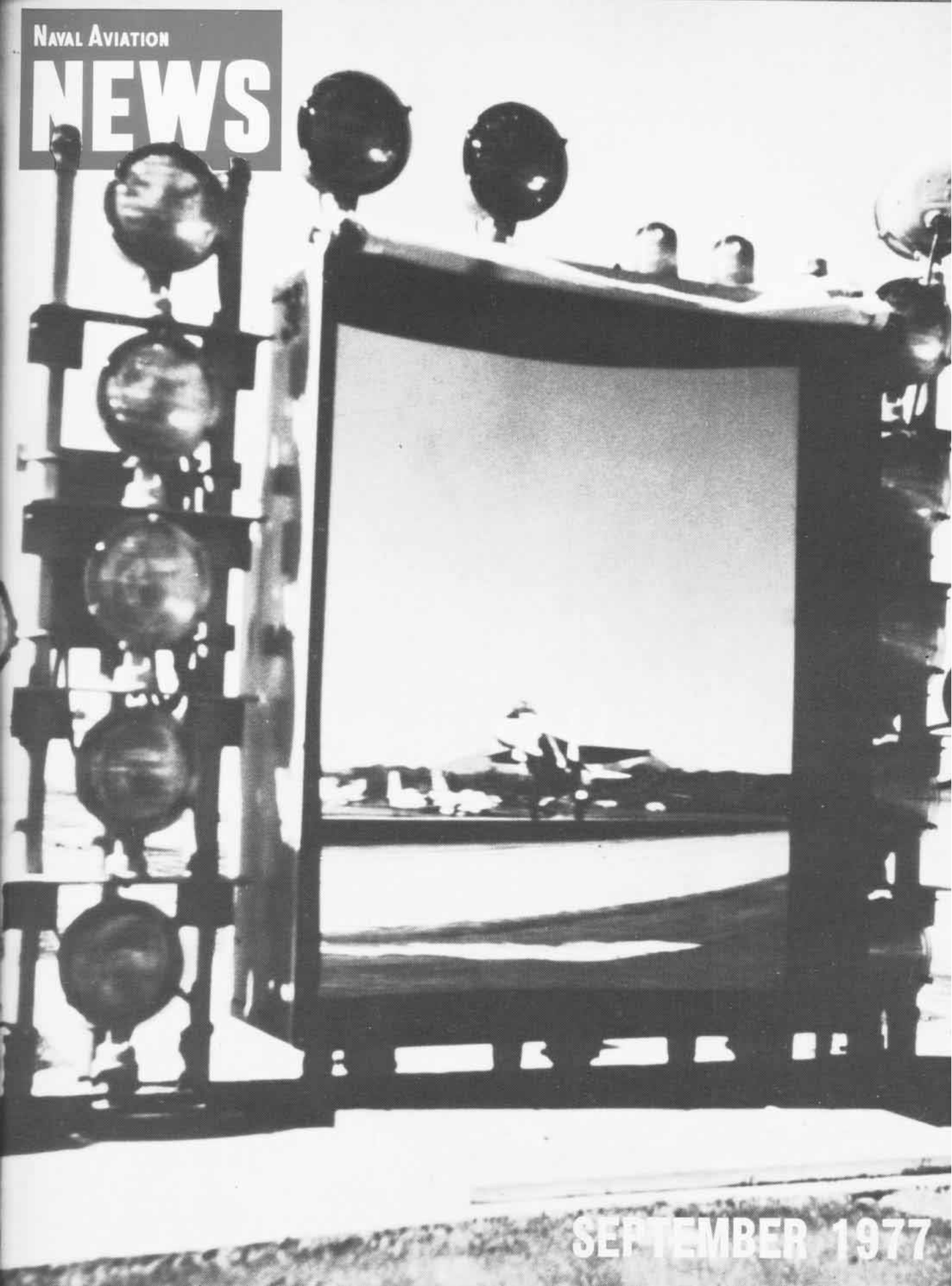
NAVAL AVIATION

NEWS

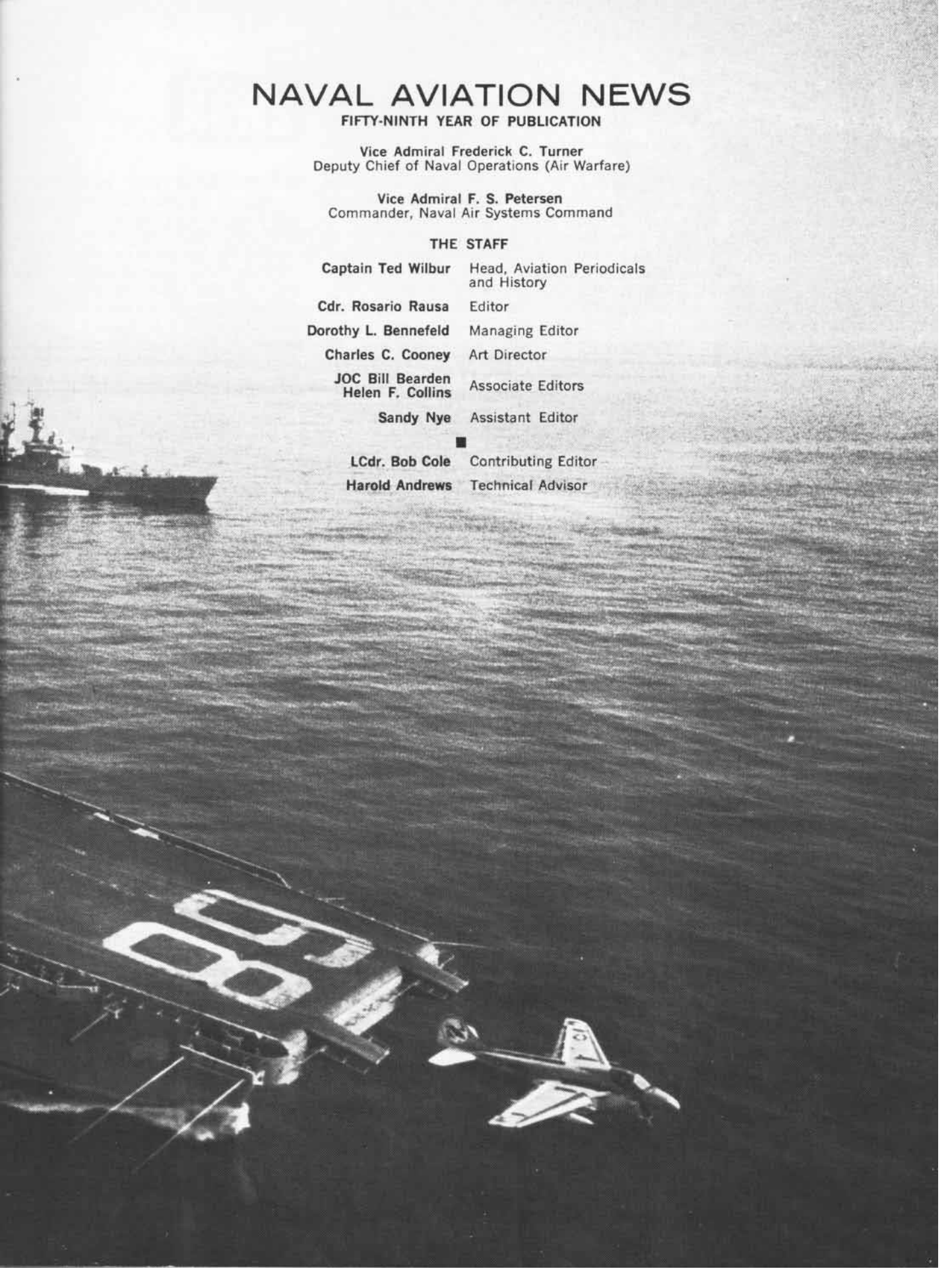


SEPTEMBER 1977

COVERS — Bob Lawson photographed the VF-124 Tomcat reflected in mirror landing system at NAS Miramar, front. Landing craft emerge from well deck of USS Coronado, back, during mock invasion exercise. PHC Milt Putnam took the picture (story on page 14). Here, JO2 R. Leonard filmed nuclear-powered ships USS Nimitz and USS California (CGN-36) during operations. A VA-35 Intruder is catapulted from CVN-68's bow.

NAVAL AVIATION NEWS

FIFTY-NINTH YEAR OF PUBLICATION



The Professional

By Lt. James M. Burin, Aviation Safety Officer, VA-196

To call someone a real "professional" is to pay him a compliment which sets him apart from his contemporaries. A pro golfer or a pro bowler is considered to be the best of all people practicing his chosen trade, but he is a professional strictly because he earns a living doing what he does best. To use the term "professional" in the context of a compliment addresses not only the fact that the person earns a living doing something he enjoys, but also reflects how well he does it. Naval Aviation has its professionals, too. Men who stand out from their fellow aviators as people who are the best at their jobs. These men seem to have a special quality, a knack of doing the right thing at the right time.

What does a pilot or NFO do or act like to make himself a professional? The answer to this question is difficult, if not impossible, to answer completely. Everyone probably has his own idea, his own set of criteria as to what constitutes a Naval Aviation professional. Listed below are just a few of the traits which make up a professional pilot or NFO. The list is by no means all-inclusive, but rather a list of some indicators which would distinguish a professional from his contemporaries.

A professional is a man

- who will not take a marginal aircraft just to get some flight time.
- to whom Natops is more than just a study guide for a test.
- who briefs and debriefs every hop completely.
- who not only owns a copy of squadron SOP, but follows it.
- who always uses good headwork.
