naha, Okinawa, in late summer. She thus became the first Wave officer to be assigned to an operational squadron in the Pacific Fleet.



Ladies for Space Shuttle

Clinical research in female physiology to develop selection criteria for women passengers in space shuttle missions has begun at NASA's Ames Research Center in Mountain View, Calif. Similar to studies on men completed last year, the program has enrolled 12 Air Force nurses. Following two weeks of orientation and preliminary medical studies, eight of the twelve will simulate weightlessness by absolute bedrest; four will act as ambulatory control subjects. After two weeks of immobility the eight women will be subjected to G forces expected when the shuttle enters the atmosphere at the culmination of the mission.

Flyer with a Tuba

Although his principal field of endeavor is piloting CH-53 *Sea Stallions* for HMH-361 at MCAS El Toro, 1st Lt. James R. Eakle, was very big with the San Diego Padres baseball team last season. On the 4th of July, Lt. Eakle went with friends and a tuba named "Frances" to a Padres-Chicago Cubs game. His musical exhortations, it turned out, not only stimulated the fans but helped inspire the players to a 4-3 victory. Here, San Diego third baseman Dave Roberts checks the tuba's tone.





GRAMPAW PETTIBONE

Off Side

Following an evening practice carrier landing period, an S-2 *Tracker* made a full stop landing so the pilot and copilot could switch seats for the next period. A lieutenant commander was to occupy the left seat and a lieutenant junior grade the right; both had considerable experience in the aircraft.

After completing the takeoff checklist, the pilot was cleared to "position and hold." This clearance was issued by the LSO in order to facilitate adequate clearance behind another aircraft that was taking off subsequent to a pilot switch.

The pilot of the *Tracker* positioned his aircraft approximately 15 feet right of the right-side-line lights of the runway, believing he had positioned just to the right of the runway's centerline lights (which were not lighted).

When sufficient clearance existed between the two aircraft, the controlling LSO cleared the S-2 for takeoff. The pilot advanced the throttles to 30 inches manifold pressure, conducted a mag check and commenced his takeoff roll. Power was maintained at 30 inches until passing abeam the LSO cart and then was advanced to full power. (This procedure is commonly practiced in consideration of noise abatement for the benefit of the LSO.)



At approximately 80 knots, the pilot commenced his takeoff and simultaneously felt a hard bump. The takeoff was aborted. The hard bump was the nose landing gear of the aircraft striking the starboard arresting gear engine. Upon attempting to lower the nose wheel to the deck, it was discovered that the nose gear had collapsed. The nose of the aircraft continued to fall through until it contacted the ground.

Heat generated by friction ignited hydraulic fluid from sheared hydraulic lines. The subsequent fire continued throughout the skid, causing minor damage. The aircraft came to rest

along a line very nearly parallel to the runway axis. The pilot secured the mixtures and the mags, and both pilots exited uninjured through the overhead hatches. The crash crew extinguished the remaining minor fire in the nose-wheel-well area. The aircraft sustained substantial damage.



Grampaw Pettibone says:

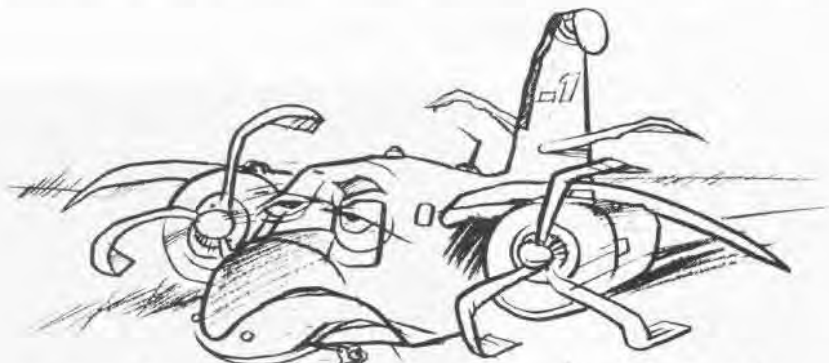
Holy Hannah! Can you believe it — with two pilots in the cockpit yet! The pilot lined up on right-side lights thinking they were the centerline lights. The copilot had an uneasy feeling about being lined up too far right; however, he said nothing. Makes you wonder what the purpose of a copilot is. Appears to me that the briefing left something to be desired, too. In addition to being very involved in squadron administrative duties, the pilot was involved in some personal time-consuming activities. All in all, this pilot should'a stayed in bed that morning. This accident should say one thing loud and clear to all — flying is a full time job requiring your full mental and physical abilities.

Quick Draw McGraw

A pilot and his radar intercept officer (RIO) were scheduled for an afternoon practice tactics flight in their F-4 *Phantom*. The brief was in accordance with NATOPS and, following the aircraft preflight and start, the F-4 taxied to the duty runway, made an uneventful departure and proceeded to the operating area.

At the termination of an uneventful tactics hop, the crew experienced ICS problems. The RIO's ICS which had been weak but clear during the preceding portion of the flight began deteriorating during the initial phase of a rendezvous with another F-4B. The pilot, who was endeavoring to direct the RIO's use of the radar to facilitate the join-up, states he had called the RIO twice on the ICS and once over the radio with directions. There was no response.

The pilot saw the RIO look over his



Maybe I shoulda stayed in bed!



left shoulder just after the radio call and signalled the RIO to raise the radar antenna. Shortly thereafter, much to the pilot's surprise, the RIO ejected!

The RIO later stated that he could not understand any ICS or radio communications but he construed them to mean the pilot wanted him to eject. The RIO further stated he did not see any hand signals from the pilot. It is significant that the aircraft had not experienced and was not experiencing any malfunctions nor was it being maneuvered erratically. The ejection warning light had not been turned on by the pilot.

The RIO was recovered uninjured and returned to base. The aircraft sustained limited damage.



Grampaw Pettibone says:

Great balls of fire! What do we have to do—remove the ejection handle in the back seat because Quick Draw McGraw is on board? Appears to me that this gent ought to take stock of the situation. We can't afford to have crew members punch out every time they have ICS trouble.

I sometimes believe we have a very small group of personnel who just have to do something sensational—or should I say stupid—just for the benefit of their own ego. I believe Naval Aviation can do without the type of people who get too shook up to take

rational action. Can't imagine what this gent would do in a real emergency.

Minus One

Two pilots arrived at operations to prepare for a cross-country flight in their US-2B. There were four passengers on the flight. The weather was forecast to be VFR to destination. The pilot completed the flight planning, conducted a thorough preflight and commenced the prestart procedures—all without incident.

The US-2B was cleared for departure, commenced takeoff and climbed to 6,000 feet. Leveling off at 6,000, the pilot noted the weather was excellent as anticipated from the weather brief. Following an uneventful first hour of flight, the #1 engine fire warning light came on. The engine was feathered and the pilot changed course to a nearby airfield.

En route to this field, the pilot reconsidered and elected to return to home base. This decision was predicated on the smooth operation of his remaining engine. Shortly after changing heading for home, a sump plug light on engine #2 came on and the engine began to run rough. The pilot now attempted to restart #1, but his initial efforts were fruitless.

He ordered the passengers to bail

out. There was some hesitation on the part of the passengers but, to get things rolling, an NFO bailed out first while the pilot continued attempts to restart the #1 engine. The engine started before the rest of the passengers had bailed out. The pilot quickly rescinded his bail-out order and landed at the original nearby airfield.

Meanwhile, the NFO drifted down and landed in a meadow. A farmer who had seen his descent picked him up and took him to the airfield where the aircraft had landed. A helicopter from a military field collected the crew and transported them to home base. There were no injuries.



Grampaw Pettibone says:

Holy mackerel! This gent pretty near wound up in the local pea patch. Once he made a good decision—to land at the nearest field—he almost blew it by changing his mind!

Can't fault the gent who made the "nylon approach." As a matter of fact, I think he did well by leading the way, as there appeared to be some hesitancy on the part of the other riders in the back.

This pilot now subscribes to making and sticking with a sound decision. Besides, it would be kinda nice if all the riders were delivered to the same airfield at the same time by the same aircraft—most passengers prefer that.



When associate editor JOC Dick Benjamin went to NATC Patuxent River, Md., to photograph Air Expo '73, it was a routine assignment for him. He had seen air shows many times before.

Sitting at his desk several days before the event was to take place, Chief Benjamin asked himself, "Just what is an air show for, why is it held?" The answer was "It's for the public; a chance for them to see Naval Aviation in action and find out what goes on behind the fence that surrounds a naval air station."