- who knows his own capabilities and limitations and always stays within them.

Look around your squadron; the professionals are easy to pick out. They are the ones all the nuggets look up to, the ones they go to with their questions. They are the ones everyone seeks an opinion from. They are the ones whose ideas seem to make the most sense, to have the most thought put into them. There are sometimes better "pure" operators of the aircraft than the professional, men who can land on the boat better or bomb better. However, there is never anyone who is a better *complete* Naval Aviator than the professional. He's the best, and those who work with him and fly with him know it. There are no age limits to being a professional, no rank requirements. He can be a nugget, a second tour type, or a department head. One thing all professionals have in common is that given any job or mission they will be successful at it because they are prepared for it, and they will do their best.

Yes, a professional is something we'd all like to be. The professionals are aviators who have built and will continue to add to the traditions and excellence of Naval Aviation. No, we can't all be professionals, but we can all *strive* to be professionals. If you do try, and are successful, then maybe someday someone will pay you the supreme compliment, "He's a real professional."

Naval Aviation NEWS did you know?

Helo Crash Protection

NADC Warminster, Pa., is developing a new system which minimizes forward whiplash and increases crash protection for helicopter crewmen.

The personnel restraint system's uninflated lap and shoulder harnesses resemble conventional systems. Upon impact, a G-sensitive crash sensor sends an electrical signal to a solid-propellant gas generator which releases gas to inflate a bladder encased in the harness. The bladder cushions the pelvic and chest areas of the wearer, preventing rotation of the chin into the chest. The unit is designed for use with a conventional strap restraining system. The inflatable restraint yields lower strap loads and lesser chest and head acceleration than conventional restraints.

Because of a problem in getting out of the restraint, the system is not yet suitable for use in the fleet. It is hoped further development will refine it into a wearable package.

Aviation Hall of Fame

The names of five aviation pioneers were added to the roster of the Aviation Hall of Fame on July 23 during the 16th annual enshrinement ceremony.

RAdm. Alan B. Shepard, Jr. (USN, Ret.), the first U.S. astronaut to be launched into space and, as *Apollo 14* commander, the fifth man to walk on the moon.

Walter Beech, founder of the Beech Aircraft Corporation, for his creation of innovative aircraft of design excellence.

Lawrence D. Bell, Bell Aircraft Corporation, who devoted his life to the development of military aircraft, helicopters and special weapons.

James S. McDonnell, McDonnell Douglas Corporation, for his advancement of military aircraft design, his pioneer work in space technology and for development of commercial aircraft.

William Penn Adair (Will) Rogers who publicly supported the development of aviation for defense and as a vital mode of transportation.

The Aviation Hall of Fame is a non-profit organization chartered by an act of Congress.

Night Eyes

In Vietnam the enemy often owned the night. But an aircraft being tested at the Naval Air Test Center at Patuxent River, Md., may change that.

An OV-10D *Bronco* going through the test and evaluation wringer at NATC's strike aircraft test directorate is equipped with a night vision sensor which allows its two-man crew to pinpoint targets in the dark. Called FLIR (forward looking infrared radar), the sensor can detect thermal radiation from all objects in its field of view, including individual soldiers. It then paints a TV-like picture of the scene for the crew.

While designed primarily to provide a night-eyes capability, FLIR also offers various degrees of vision through camouflage, dust, smoke, haze and light fog. It can be used for navigation, terrain avoidance, surveillance, target detection, recognition, tracking, gun laying and even as a landing aid.

The FLIR sensor is mounted in a turret in the *Bronco's* nose, which has been extended 30 inches. This extension, together with other physical changes and increased horsepower, required new flying qualities and performance tests by NATC. Later, the aircraft will be evaluated operationally with the FLIR. At that time it will also be carrying a laser ranger designator

NAVAL AVIATION NEWS did you know?

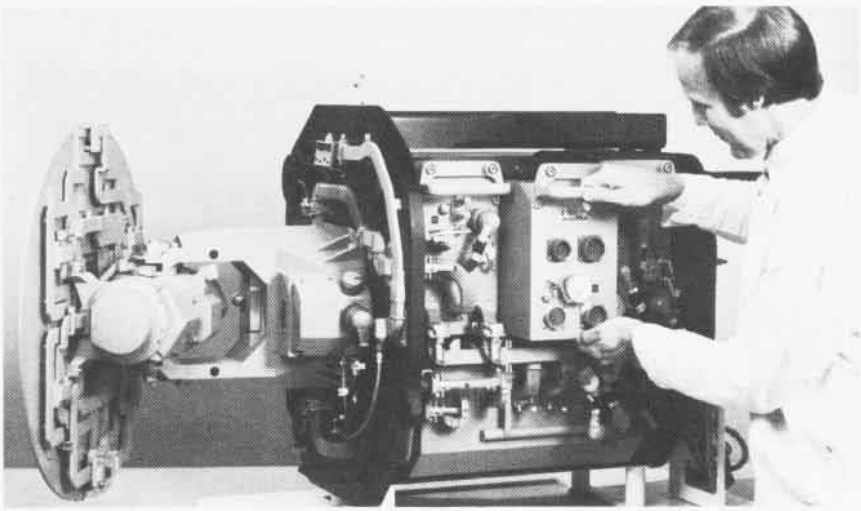
in the FLIR turret, which will provide pinpoint guidance information to other attack aircraft.

Two OV-10As were modified as YOV-10As with the FLIR system and combat tested in Vietnam in 1971. The results indicated that the *Bronco* with night eyes would be a powerful weapon. Seven A models were eventually reconfigured as YOV-10As but only the one at Patuxent River was aerodynamically shaped in a body style resembling the new OV-10D. It is giving the test pilots and projects engineers a sneak preview of the new *Bronco*.

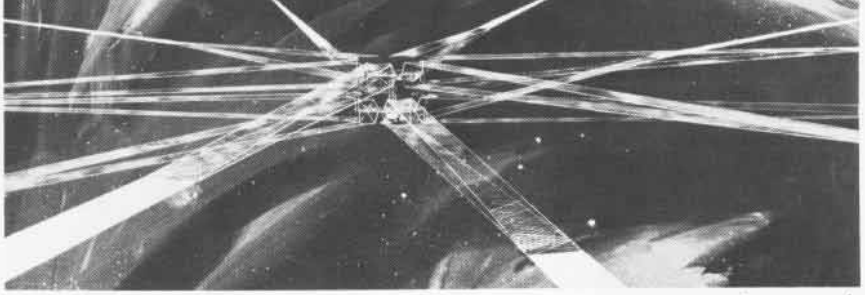
Project officer and test pilot is Lt. Pat O'Neil. Engineer is John Loftus.

F-18 Radar

The mockup of the radar for Navy's new F-18 *Hornet* strike fighter reveals a dramatic reduction in size. This has been made possible by recent advances in circuit design, component technology and packaging techniques. Only a few years ago, a radar with this system's capability would have been



about twice the size, according to Hughes Aircraft Company, which is developing the radar for McDonnell Douglas Corporation. The all-digital, multimode system, consisting of only four units, is designed to achieve a new level of reliability — more than 100 hours between failures.