He then decided that the best way to present an air show for the public is through the eyes of the public. So he took his wife Charlotte to Patuxent River. The following is Air Expo '73 as she saw it.

Photos by JOC Dick Benjamin

It was terrific, absolutely fantastic! I had never seen a military air show before my husband took me to Air Expo '73 at Patuxent River. I didn't even know what types of planes the Navy had or why it had them. Before that day in late August was over, I knew more about Naval Aviation than I ever expected to.

We went to the base as soon as the gates were opened that morning and spent several hours looking at all the static displays. I felt a bit dumb because I had to keep asking Dick what type a certain plane was and what it was used for. The closest I had ever been to a plane before was a small commercial liner

seeing naval aviation in action



flying between Washington, D.C., and my folks' place in West Virginia. But then I thought a lot of the other people were probably in the same boat, so I swallowed my pride and kept asking questions.

There were so many aircraft, it was hard to keep track of them. I think the one I liked best was the A-4. There were others that were bigger and faster, such as the A-5 and the F-14, but the *Skyhawk* looked so "chic" that it came out tops in my book.

It seemed like no time before there were people jammed in the area. Kind of a standing-room-only crowd. Bill Frierson of the public

affairs office told me later that about 50,000 people were counted coming through the gate. You could sure tell it, especially when they piled up at the restraining fence to watch the air show—which is what I was waiting for.

There was a lot to look at on the ground, but a plane flying is better than one parked, any day, and I could hardly keep still waiting for things to start popping.

When they did, wow!

There were continuous thrills for the rest of the day. Jets were flying all over the place, bombs exploding, a helicopter that seemed to be dancing a waltz, parachutists floating

down through the sky to targets below, and Dutch Schulden and Corkey Forno putting their old planes through all kinds of crazy maneuvers.

It was all too much, and I have to admit I was disappointed when it was over. I wanted to see more.

Everyone should get a chance to see an air show like this to find out how Naval Aviation ticks. It was an experience that I wouldn't trade for anything. Too often all we civilians know about the Navy is that there is one. But that really isn't enough.

Air Expo is a yearly event at Patuxent River and a really big thing for the community. And you can bet I'll be there again next year.

Gail Leach was so happy when she received her crown as Miss Air Expo '73 from RAdm. Roy M. Isaman who commands the center.



The Bearcat and the Corsair that Corkey Fornof and Dutch Schulden flew also got a lot of attention.



Of course there was a whole lot of other types of planes and helicopters to look at.





The P-3 was the most popular airplane of them all. We had to stand in a long line to get a look inside it. It sure isn't anything like that plane I fly home in.



It was marvelous how the Seabee Drill Team performed without hurting each other.

The ejection seat demonstration was really neat. I hadn't known before how a pilot got out of a speeding jet if he had to.





With jets screaming overhead and bombs exploding on the ground, you had to keep your ears covered. I think the bomb charges were planted, but they were very real. The crowd was kept a safe distance away so nobody could get hurt.





There were so many people that it seemed like Times Square on New Year's Eve. No one seemed to mind because it was such fun.



The pilot flying the UH-1 did a wonderful job putting his helo through maneuvers that made it look as though it were dancing. The crash crew showed how to put out a 2,000-degree aircraft fire.



Some of the other things we saw were an "enemy" A-5 attack plane getting shot down by a fighter; an Orion flying with only two of its four engines running; four Marines parachuting from a climbing OV-10A to take up battle stations behind enemy lines; and the Marine drum and bugle corps. All in all, it was quite a day.

Naval Air Coats of Arms

By Clarke Van Vleet, Aviation Historian

Do you know your armorial bearings?

We question not your love life. Rather, we're wondering if you know the background of your insignia.

Daniel Webster tells us that "Insignias (as military badges) resemble, or are likened to, armorial ensigns." In the Middle Ages, noblemen, knights and warriors were adorned with vivid coats of arms. The bold and fearless who ventured forth in jousting tournaments and feudal conflagrations, especially the Crusades, proudly wore the emblems created for them by crown-appointed heralds.

Today's insignias have descended from the 12th century and are seen

in myriad forms. Classic examples exist at the College of Arms on Queen Victoria Street in London, for example, or at the U.S. Institute of Heraldry at Cameron Station, Alexandria, Va. Twentieth century heraldry for Naval Aviation readers, however, is best personified by those insignias assigned to units ranging from squadrons to top level staffs.

OpNavInst 5030.4B sets forth CNO's standards for design and specifically calls for clear, uncluttered depictions with bold colors for contrast and distinctive symbols of such character as to bring dignity to the service and encourage perpetuation of the design.

Aviation heraldry "got off the

ground" in WW I when an era of aerial knighthood was born in the skies over France and Germany. The skull and crossbones or overall black and white checkerboard designs on German planes, the "Indian Head" emblem of the volunteer American unit, *L'Escadrille Lafayette*, and Eddie Rickenbacker's 94th Pursuit Squadron with its "Hat in the Ring" were but a few which became famous.

Meanwhile, insignias for U.S. Naval Aviation began to emerge at local levels. They were unofficial but no directives from higher authority existed to provide guidelines. Since there is virtually no documentation of this heritage except for some old photographs,





an attempt is made herein to explain the early beginnings of Navy insignias.

In the 1920s, as the number of units expanded, insignias began to proliferate in the fleet, not without setbacks, of course. For example, VF-1 adopted a soaring bird with outstretched claws as its insignia. Some crew members from neighboring VF-2 stole into the hangar on the eve of their first joint cruise to Panama and painted gigantic galoshes over the talons of VF-1's bird. The squadron later abandoned its emblem anyway, ostensibly because it resembled the parrot used as a trademark by the Ghiradelli Chocolate Company.

In its place, in 1927, the unit estab-

lished a *High Hat* design which has been passed along through the years to eight different squadrons. Today, VF-14 proudly wears it.

By the Thirties, the Bureau of Aeronautics took firmer control of insignias. VF-2B, the famous enlisted squadron, was using a chief's chevron emblazoned with the word *Adorimini* (Caesar's battle cry). The Aviation Pilots (APs), having won an E, decided that a change was in order and, in 1934, submitted an insignia depicting a monkey-like figure with plans to rename themselves the *Apes* to reflect the APs' excellence. Washington responded with a rather curt "The Bureau does not look with favor upon the proposed

new design for a new insignia. . . ."

Insignias flourished throughout the fleet in WW II and hundreds of ships, squadrons and stations seemed in a race to surpass each other in design artistry. Many were good, others were gruesome, comical or ridiculous. The sky was the limit on what could be included in designs and nearly all proposals were approved for lack of definitive ground rules. Many poorly conceived coats of arms got through the mill, largely because the submitting outfit wanted it so. Cartoons abounded.

In the Navy Department, OP-05D is tasked with reviewing and approving new air insignias or modifications of old ones. With continual changes in or-



Naval Air Coats of Arms



VF-9



VP-31



VO-3



VF-42



VPB-129

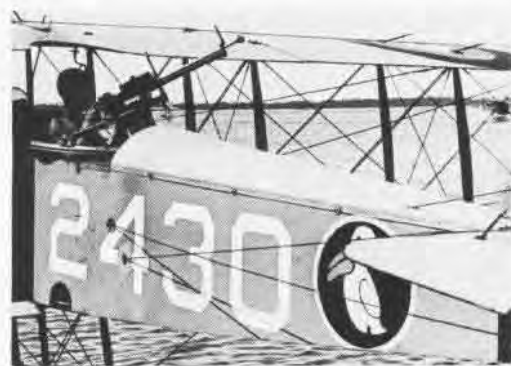
ganization and unit missions, coupled with the creation of new aeronautical divisions throughout the Navy, this task constitutes a flourishing business. Official applications and requests for research or advice run well over 200 each year. Unfortunately, the small staff responsible cannot handle private requests. However, the public may have access to some 3,000 individual files of old and currently commissioned insignias by visiting the office in Arlington, Va.

The current instruction describes all contingencies and units applying for insignia approval are asked to study it thoroughly before submitting requests. A couple of points which appear to cause the most difficulty should be emphasized. Best results are obtained by using only two or three vivid colors and no more than one or two symbols in the design. A multi-symbol insignia may look impressive from arm's length but at a distance it becomes an unrecognizable, cluttered hodgepodge.

One of the chronic administrative errors is the failure of units to comply with paragraph two of the CNO letter they receive with final approval of their insignia which states "that two 8x10 and two 2 1/4 x 3 1/4 color prints, two embroidered patches, two decals and a plaque, if produced, be forwarded along with other data for record and display purposes."

Units with a recently approved insignia are asked to examine their files for compliance with this request, particularly if they wish their emblems of heraldry to enter the annals for posterity.

(Editor's note: Each month Naval Aviation News tries to feature a squadron or aviation unit and its insignia on the inside back cover. Since there are literally hundreds of such Navy and Marine organizations and only a dozen months in the year, it is impossible to satisfy all concerned. Some will conclude that their outfit hasn't received timely recognition. We regret that this is, unfortunately, unavoidable. We solicit your patience, however, with the pledge that, if at all possible, we will endeavor to get your unit into print.)



Cartoon-type insignias, like those of WW II, far left, are now forbidden. Ram butting "L" out of Kultur (German for culture), middle above, showed WW I flavor at Pensacola in February 1918, but unit identity, if any, is unknown. Also a mystery are pelicans depicted on N-9s in 1918 at Miami, then a USMC air training station.



Left, new VF-1, commissioned in October 1972, the fourth VF-1 in naval aviation history, opted for wolf's head insignia; VF-2, also a fourth in lineage and flying F-14s as well, was granted a waiver to adopt the original VF-2 emblem (inset) of the Twenties.



Upper left, Ace of Spades was first documented squadron insignia, adopted in 1921 by USMC First Air Squadron which has evolved into today's VMA-231 and flies the Harrier. Above and left are two examples of coats of arms on planes. Page 40 has additional views of recently approved insignias.

While the current A-7, as the *Corsair II*, recognizes its WW II F4U series predecessors, Vought *Corsairs* were famous naval aircraft long before the F4U-1 arrived on the scene. Since names were not officially assigned to Navy aircraft prior to WW II, the F4U-1 was the first official *Corsair*. But the *Corsair* name assigned by Chance Vought to its 1926 O2U-1 model stuck and Vought biplane *Corsairs* were famed in Navy, Marine, Coast Guard and foreign military service for more than a decade.

The initial *Corsair* was the first airplane designed to use the then new Pratt & Whitney engine. With the promise of 400 hp and minimum weight, Vought designed a two-place observation biplane with bomber and fighter potential as well. The early flight test reports were more than enthusiastic and the *Corsair* line was born: 130 production O2U-1s followed the two prototypes.

The O2U-1 featured a mixed wood and metal structure, fabric-covered. It could be flown from fields or carriers with wheel undercarriage or converted to float gear. Some *Corsairs* later had amphibious landing gear installed.

During prototype testing, the O2U-1 set four international records for seaplanes, and production deliveries were hardly under way at the end of 1927 when early aircraft, delivered to the Marines, achieved fame in Nicaragua. The Marines pressed the *Corsairs* into service against rebel bandits, using gunnery and bombing attacks to support ground troops. One of these first *Corsairs* was used by then Lt. C. F. Schilt for a series of rescue flights under intense fire, which earned him the Medal of Honor.

Meanwhile, other *Corsairs* went about more routine, if no less exciting, duties as seaplane scouts operating from capital ships of the fleet. Other *Corsairs* equipped the early scout squadrons flying from *Lexington* and *Saratoga*.

With the success of the initial model established, improved versions (159) continued in production until early 1930 when they were superseded by the O3U series. As usual, the increased weight of the improvements offset many of the other advantages in the view of Navy pilots.

As the O2Us were superseded by later models in the early 30s, they were phased out of operational squadrons, most of the remaining aircraft being in training service at Pensacola where they served until the late 30s.



O2U-2



O2U-3

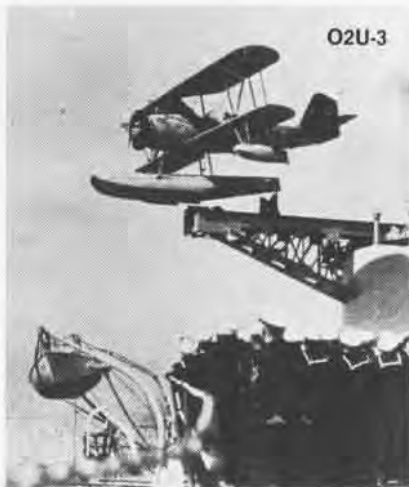


SAIR

O2U-4



O2U-3



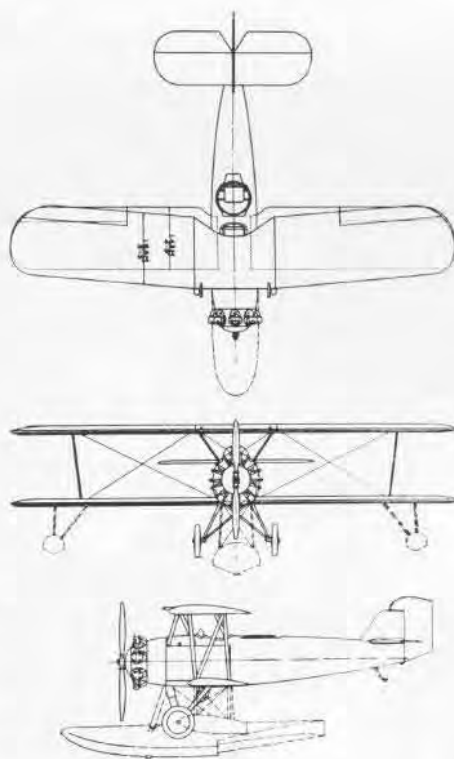
O2U-1



O2U-1 prototype



Wing span		
O2U-1		34'6"
O2U-2, 3, 4		36'0"
Length		
landplane, O2U-1		24'6"
O2U-3, 4		25'1"
seaplane, O2U-1, 2		28'7"
O2U-3, 4		28'10"
Height		
landplane, O2U-1		10'1"
O2U-2, 3, 4		11'0"
seaplane, O2U-1		11'7"
O2U-3, 4		13'2"
Power plant		
O2U-1, 2	P&W R-1340B	450 hp
O2U-3, 4	P&W R-1340C	450 hp
Maximum speed		
landplane, O2U-1		149.5 mph
O2U-3, 4		138 mph
seaplane, O2U-1		146 mph
O2U-3, 4		136 mph
Service ceiling		
O2U-1		20,500'
O2U-3, 4		17,000'
Range		
landplane, O2U-1		526 nm
O2U-3, 4		478 nm
seaplane, O2U-1		483 nm
O2U-3, 4		348 nm
Armament		
.30 machine gun fixed in upper center panel outboard of prop arc		
.30 machine gun flexible, rear cockpit; ten 30-lb. bombs in under wing racks on lower wing		





Left, capacity crowd of Tailhookers at Las Vegas Hilton listen to POW presentations.

TAILHOOKERS'





Above, VAdm. Houser presents award to VAdm. Cooper. Right, Adm. Moorer with F4B-1.



ANNUAL REUNION

Leadership. Responsibility of rank. Communications. Take command. These were the points repeatedly stressed by four returned POWs during a two-hour symposium held at the Hilton Hotel in Las Vegas in September during the 17th Annual Tailhook Reunion.

Heading up the distinguished panel was Rear Admiral James B. Stockdale who was shot down in 1965 and was the senior prisoner in the camp system from 1967 until his release in February 1973. Assisting RAdm. Stockdale were Captains Harry T. Jenkins, Jr., and Howard E. Rutledge, both captured in 1965; and LCdr. George Coker, captured in 1966. All were released in 1973.

When introduced by Captain Robert

Story and Photos by PHCS(AC) R. L. Lawson

E. Gallatin, Tailhook Association President and 1973 Reunion Chairman, the panel members received an overwhelming standing ovation.

They discussed their imprisonment in North Vietnam as related to POW organization, survival, resistance and morale. All were members of an 11-man group known as "The Alcatraz Gang" and were imprisoned for the greatest portion of the time at Hao Lo Prison near the Ministry of Defense in Hanoi. This was known as Alcatraz by the POWs who don't care for the Hanoi Hilton label. Following the discussion, the panel members responded to questions from the nearly 2,000

Tailhookers who filled the large convention hall.

Again and again the discussions came back to the main theme of leadership. LCdr. Coker strongly emphasized the need for officers to "be prepared to accept positions of leadership" and how keenly junior prisoners looked for, and expected, that leadership from their seniors. RAdm. Stockdale, Capt. Jenkins and Capt. Rutledge all affirmed this point and made it clear that "the senior man in the POW situation must accept his responsibility of rank regardless of the reprisals he knows he may face." (The North Vietnamese considered it a punishable offense for anyone to take command or attempt to lead other prisoners.)