Spinning Sail Concept

A 12-bladed spinning solar-sail spacecraft propulsion concept is a possibility being considered by the National Aeronautics and Space Administration for interplanetary automated shuttle use within the solar system in the 1980s and beyond. If selected, its first use could be for a Halley's Comet rendezvous in 1986.

Also known as the heliogyro sail, the concept employs a helicopter design with extremely long blades (sails). The 12 sails would be made of reflective aluminized plastic film and would be deployed in two tiers of six each. According to NASA's Jet Propulsion Laboratory, Pasadena, Calif., the 12 blades would be spun out by centrifugal force after being launched from the space shuttle. The spinning gyro concept was chosen because it was considered more practical by program engineers and designers.

The scientists say each blade could be 4.5 miles long and only 28 feet wide. The spacecraft and its scientific payload would be mounted at the center of the heliogyro. The slowly spinning craft would be propelled by the sun's photon radiation and rotate once every three minutes.

An ion drive (solar electric) spacecraft propulsion system is also being studied by JPL.

Several other NASA centers and a dozen industrial and research facilities are involved in the two efforts to develop a low-thrust, long-term spacecraft propulsion system.

TS-2A Replacement

The Naval Air Test Center, Patuxent River, Md., has begun a four-phase service suitability evaluation of the T-44A, which is scheduled to replace the TS-2A as the Naval Air Training Command's multi-engine advanced training airplane. The evaluation will consist of a contractor's structural demonstration, a Navy performance demonstration (NPD), an expanded Phase II Navy preliminary evaluation (NPE) and BIS trials.

The contractor's structural demonstration will consist of approximately eight flights to verify structural integrity throughout the design envelope of the plane. The demonstration has two phases, dives and pullouts, and field landing tests.

The NPD involves approximately 20 flights, by Test Center project pilots, to verify performance guarantee specifications. Primary guarantees include single-engine climb performance and service ceiling determination, initial and final cruise segment specific range guarantees, critical field length and maximum level flight airspeeds.

The Phase II NPE, approximately 40 flights, will consist of flying qualities and aircraft performance, engine and avionics performance, electromagnetic compatibility and human factors evaluations. The BIS trials, if required, will be conducted after the Phase II NPE.

Four production T-44As, the military version of Beech Aircraft Corporation's *King Air*, have been delivered to the Naval Air Training Command and are being used for instructor pilot training. Student pilot training will begin after completion of the Phase II NPE.

grampaw pettibone

One Dark Night — One Bright Light

A flight of two CH-53s was scheduled for night confined-area landing practice. The landings would be made both individually and as a section.

The wingman launched first, proceeded to the practice site, and landed. A crew member placed two portable landing zone lights in position to mark the northern boundary of the landing zone. The flight leader arrived, landed and had the remaining two portable landing lights emplaced to mark the southern landing zone boundary.

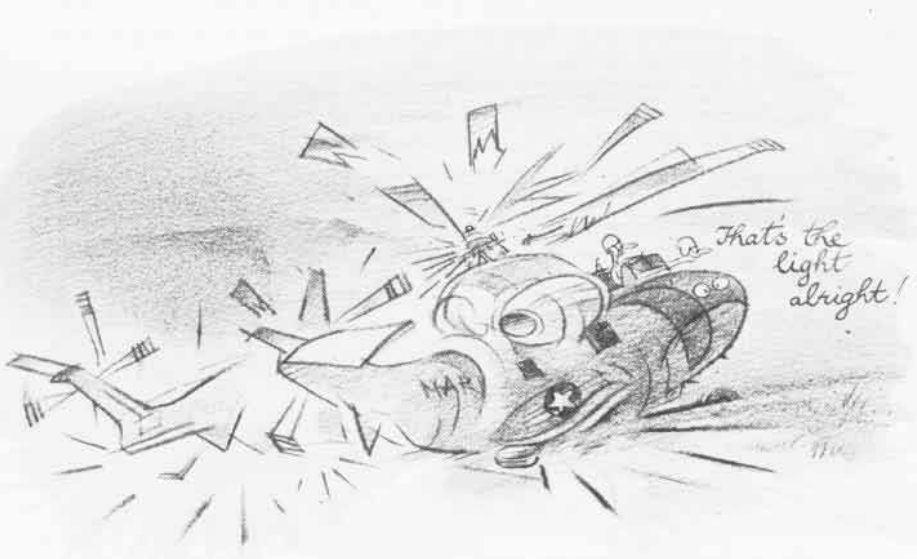
The flight then joined up and the lead aircraft copilot led the first three section landings. The wingman then assumed the lead position and executed four additional section approaches resulting in two wave-offs and two successful landings.

The flight then divided up as briefed and commenced individual landing pattern work. Following two successive landings by the lead aircraft copilot, the lead aircraft pilot took his turn at the controls. The

lead aircraft pilot's next three approaches were waved off due to overshooting the land zone. The fourth approach resulted in a successful landing. Hardly satisfied with his performance, the lead aircraft pilot elected to perform an additional landing. The final approach was flown to a long, high straightaway. All flight instruments were functioning normally. A 10-15-degree nose-up attitude with an indicated airspeed of approximately 20 knots was noted as the aircraft passed 100 feet on the radar altimeter. The pilot used the forward right landing zone light as a line-up reference and tended to fixate on that light as the aircraft neared the zone.

During the "final" portion of the approach, the pilot's scan deteriorated. Before either pilot realized the implications of the situation, the aircraft tail struck the ground. Both pilot's later expressed surprise because they felt they were still at least 100 feet in the air. The radar altimeter warning light (set at 25 feet) and the attitude warning horn functioned normally.