Naval Aviation's system of training

Left, former POWs LCdr. Coker, RAdm. Stockdale, Captains Rutledge and Jenkins and LCdr. Ron Knutsen participated in symposium.

Tailhook Reunion

and the development of the competitive spirit were credited with being great factors in the survival of all four panel members. The feeling of not letting the enemy beat him but that he was going to beat his captors was brought out by RAdm. Stockdale. He also emphasized his belief in the need for Navy men to condition themselves through body contact sports, to prepare for emergency situations and to develop a competitive spirit.

Before ending the symposium and descending from the speakers' platform to greet old friends not seen for

so many years, the panel gave credit to the American spirit and sense of humor which provided them with "the resilience to come back after humiliation, torture and beatings to face their captors again and again."

The final question asked of the panel was "What are your plans for the future?" The answer came back as a unanimous response, "We don't want to be professional ex-POWs, we want to get on with our duties in the Navy," and then with great exuberance, "Which carrier can I have?"

The grim visions of North Viet-

namese prison camps were alleviated somewhat by three other symposiums. Tailhookers were treated to an inside look at the *Apollo* program by Captain Ron Evans, *Apollo 17* command module pilot. The Carrier Suitability Branch, NATC Patuxent River, Md., was represented by LCdr. Clint Smith and Mr. Roger Decker. The annual industry symposium was headed by Mr. Joe Gavin, President of Grumman Aerospace Corporation, and included many distinguished panel members. Under discussion were many of the problems that must be faced in the future of Naval Aviation.

Combat Camera Group, Atlantic presented its outstanding multimedia program on the History of Naval Aviation.

Culminating the weekend activities was the annual awards banquet presided over by Capt. Gallatin.

This year VF-161, VA-75, HS-11 and VT-23 were named the outstanding squadrons in their fields. VA-84 received an award for having the most Tailhookers present. Vice Admiral Damon W. Cooper, Chief of Naval Reserve, received the 1973 Tailhooker of the Year Award from Vice Admiral William D. Houser, Deputy Chief of Naval Operations (Air Warfare).

Max trap awards went to Rear Admiral Fred Koch (Op-05), 805; Captain Gene Sizemore (C.O. of NAS Jacksonville), 1,036; Commander James H. Flatley III (ComNavAirLant staff), 1,297; LCdr. Dick Hamon (VX-5), 803; Lt. Bob Webster (VAQ-130), 464; Ltjg. John Rowe (VA-27), 268; and Ens. Chris Byerley (VS-41), 22. The awards were presented by Captain George Watkins, "the greatest bagger of them all" with 1,418 carrier landings.

Following the awards presentation, Admiral Thomas H. Moorer, Chairman, Joint Chiefs of Staff, gave a hard-hitting speech on the effectiveness of air power and expressed his personal thanks to the assembled Naval Aviators for their outstanding performance in Vietnam. Adm. Moorer is the present Gray Eagle; he was designated a Naval Aviator in 1936.



Above, RAdms. Alan Shepard and Stockdale chat at VIP banquet. Left, VT-23's commanding officer, Commander Don Martin, receives trophy from RAdm. James Ferris, CNAtra. Below, ex-POW Commander John McCain (right) arrives for the reunion.



1973 NATS

By JO1 Eusebio Pacacios

This year the National Model Airplane Championships were held at Wittman Field, Oshkosh, Wisc., the first time since 1948 that the meet was held without the aid of a Navy facility. More than 2,000 contestants competed in 49 events during the week of August 6-12.

It was also the first time that official Navy teams competed. They were sponsored by the Naval Training Command and were under the direction of AZC R. A. Olen, NAS Kingsville.

A Gold Team was supervised by Commander A. W. D. Snyder, recently retired, NAS North Island. His sons, Max and Scot, MNC Pat Carroll, Explosive Ordnance Detection Group 2, and PRI A. T. Wright, NAS Cecil Field, completed that team. Max and Scot broke national records with their entries.

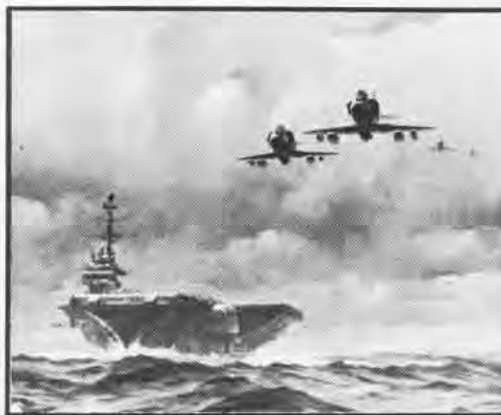
Navy's Blue Team included ADJ1 Michael Butler, PMR Point Mugu, Lt. Malvin Meador, NARDet Patuxent River, AZCS E. A. Steffen, VT-25, C. Weirick (retired) and AZC Olen.

The Silver Team was led by Captain J. E. Klaus, OinC of Purdue University's ROTC unit, ADR1 Bobby Brown, VT-27, HMC Donald Golihur, Naval Hospital San Diego, and AT1 Terry Rimert, VS-32.



Under the supervision of AZC Olen, AZCS Steffen puts his radio-controlled model through prescribed maneuvers, top. Cdr. Snyder helps Scot make final gas mixture adjustment, above. Scot's entry flew a record-breaking 118.92 mph. PRI Wright guides his entry from the pylon, right.





at Sea with the Carriers

John F. Kennedy (CVA-67)

The *Clansmen* of VA-46 have surpassed 15,000 hours of accident-free flight operations. Aboard ship 19 of the 28 accident-free months, the *Clansmen* have logged over 6,000 carrier landings during the period, with a sortie efficiency rate of 96 percent. The carrier is presently deployed to the Mediterranean.

Ranger (CVA-61)

All was not activity as usual aboard *Ranger* recently when many crewmen were startled — or amused — by "Twinki" as he casually walked the passageways of the carrier.

Twinki is a 75-pound lion cub brought aboard the ship to promote a special "Ranger Day" at Marine World-Africa USA. Scheduled for

November 24, the special day will provide *Rangemen* and their families a chance to visit Marine World at a special discount rate.

Constellation (CVA-64)

Constellation and CVW-9 have been awarded the Presidential Unit Citation for "... extraordinary heroism and outstanding performance of duty against an armed enemy in Southeast Asia from October 22, 1971, to June 13, 1972." CVW-9 consisted of VFs 92 and 96, VAs 146, 147 and 165, RVAH-11, VAW-116, and detachments from HC-1 and VAQ-130.

Independence (CV-62)

Crewmen of HS-5 aboard *Independence* recently responded to three emergency calls within a three-week

period from Greek citizens in need of medical assistance. In two of the cases, Greek-American Navy men figured prominently in the rescue efforts.

The first incident occurred 110 miles south of Athens. An HS-5 helo crew flew a late-night rescue mission to the village of Potamos where villagers turned their automobile lights on the local soccer field which was used as the landing and pickup area. A Navy medical team treated a 15-year-old boy who had been bitten by a poisonous fish while the helicopter made the trip to Athens where the boy was hospitalized for two days.

Two weeks later, HS-5 responded to a call to air evacuate a Greek diver who was stricken with the bends while diving in 150 feet of water near Karpathos. During the flight to Athens, the diver was treated by Lt. Leo Solirion, MC, the son of Greek-American parents.

Greek-American LCDr. Christopher Stefanou, command duty officer at the Fleet Support Office, Athens acted as mission coordinator for the third emergency call. Complications developed after a woman's baby was delivered on the island of Santorini. Local doctors considered her condition serious enough to require emergency treatment in Athens. HS-5 responded again, flying to the island and then on to Athens with the patient.

Oriskany (CVA-34)

Oriskany has been selected to receive the 1973 Edward F. Ney Memorial Award for having the best large mess afloat. The Ney Awards are presented annually in recognition of outstanding Navy food service.



An advanced model of the Hawkeye makes its first carrier landing during recent carrier compatibility tests aboard USS *America* (CVA-66). The E-2C is expected to begin replacing the E-2B in a year. Main differences between the two models are more powerful engines, all new electronics equipment and an elongated nose which lengthens the aircraft by about two feet.

This is the third time that *Oriskany* has won the coveted award. She also took the honors in 1964 and 1965.

As part of the award, the carrier will send CSI Azzie J. Poteat to the School of Hotel Administration at Cornell University, Ithaca, N.Y., for courses of instruction in professional cookery. The university contributes to the program by providing the courses to first and second place winning commands. The Alameda-based carrier is presently preparing for her next deployment to WestPac.

Hancock (CVA-19)

Fighting Hanna's aircraft intermediate maintenance department was re-

cently presented its third consecutive Best Small AIMD Afloat award by Rear Admiral Wesley L. MacDonald, ComCarGru Three. The award is presented annually for AIMD management and production efficiency.

When ADJ2 Victor Winandy of HC-1 hoisted Ltjg. Gene M. Brotherton out of Pacific waters recently, it was his fifth such rescue. As the helicopter crew prepared for routine SAR duty, the pilot plugged into the standard radio circuit just in time to hear Ltjg. Brotherton's message that his F-8 *Crusader* had low oil pressure. Within two minutes, the helicopter was speeding to the downed pilot seven miles away. This was the sixth rescue this year by HC-1 Det. 3.

Intrepid (CVS-11)

The crewmen of *Intrepid* took time out August 16 from their work deactivating the WW II veteran to celebrate the carrier's 30th anniversary.

Intrepid is presently at NAS Quonset Point, R.I., where she is being prepared for mothballing. She is scheduled to be decommissioned March 15, 1974, and placed in the Naval Inactive Ship Maintenance Facility, Philadelphia, Pa.

Crew members also recently helped celebrate the 60th anniversary of the Dental Corps. During the celebration, Commander Aubrey Bourgeois, *Intrepid's* dental officer, gave the command to catapult from the flight deck a tooth belonging to DT3 Phil Lovato.

Ticonderoga Set for Decommissioning



USS *Ticonderoga* (CVS-14) steams at sea for the last time before being deactivated.

USS *Ticonderoga* (CVS-14) is presently in the final process of deactivation in San Diego prior to being decommissioned. She will be stricken from the naval ship register November 16 and disposed of in a manner most convenient to the government.

Ticonderoga was commissioned May 8, 1944, as an attack carrier. She was highly active in destroying Japanese airfields and ships in and around the Philippines until she was badly damaged in a kamikaze attack in January 1945. After two months of extensive repairs, *Tico* was back in action for the remainder of the war, attacking Japanese-held islands, supporting Allied forces ashore and destroying enemy shipping.

In January 1947, she was placed in the Bremerton Group of inactive reserve ships where she remained until 1952. After two years in the yards undergoing modernization, she was recommissioned in 1954. As an attack carrier she made cruises to the Mediterranean and over ten deployments to the Western Pacific.

In 1969, *Ticonderoga* was refitted and redesignated a CVS and has served as the flagship for Commander, Anti-submarine Warfare Group Three. She recovered the *Apollo 16* astronauts in April 1972, and the moon voyagers of *Apollo 17* in December 1972. Her last mission was the recovery of *Skylab II*, 750 miles southwest of San Diego.



USS *Ticonderoga* (CVA-14) as she looked before she underwent extensive modernization.





Weapons and Technology Seminar

SARS on the move

Whenever an innovative training program involves 2,000 miles of travel in a two-week period, its potential and scope merit a close scrutiny. This sojourn last summer, defined as a

Weapons and Technology Seminar, was conducted in California and designed for Naval Air Reservists on two weeks' AeDuTra—to update them in air weaponry and related technological de-

velopments in the Navy of today . . . and tomorrow. The energetic cooperation of many officials, civilian and military, was responsible for the success of this venture.

Planning had begun months earlier, conceived and implemented by Commander Alvin W. Platt, USNR, presently C.O. of NavAirSysCom's Reserve Unit G-1. He sought out and obtained the needed logistic support of NavAirSysCom, ComNAR, NARU Alameda and NASRU G-1, as well as other government, industrial and military installations which contributed much in the way of physical and human resources. Cdr. Platt molded the officers of NASRU G-1 into a cohesive team capable of carrying out the planned training mission.

On a Sunday evening, the group of 32 Naval Air Reservists, most of whom are engineers in civilian life, rendezvoused at NAS Alameda and

By Captain Edwin M. Logan, USNR

the seminar was off and running. The participants discovered that the next 14 days were to pass all too quickly as they kept on the move throughout much of California. It was to be one of the most enlightening and rewarding training periods they had known.

At the Lawrence Livermore Laboratory near San Francisco, the Reservists learned about nuclear research. During their visit to the Naval Weapons Station, Concord, 40 miles northeast of San Francisco, they concentrated on the ordnance department and the quality and engineering evaluation laboratory.

Phileo-Ford's Western Development

Laboratories at Palo Alto near NAS Moffett Field provided an overview of space and ground communications and satellite control systems. There they became acquainted with a new computerized display designed to minimize errors and provide better teamwork in air battle conditions.

Lockheed Missiles and Space Company, Sunnyvale, afforded the group the opportunity to study the *Polaris* missile and its successor, the *Poseidon*.

At the Ames Research Center, the Weekend Warriors were exposed to developments in helicopters, V/STOL and high performance aircraft, and related aeronautical fields. They were briefed on the different phases of rotary wing technology, including per-

SARS viewed the anechoic chamber at Point Mugu, Calif., where radar microwaves are beamed at scale aircraft models and the waves the models reflect are recorded, left.



formance, flight dynamics and vibrating loads. They learned about advanced concepts being studied to enhance helicopter performance; reverse velocity, circulation control, jet flap and tilting, hingeless rotors and feedback control systems. They heard about V/STOL, research problems — operation, performance, noise, guidance and display systems.

As the officers toured the Ames facilities, they witnessed instrumentation used in air breathing propulsion and the testing of models in wind tunnels. In the flight and guidance simulation laboratories they saw the space shuttle and vertical takeoff aircraft simulator. The same simulator can also "test" vehicles still on the drawing board.

At the Naval Air Rework Facility, Alameda, the Reservists were briefed on the NARF's role in aircraft maintenance and repair, and on the use of various detection tools to investigate aircraft failures and their causes. One new tool is the analytical scanning electron microscope which magnifies a metallic object from 5 to 320,000 times its normal size, thereby helping to make the necessary chemical analysis. Backscatter and secondary electron

images also help reveal differences in chemical composition.

As the Reservists toured the NARF and examined aircraft being reworked electrically, electronically and mechanically, they observed new techniques and methods, including the inventorying of spare components with the aid of a mini-computer.

Also at Alameda, in a change of pace, four combat-tested Marine pilots served as panelists for a presentation on aerial warfare over Vietnam. They described the difficulties encountered in constructing airstrips and during the gradual build-up of aircraft and helicopters to carry out combat missions. There were static displays of various Marine aircraft, including the A-4 Skyhawk.

Intelligence was closely correlated with the technical aspects of the seminar. In this area, the officers had the advantage of being able to listen to a current atypical facet of intelligence — a former POW, LCDr. Roger Leserth, USNR, spoke of his experiences. When his aircraft was downed by SAMs over North Vietnam, he was injured and parachuted into a field where he was picked up by the enemy.

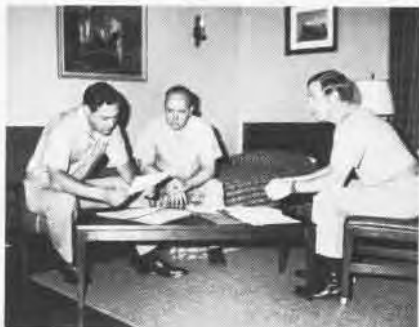
He described his capture, internment and recuperation, as well as the enemy's attempts to exploit the POWs for propaganda purposes.

After the POW intelligence briefing, the midpoint of the training program, the unit was airlifted to the Naval Weapons Center, China Lake, in southern California's Mojave Desert, about 160 miles northeast of Los Angeles. There the touring Reservists furthered their knowledge of the principal Navy RDT&E center for air warfare and missile weapons systems. The approach to weapons' development by NWC is based on an operational, two-fold philosophy that operational efficiency and weapon effectiveness are improved when all physical facilities are in one organization; and that the task of creating reliable weapons is best achieved through the combined efforts of a civilian-military team of engineers and scientists who are cognizant of naval operational needs.

The SARs were given illustrated presentations on numerous programs including:

- The *Bulldog* weapons system, developed in response to a Marine Corps need for a close air support weapon.