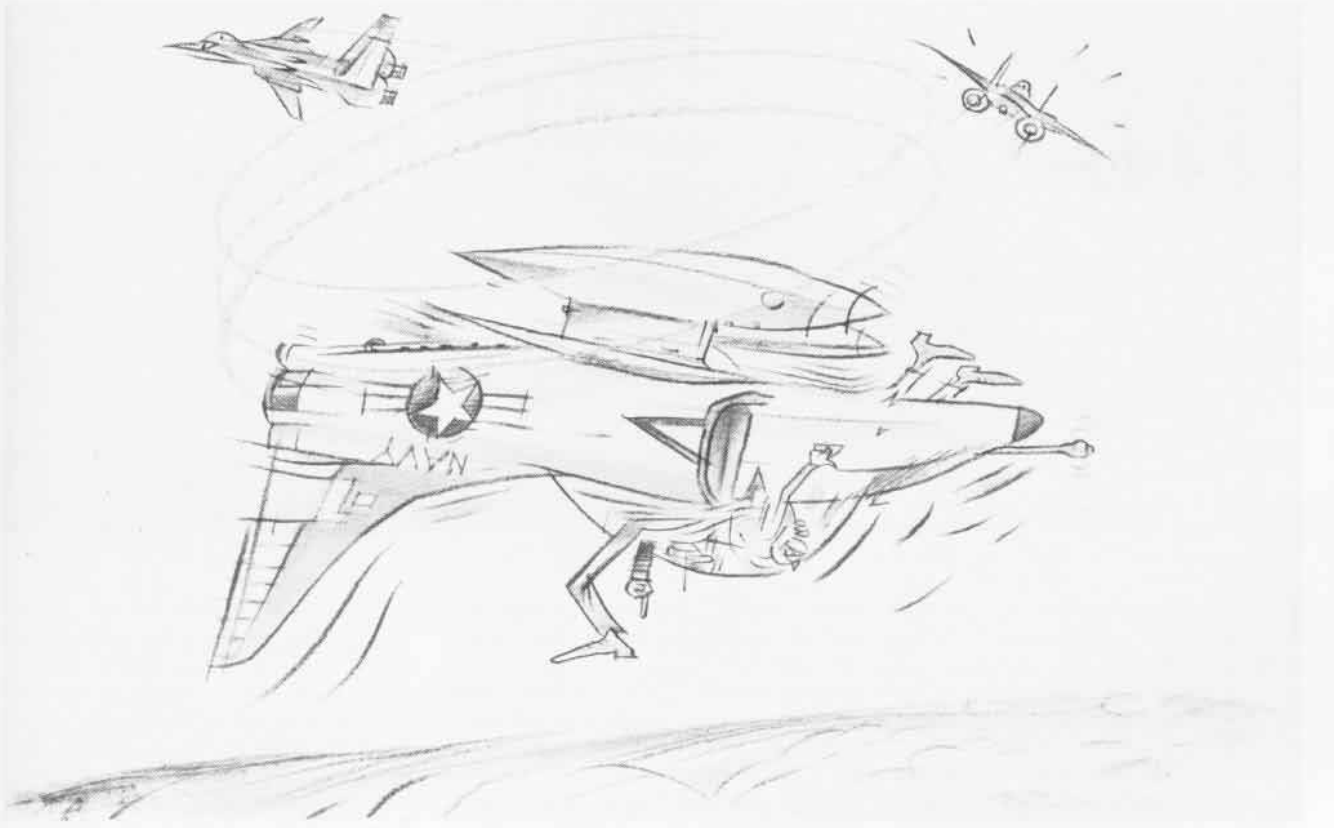
As the tail skid impacted and collapsed, the tail rotor blades struck the ground. The aircraft then began to roll left and yaw right with the main rotor blades striking the ground and disintegrating. The crew egressed uninjured and the aircraft was eventually consumed by fire.



Grampaw Pettibone says:

Great jumpin' Jehoshaphat! These guys are lucky to still be breathing. Why wasn't the copilot backin' this guy up on the flight instruments? Single-point light source fixation is a well documented problem. Perseverance certainly is a desired trait in a Naval Aviator, but only when it's tempered with caution, good judgement and common sense. Anytime you're flyin' an aeroplane in IFR conditions (and pitch black is IFR) while employing a VFR scan, the IFR then connotes, "I'm flying recklessly." Pride notwithstanding, and as any professional knows, you, and only you, know your limitations on a given flight. A little bit embarrassed is acceptable, but there's no such thing as a little bit dead!

ILLUSTRATED BY Osborn



Hey! Who's in Charge Here?

After a thorough brief for an advanced tactics support mission involving two F-14s and one TA-4, the crews manned up for takeoff. The *Skyhawk* departed NAS Home Plate followed by the *Tomcats* and proceeded to the ACM area. Two normal intercepts and ACM engagements ensued. The third intercept was terminated prior to the ACM engagement when an errant F-4, piloted by a heads-down Ace Laroo, passed through the tactics area.

At the start of the fourth intercept, the TA-4 was vectored to the F-14s to start the final engagement. The *Skyhawk* passed close aboard one of the F-14s commencing the engagement and started a level starboard turn at approximately 375 knots and 22,000 feet.

After about 180 degrees of turn, the TA-4 pilot visually acquired the second F-14 at his 4-5 o'clock position. The TA-4 pilot continued the starboard turn into the second F-14 and increased the aircraft G loading to 3-4 Gs. The *Skyhawk's* airspeed dropped off to 325 knots. It was at 21,000 feet in a 90-degree angle of bank, nose slightly low.

The TA-4 almost immediately departed controlled flight with a violent right roll and negative G loading. The aircraft then experienced a high yaw rate with continued negative G loading. The pilot was forced up and forward against the glare shield while the rear seat copilot was forced up into the canopy.

Because of extreme buffeting, neither the pilot nor copilot could read the instruments. Perceiving that the aircraft was in an inverted spin, the pilot initiated anti-spin controls for an inverted starboard spin at approximately 17,000 feet, with no apparent effect. Passing through 12,000, the copilot initiated command ejection from the rear seat. The ejection sequence was normal and both TA-4 crewmen were rescued.

Grampaw Pettibone says:

Oh, my achin' corpuscles! Investigation revealed that the copilot ended up with command ejection capability due to a failure to preflight the front cockpit ejection selector. During the preflight briefing the pilot in command stated he would maintain the command eject function in the front seat. Missed preflight items can ruin your whole day. Ten thousand feet is squadron SOP for emergency ejection. The pilot had initiated anti-spin controls and was trying to work the problem out. Because of a premature ejection, we will never know for sure whether the plane would have recovered. It would have been some help if the rear-seater had offered some information, such as type and direction of spin, altitude, etc.

At least the copilot could'a inquired about the pilot's desire to leave the aircraft. Granted, it's awful hard to reach the intercom switch when you're pressed against the top of the canopy but, sufferin' catfish, what about hot mike? When you're in a dynamic operating environment, it behooves you to use the old noggin and have instant communication with other crewmen. A decibel of noise can save your poise! No one is immune to preflight or crew coordination complacency. Young tigers take heed!

Back to Basics

Bud Lineberger is a prospective air wing commander; Farrell Corley came aboard fresh from the training command; Jim Simons is an Air Force captain and former *Thunderbird;* John Patton is a former *Blue Angel;* and R. A. Wright is a Royal Air Force squadron leader.

The common denominator is fleet carrier qualifications aboard *Saratoga* as she steams off the Virginia Capes. Commander Lineberger, Ltjg. Corley, Capt. Simons, Lt. Patton and Sqd. Ldr. Wright must periodically prove they are capable of safely launching and recovering their aircraft aboard ship, day and night.

All are members of Fighter Squadron 101. One-oh-one is a replacement air group (RAG) squadron tasked with training Naval Aviators to fly the F-4 *Phantom.* Final exam is fleet carrier qualification. Experienced F-4 flyers undergo only the carrier refresher portion of the squadron's syllabus.

The *Grim Reaper* squadron is only one of several RAG and fleet squadrons from both the East and West Coasts undergoing carquals during this period. *Saratoga,* commanded by Captain C. B. Hunter, is providing an around-the-clock platform for day and night operations.

For certification to land a fleet aircraft aboard ship, an aviator who has never done so or who hasn't operated aboard ship in the last 12 months must complete two touch-and-go's, ten day traps and six night arrestments. Natops specifies a combination of two, four and four for intervals of six months to a year. Less than six months divorced from shipboard operations requires a refresher period of two, four and two. These are minimums. A pilot coming through the RAG with orders to a squadron already deployed will be given extra day and night traps.

When you consider, as in the case of the F-4, that the pilot approaches the ship at 142 knots with an average gross weight of 37,000 pounds and a sink rate of 700 feet per minute, you realize why carquals are recognized as a Naval Aviator's most demanding challenge.

Bud Lineberger, a member of the select fraternity who have made more than 1,000 carrier landings, is quick to indicate, "You can't ever call landing on a carrier routine. After a long layoff, there's always a bit of apprehension. You're dealing with tremendously tight tolerances. When you're on glide slope with a good approach, you have only a 12 to 13-foot hook-to-ramp clearance. Since there are only 30 feet between the four arresting wires, you're dealing with a 120-foot touchdown area and have a maximum of 30 feet to catch the #3 target wire. That's why a young Naval Aviator spends most of his time in a bounce pattern."

The bounce pattern translates to field carrier landing practice (FCLP) sessions including 3 day and 12 night periods of 8 touch and go landings each. The runway simulates a carrier deck complete with the Fresnel lens optical landing system and a landing signal officer who monitors and later debriefs each approach. Also practiced are emergency procedures such as having to land with loss of flaps. Unfortunately, the blackness of night at sea with its attendant loss of visual cues, and a pitching, rolling deck cannot be simulated.

Lineberger, who has served tours as an LSO, feels, "The key to being good around the boat is self control, self discipline — adhering through concentration to what has already been learned. If you're looking at the ramp, you're looking in the wrong place."

Lt. Bob "Boots" Baker, a VF-101 instructor pilot, explains some of the CQ mechanics. "You get your day quals first. You are shot off, climb to 600 feet, turn downwind, drop the hook and, abeam the LSO platform, turn into final, make your trap and start again. At night, you climb to 1,200 feet out about four miles and make a straight-in approach guided, as to landing and glide slope, by the voice of the controller in the air traffic control center until you pick up the ball."

The ball or meatball is the center vertical cell of the Fresnel lens. If the pilot sees the amber light lined up between a split horizontal row of green datum lights he knows he's at least on the proper glide slope.

Of four arresting cables strung

By Ltjg. Bob Frantz, USNR

Fouled Deck! LSO simultaneously triggers red lights on optical landing system and radios pilot for a wave-off. Arm is raised to let air boss know LSO is aware of deck condition. Below, LSO Hartle debriefs Lt. Patton. Simons, peering over Hartle's shoulder, looks at grades.

across the aft section of the angled deck, the number three wire is preferred. Engaging it will put you in the middle of the landing area. If the three wire is not engaged, either the four or two is next in priority. Snagging number one is discouraged. In Baker's words, "A guy who gets in the habit of catching the 'one' will eventually catch the ramp."