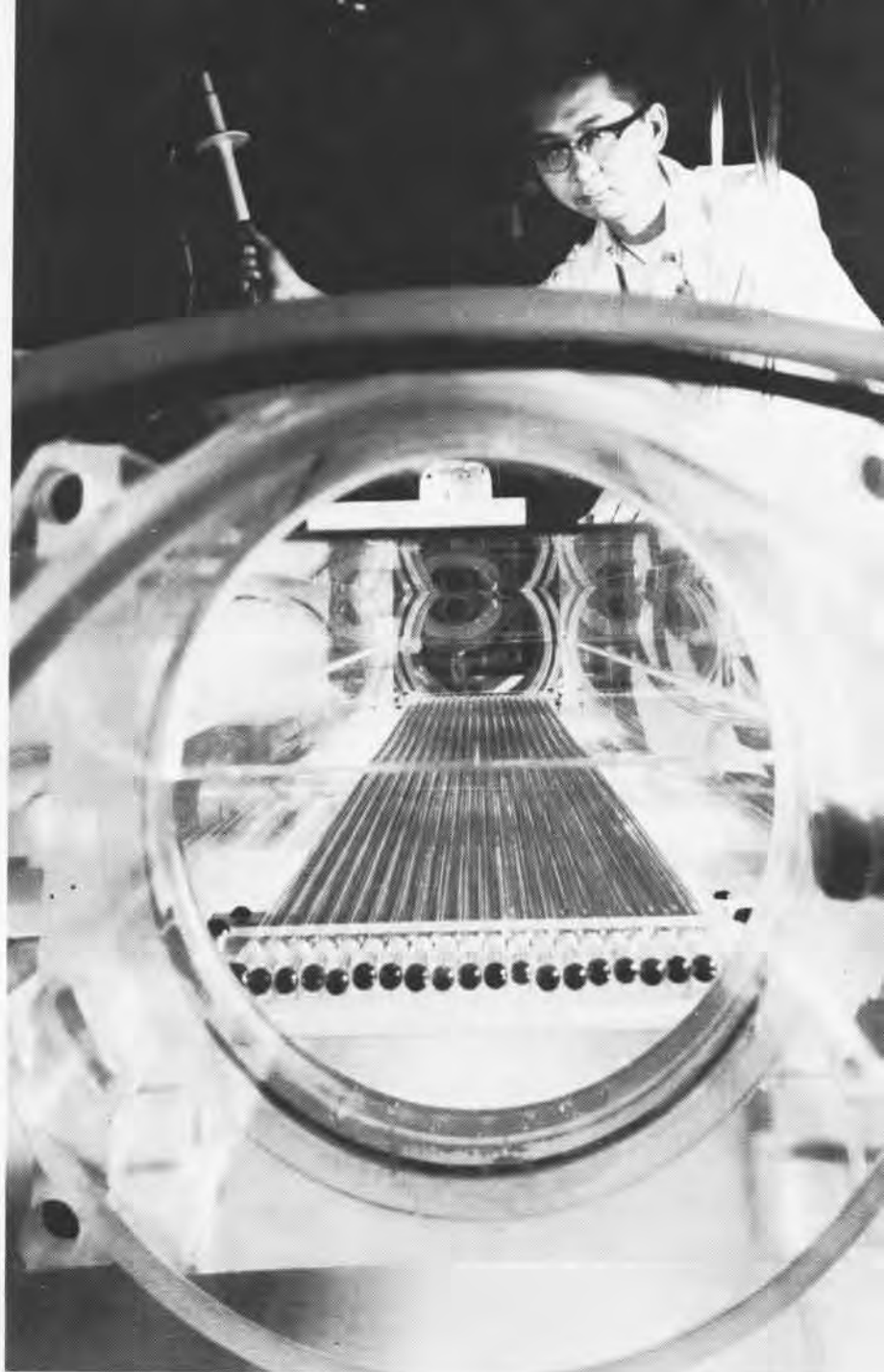
VX-4 F-4s, AV-8As, F-86, far left. At left is a Bulldog at China Lake. Below, Commanders Robert Margotta and William Howard discuss seminar with NASRU G-1's Cdr. Platt.



It employs a laser guided, air launched missile for pinpoint accuracy in destroying surface targets and enables the pilot to launch the weapon at altitudes and standoff ranges beyond enemy small arms and anti-aircraft fire.

- *Harm*, a missile with broadband frequency coverage, a large launch envelope and shorter time to designated target.
- The night attack systems program which provides a guided night attack weapon for aircraft such as the A-6E and A-7E.
- *Echo Range*, the test and evaluation of defense suppression equipment and tactics with continuing emphasis on shipboard radar systems.
- *Agile*, a missile system designed to allow air-to-air attack in all situations where the target is visible to the pilot.
- *Chemiluminescence*, a chemical source of light which can be used in many areas, including search and rescue missions, to mark locations of rescuers or victims, and to mark drop zones and helicopter landing sites.

Another airlift took the Reservists to the Pacific Missile Range, Point Mugu, 50 miles north of Los Angeles on California's picturesque Coast



SARS observed laser research at Lawrence Livermore Laboratory near San Francisco, Calif.



Above, the Naval Air Reservists observed the climatic chamber at Naval Missile Center Point Mugu where aircraft are exposed to all types of environmental conditions. The P-3 Orion production line at Lockheed California Company, right, was on the SAR itinerary.





Highway. The vast expanse of the Pacific Ocean affords a safe area for testing and evaluating missiles and remote-controlled aircraft. Laguna Peak and the islands adjacent to the Santa Barbara Channel offer a convenient site for communications and instrumentation equipment. At Point Mugu the officers received a progress report on the F-14 *Tomcat* and viewed the supersonic Mach 2+ fighter in the hangar area.

The SARS also visited a laboratory to observe the testing and evaluation of missile systems in environments where extremes of temperature, altitude and vibration are simultaneously applied to the missile being analyzed. Temperatures may range from an Arctic-like 120 degrees below zero to a seething 800 degrees above. Altitudes vary from sea level to higher than 300 miles, with acceleration exceeding 700 Gs. Missile components are shaken, shocked and bombarded by high intensity sound in the vibration, acoustical and drop test rooms. They are seared in hot, humid chambers and are subjected to accelerations and related altitude tests in the centrifuge and in various altitude, humidity and temperature chambers. Once the components pass their respective tests, they are assembled into the complete missile system. They are then retested to demonstrate the interaction of one part with another and to determine the effects of parts failures on the performance of the system. The missile system is therefore subjected to all possible environments of actual flight operations.

Considerable time was spent in the anechoic chamber which is involved in research on reflected radar signals. Radar systems perform various functions, including long-range detection of enemy threats. Special attention is given to the characteristics of signals reflected from targets against which our weapons systems must be effective, from the aircraft and missiles threatened by enemy radar systems and from targets used in evaluation tests to simulate the threats. When the characteristics of the reflected signals are learned, they make up the target's radar signature — what the radar receiver "sees" when identifying the approaching vehicle.

In Burbank, on the outskirts of Los Angeles, the Weekend Warriors became familiar with many of Lockheed California Company's aeronautical developments, with particular emphasis placed on the P-3C *Orion* and the S-3A *Viking*. At the Rye Canyon Research Laboratory, which supports Lockheed's efforts, segments of future aircraft carrier equipment are in operation. One is the Versatile Avionics Shop Test (VAST), a bank of computer-controlled electronics systems whose components are designed to thread their way through the circuitry of an S-3A avionics subsystem to pinpoint any faulty component causing a complaint.

At Treasure Island, the Reservists learned about the numerous elements of electronic warfare — men, hardware and concepts. The growing sophistication of enemy weapons systems makes the time factor, particularly the lack of defensive reaction time, increasingly important, especially when several enemy missiles are approaching their target simultaneously. New concepts, designed to cope with the shrinking time, include the addition of an electronics warfare technician aboard ship who will initiate deceptive and confusion tactics once the parameters of an enemy emitter are identified, thus buying more time for the shipboard weapons team to prepare for the enemy threat.

Their mobile training program over, the Reservists of NASRU G-1 returned to their homes, fatigued, but with a significant training experience behind them.

The sophisticated seminar had provided a comprehensive understanding of the weaponry RDT&E environment and its significance in the Navy today. Those who participated in the innovative program feel it could be enlarged to accommodate both Regulars and Reserves, officers and enlisted, and, where time might preclude a two-week program, perhaps selected segments could be utilized.

A participant in the seminar, Captain Logan in civilian life is a professor at Towson State College, Baltimore, Md., where he is Chairman of the Educational Technology Department.





How Many Gs?

How many Gs can you pull in seven seconds?