The LSO grades each approach based on which wire is engaged; nearness of the touchdown to the centerline (running fore and aft on the angled landing area); overall ability to fly the ball; line-up during approach; aircraft attitude; use of engine power; and ability to make inflight corrections.

Cdr. Lineberger adds, "I look for predictability. I know a guy is coming along when I can predict his response to an inflight correction on his approach. When he can do this, he's safe to come aboard."

Top grade for a pass is an OK 3; also acceptable is an OK 2 or an OK 4. Catching the number one wire is only fair. A no-grade is not dangerous, but it's not good. A cut C is a dangerous pass and could result in a divert to the beach for additional bounce practice.

John Patton has made 340 carrier landings and has just completed a three-year, 210-show tour with the Navy Flight Demonstration Team. "Being a *Blue Angel* has been great, but it's fun to be back with the fleet. The only thing in the world that is different in aviation is landing on the boat. It takes 110-percent work. You have to be able to intensely concentrate on the task at hand — especially at night where you have no horizon, can't judge altitude and have almost zero depth perception. All your day visual indicators are gone."

A lieutenant junior grade, fresh from the training command, Farrell Corley described his first night carrier landing as "the scariest thing I've ever done — scared me to death. It started with the cat shot. The catapult puts tremendous G forces on your body and hurls you out into pitch black. The air was bumpy. By the time we turned downwind, my RIO and I had the 'leans' so bad we felt we were in 30 degrees of bank, when in fact we were wings level. The tremendous accelerations fool your ear's vestibular system. Without your eyes to help out — nothing but black out there — it's hard to convince yourself you're wings level. It takes good basic air work, discipline and confidence in your instruments."

Perhaps the best summary to a discussion on fleet carquals are the reactions of Jim Simons. Capt. Simons is an AF Academy grad, flew F-4s in Europe and F-105s in SEAsia and has had a tour as an instructor in the Air Force Fighter Weapons School. Prior to reporting for exchange duty with the Navy, he flew for two years as a member of the Air Force Jet Demonstration Team — the *Thunderbirds*.

With this background, he is still quick to state, "Carrier operations represent the most critical flying, requiring more precision than anything I have ever done. I used to fly a high speed, low level inverted pass during an air show, but if it wasn't working out well for whatever reason, I could always bail out of the maneuver. Carrier ops are very unforgiving. When you're deployed in the Med there are times, because of deteriorating weather or no divert fields, you know you either get aboard or you're on your way to hurtin' city. Ejecting into the black night at sea is not a pleasant thought.

"You've got to work to be a pro, and develop the good habits. Learn to get a good start so you can avoid the big corrections. Develop a continuous series of cross-checks. The sooner you see deviations occurring, the smaller the input required to correct them.

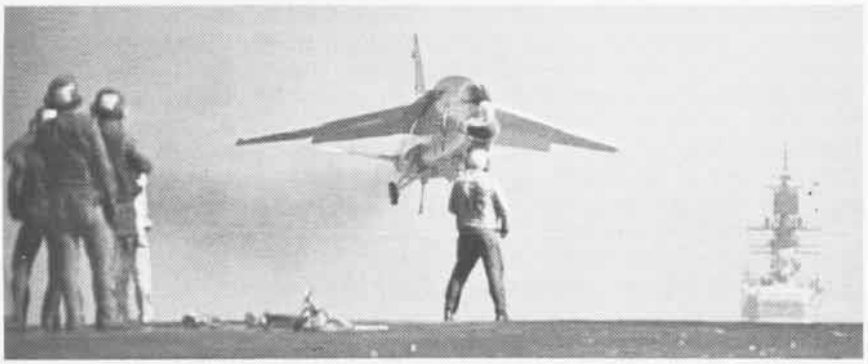
"The forces involved in a cat shot and trap can only be described as violent. Any guy that's pushing to get aboard, because of pride or stupidity, when he should take it around again, is looking for trouble."

LSO

Story and Photos by
PH2 Doug Cunningham

Frank Meyers is a Texan. He is 30 years old, unmarried and has been a Navy pilot for eight years. He is VFP-63's Natops officer, flight instructor and landing signal officer.

As the only day-night F-8-qualified training LSO with VFP-63, Lt. Meyers is one of the persons charged with providing squadron replacement pilots with information and flying instruction on the RF-8G characteristics. Aside from the aircraft flown by reserve reconnaissance squadrons, all Navy F-8s have been phased out of fleet service and nearly all the other F-8 LSOs are now assigned to F-4 and F-14 squadrons.



Although not officially designated a RAG squadron, VFP-63 carries out some of the same functions, such as training its own replacement pilots and maintenance personnel.

"Like other planes, the F-8 has its peculiarities," says Meyers. "If a pilot is too slow on his approach and attempts to push up the power, the RF-8G's slower engine response requires more time for the power increase to take effect on the glide slope."