Naval Air Development Center, Warminster has a device, located in the building that houses the Crew Systems Department, that can have you pulling 40 Gs in that brief time frame.

Of the four departments that make up the operating force of the Center, Crew Systems is the most oriented to the man in the cockpit, his environment and his unique problems. The department's mission is brief and to the point: to provide a comprehensive, coordinated research and development program in the areas of aerospace medicine, life sciences, aircrew equipment and human factors engineering. To accomplish this ambitious undertaking, Crew Systems is divided into four divisions, each with a portion of the department's overall responsibility.

At the Life Science Division, the main thrust is in research within the fields of aviation and space medicine,

By Michael G. McDonell

Photos by JOC Dick Benjamin

biophysiology, biochemistry, vision and the biophysical effects of acceleration forces. It is in this, the most medically oriented division, that one finds many medical personnel engaged in residency training in aerospace medicine or, as post-doctoral research associates, engaged in such research as stroke recovery and shock studies.

The Human Factors Engineering Division provides the department with the primary source of expertise and manpower for assessing human performance effectiveness during aircraft operation, maintenance and support.

The Life Support Division handles the research, development, test and evaluation of all equipment and systems used to maintain crewmen in all environments. Its personnel have been responsible for developing much of the

Navy's flight gear, mission oriented flight suits and flotation gear.

The Escape, Simulation and Crash Safety Division's function seems self-explanatory. Literally at the center of its area of responsibility, as well as at the physical center of the building which houses the department, is one of its most spectacular and, at the same time, its most representative piece of equipment.

In a large, circular room mounted on solid bedrock and powered by a 180-ton GE motor located two stories below the surface is the world's largest operational centrifuge. Attached to the motor is a steel arm at the end of which is a gimbaled gondola which carries many of the early astronauts as they trained for launch, abort, and re-entry via the various acceleration profiles available.

With a computer controlling the centrifuge, various acceleration profiles can be developed in which the occu-

The world's largest operational centrifuge, with a gimbaled gondola at the far end, has seen numerous uses, left. When an aircraft cockpit is placed in the gondola, right, a pilot can "fly" the centrifuge during tests.





pant experiences such effects as G forces and pressurization. During an "open loop" profile, the pilot rides as a passive passenger to experience these effects, with control of the centrifuge, via the computer, being maintained by researchers outside the gondola. With a "closed loop," control is turned over to the pilot who then "flies" the centrifuge. During normal tests, an actual aircraft cockpit is placed in the gondola and hooked up to the computer. The result is that the pilot flying the centrifuge sees the gauges responding, looks at a realistic outside environment and, given the proper circumstances, even feels his "aircraft" buffeting via hydraulic actuators.

What is the purpose of all this?

Don Moreway, a research psycholo-

gist who works very closely with the centrifuge, sees it as a laboratory for testing normal people in an abnormal environment.

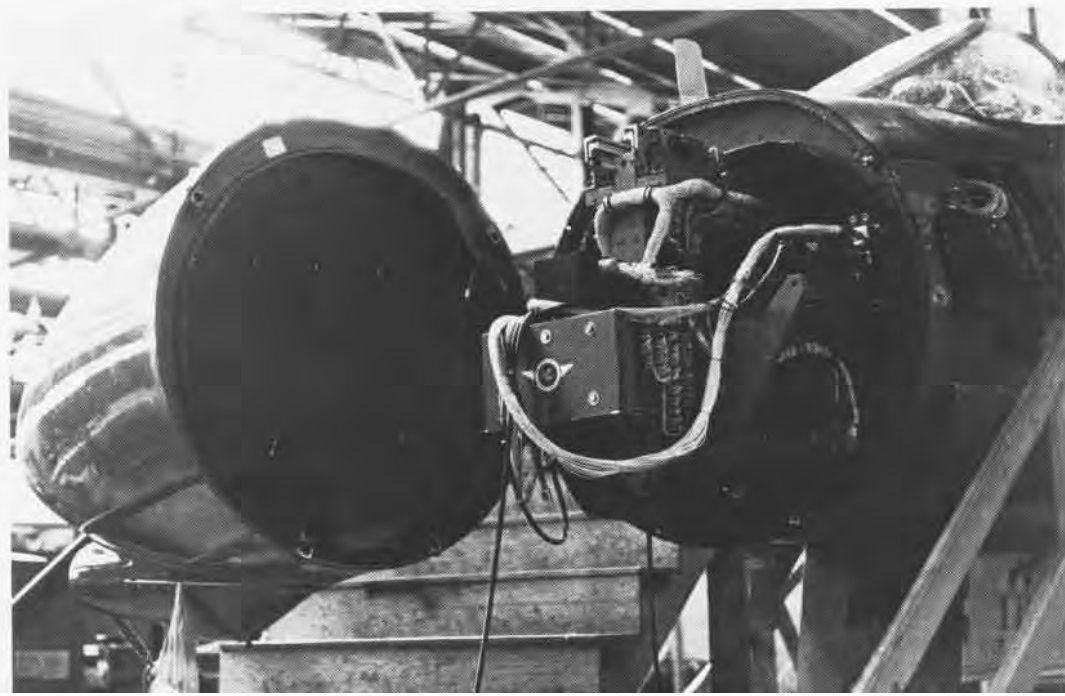
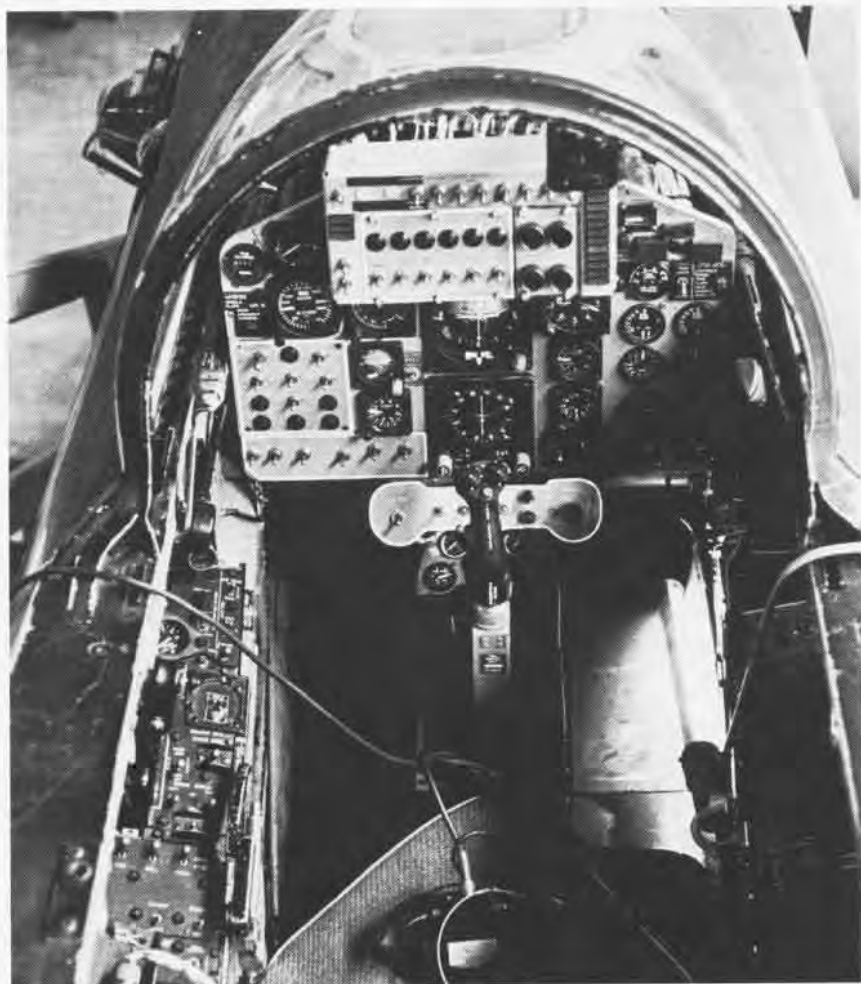
"Let's take a spin program," he suggests. "You take a new and expensive aircraft, intentionally spin it and you're in a potentially high danger zone for both the man and the machine. We've had test pilots come here to test a spin program for a certain aircraft. The aircraft's data was programmed and plugged into the centrifuge; the flight was 'flown'; and, as the 'aircraft' departed from its 'flight path,' it went into a stall buffet which was simulated by hydraulic actuators. The entire cockpit began to shake and, as it fell off into a 'spin,' the altitude indicator reflected the fact. To increase the

realism, we also installed an 'out-the-window,' or windscreen, display so that as the pilot looked out of the cockpit he saw the horizon, clouds, ground, lakes, etc. As he maneuvered, he could see his maneuvers reflected by these features as they rolled, spun and started to turn around. To make it even more realistic, we installed a zoom lens on the display which was hooked to the altimeter. As the pilot lost altitude during a spin, that little lake that appeared outside began to grow larger.

"Judging by the fact that the pilots' voices got higher as their altitude got lower, I'd have to say that the simulation was pretty effective. But I must stress that while we simulate in the centrifuge, the G forces felt by the



QF-4Bs, such as the one at left, provide realistic targets. The cockpits of the aircraft have been modified to include remote control switches, below. The QF-4B can become a control aircraft by replacing the remote control rack in the nose with a control rack, bottom.



men 'flying' the machine are quite real. They hurt. The same holds true for altitude. Although the gondola never raises 20 feet from the floor, the 100,000 feet of altitude that we simulate is realistic. If the man takes off his oxygen mask, he is going to go hypoxic and pass out. For just these reasons, we are extremely safety conscious here. Among the many precautions that we take, besides monitoring the run, is a 'stop the run' button which the pilot can hit. It immediately stops the centrifuge, sounds a siren and summons medical help."

The value of the Warminster centrifuge is readily apparent. Any machine that can recreate what would normally be a hazardous environment so that human response can be studied under controlled circumstances or that can put an "aircraft" through its paces before its metal is even bent rates high as a laboratory tool.

What is in the future for the centrifuge?

Don Moreway pondered that one and replied with a sly smile, "We were thinking of programming a 'break up,' that is, simulating the overloading of an aircraft's system to the point where it would actually fall apart. When we reached that point, we would stop the run, douse the lights in the cockpit and play the *Alleluia Chorus* so the pilot would know what happened."

Seems a logical next step for a machine that can simulate most every condition encountered in aviation.

One way of explaining what we do in this department is to compare a WW II vintage aircraft with an aircraft of today." The speaker is Bob Taylor, an aerospace engineer and

head of the Plans and Programs Division of the Air Vehicle Technology Department. "Probably the greatest complexity has been in mission equipment — avionics, navigation, detection equipment and things of that nature. And while we at Air Vehicle Technology are not concerned with the mission type equipment per se, we are concerned with what goes into the carcass of that airplane — the materials that go into the airframe, the structure, the propulsion, the electrical and hydraulic systems — these are what we are concerned with.

"In short, we look at the basic air-

craft and then examine the technologies to see what will best suit the Navy's future missions. If it is a VPX mission, we will look for materials for the airframe which will allow for a decreased radar cross section. For the fighter or attack aircraft, we look for things that will give us lightness so that the engineer won't have to haul a dead load. I guess you could say we are in the body-building portion of the total development scheme of an aircraft."

Two "flasher red" F-4B *Phantoms* being worked on down on the shop floor are representative of the work



being done by the Air Vehicle Technology Department. Designated QF-4Bs, they are drone *Phantoms* being prepared for their mission as simulated "threats" for the F-14/*Phoenix* program. Several of their kind are already in operation at NMC Point Mugu where the demands for a full-size Mach 2 target are being met. The reason for their being seems obvious when one considers that as aircraft missile systems are developed, equally sophisticated realistic targets will be required to evaluate them.

A fact of aeronautical life that has recently entered the scene is the use

of electronic countermeasures (ECM) against aircraft. The need for a target aircraft with this capability is apparent and getting ECM equipment scaled down to proportions that will fit into the smaller drones is nearly impossible. Not so with the QF-4B which is seen, in the near future, as having the capability of providing this environment for advance aircraft missile systems.

Still another projected addition to the drone *Phantom's* capabilities will be an all-attitude maneuvering capability. As presently designed, the QF-4B has some ability to maneuver since it can withstand high Gs when turning;

but to fly unlimited, unrestricted flight through the aircraft's envelope, as a man would fly it, is not presently possible.

Isn't a QF-4B an expensive target?

Not when you consider that the airframe has reached the end of its normal service life and that most of the missiles fired at it will not have warheads. But, ultimately, somewhere along the test cycle, the warhead must be tested against a moving realistic target; if successful, scratch one drone *Phantom*.

At the present time, all operational QF-4Bs are at Point Mugu and all the control is performed by the ground station. The aircraft takes off under ground control and is picked up by a control plane which guides it to the maneuvering area. The ground control then picks it up again and puts it through its paces. It is returned to the landing area, with the final leg under control of the chase plane, and then landed by the ground controller. This situation may change.

The QF-4B can be modified to become a piloted control aircraft simply by removing the remote control rack in the nose of the plane and replacing it with a control rack. Thus modified, the aircraft becomes a DQF-4B. Pilots of this version can then control other drones, an important achievement when one considers that the *Phantom* can out-fly all of the controller aircraft normally associated with drone operations.

These and literally hundreds of other projects are on-going at this time at the Naval Air Development Center, Warminster, where tomorrow's equipment for Naval Aviation is being developed today.

The Air Vehicle Technology Department also works with configurations of such aircraft as the A-3 Skywarrior and the H-2 Seasprite.



Letters

Oh?

I would like to comment on the article "Fighter Pilots — Man Your Planes" in the May 1973 issue of your magazine, specifically a photograph on page 26.



The caption states that "Hooks on axle engage fore and aft cables on flight deck to aid in directional control." While this is undoubtedly so, I suggest that this device (which was also fitted in our first flush deck carrier *Argus*) was in fact the first arrestment system and therefore the forerunner of the presently used cross-deck pendants and single aircraft hook arrangement.

The enclosed photographs of Parnell Panther deck-landing trials in *Argus* may be of interest.

A. G. Linsley, Lt., RN
Underwater Escape Training
Royal Naval Safety Equipment
and Survival School
M.O.D. (Navy) Establishment
Seafield Park, Hill Head
Fareham, Hampshire

Panthers

I am very interested in Naval Aviation history and, having had a few articles on the subject published, I am now ap-

proaching a more ambitious project and am wondering if any of your readers can help me.

I am researching the history of the Navy's *Panther* squadron, now known as VA-35. I plan to write a history of the unit, from its inception in 1934 to the present day. To round out my research, I'd like to hear from any former *Panthers* who served in the unit when it bore these designations: VB-3B (1934-1937), VB-4 (1937-1939), VB-3 (1939-1945), VB-4 (1945-1946), VA-1A (1946) and VA-35 (1949-1965).

In addition to facts, I am looking for interesting anecdotal information.

Peter Kilduff
57 Sefton Drive
New Britain, Conn. 06053

Naval Aviation Films

The following motion picture films are among the latest released by the Film Distribution Division, U.S. Naval Photographic Center.

MN-10910 (unclassified) *Periscopic Sextant*. Use of the periscopic sextant on multi-engine aircraft in aerial navigation (26 minutes).

MN-10912B (unclassified) *Helicopter Search and Rescue — Land Phase*. Vehicles, equipment and devices necessary for ground rescue by helicopter (25 minutes).

MN-10932E (unclassified) *Electromagnetic Compatibility — Operational EMC* (25 minutes).

MN-10932F (unclassified) *Electromagnetic Compatibility — General EMC Design Consideration* (25 minutes).

MN-10932G (unclassified) *Electromagnetic Compatibility — EMC Testing* (25 minutes).

MN-11118 (unclassified) *A Cut Above*. A documentary of the Naval Test Pilot School, Patuxent River, Md., the curriculum and admission requirements (27 minutes).

Instructions for obtaining prints of newly released films are contained in OpNav Instruction 1551.1E.

Reunion

The 21st national reunion of former members of the crew, squadron personnel and Marines who served in *Lexington* (CV-2) from 1927 until May 1942, when she was sunk in the Battle of Coral Sea, will be held in Long Beach, Calif., at the Edgewater Hyatt House, June 26-29, 1974.

Shipmates may contact Walter D. Reed, 5410 Broadway, Oakland, Calif.

Naval Air Coats of Arms





The Naval Air Technical Training Center, Glynco, Ga., commanded by Captain Roger J. Miller, is the home of naval air traffic control training. S-2 Trackers are used in the Antisubmarine Air Controller Course and for GCA training. The A-4 Skyhawk is the training aircraft for the Air Intercept Controller Course. The Glynco schools are scheduled to move to Memphis, Tenn., and Dam Neck, Va., in 1974.