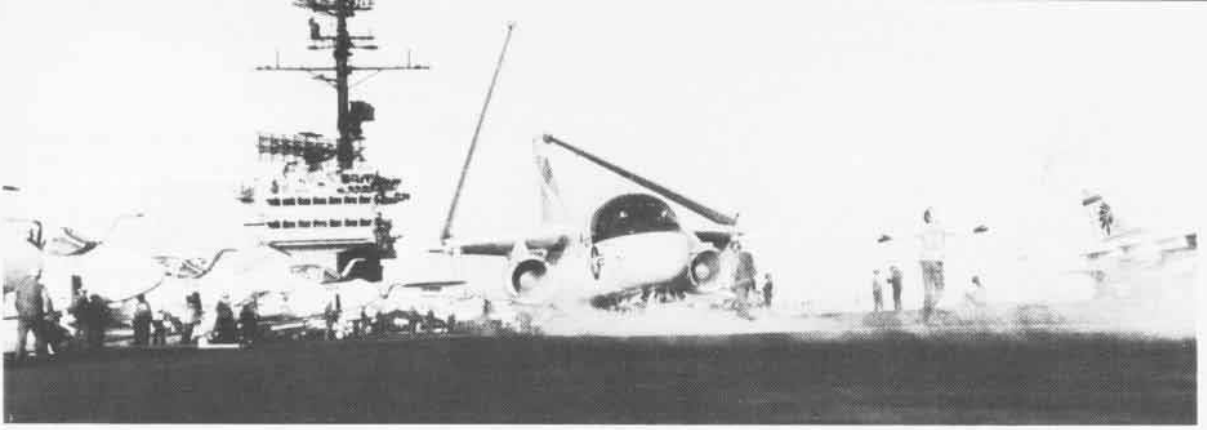
Obviously, a novice or even a veteran pilot making an RF-8G approach can have a hairy time of it if he does something wrong. In such situations the LSO has to guide the pilot down.

He volunteered for LSO training while in another squadron. His duties expanded to those of Natops officer and tactics leader upon his arrival at VFP-63.

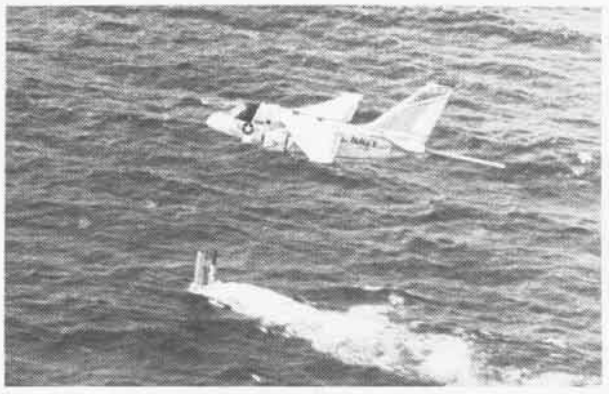
At the squadron, experienced pilots, as well as those just beginning, have to undergo familiarization in the RF-8G, learning instruments, formation flying, low-level navigation and photo reconnaissance procedures.

When it comes to carrier work, Lt. Meyers advises VFP-63 pilots to use reference books and the Natops manual as much as possible. "A pilot's performance around the ship," he tells them, "determines his reputation. And, in a way, the LSO is only as good as the other pilots think he is."

All involved strive to instill the necessary measure of confidence in each other.



HUKKERS and VIKINGS



Last spring, VS-28 participated in an ORE as part of the Carrier Air Wing Six-USS *America* team. One of the *Hukkers* summarized the action:

The atmosphere has been different these last ten days aboard *America*. Jacksonville lies just over the horizon and yet, from the announcements on the 1mc to the intelligence briefings before flights, it's as if we're in the Med again, carefully watching the positions of Sixth Fleet units and their Soviet counterparts. The local situation, and then the world situation, have grown tense over political actions. The threat of open "hostilities" exists.

America and Carrier Air Wing Six are no strangers to this scenario. They participated in the Lebanese crisis and evacuation in 1976. Visions of those operations came to mind as the *Hukkers*, led by Commander J. B. Austin, prepared once more to commence close surveillance of simulated enemy submarines and to track them with the accuracy necessary to make a quick kill.

By Lt. T. J. Lee

On the flight schedule, missions now read "antisubmarine warfare" vice "crew training." Ordnance includes all bombs, rockets, torpedoes and mines in the S-3A inventory. Although some simulation is involved, the implications are plain enough: The fleet defense mission is a real and crucial one.

Abruptly, hostilities are declared. Battle stations are manned. Ships and submarines become targets. Strike plans, worked out and coordinated in advance, go quickly into effect. As the threats change, tactics are adjusted to meet them. Aboard the carrier, launches and recoveries go on amid simulated missile hits, casualties and other quick-response drills. On station, the ASW problem is in progress: A team effort between surface units, helos and S-3As. The multisensored *Vikings*' crews quickly correlate the incoming data. The scope of the search and tracking narrows until finally — attack away! And so it continues through different subthreat evolutions.

The *Hukkers* participated in and successfully completed the mining of a hostile harbor — a relatively new mission. Also, a crew listened as a practice torpedo searched for, acquired and "killed" a sub.

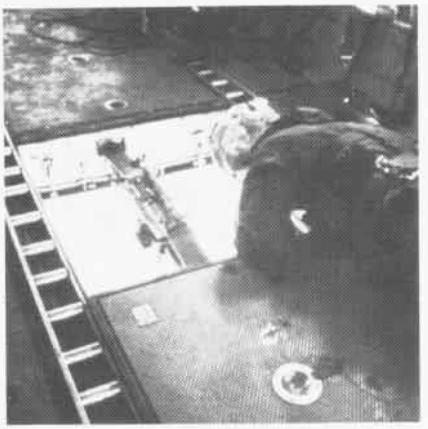
Training was intense. Electronic warfare, Natops, carrier operations, recognition of friendly and potentially hostile aircraft and ships — all were emphasized with particular attention on weapons handling.

Antisubmarine Warfare Wing One observed and evaluated the exercises. Did the *Hukkers* maintain their aircraft ability? Did they coordinate with the tactical support center and other ship personnel to send out their crews with the best brief available? Were those crews proficient in managing their weapons systems? Did they provide the fleet with appropriate defense and strike capabilities?

Did VS-28 demonstrate proficiency against the submarine threats? Were the *Hukkers* able to score goods hits?

The answer was Yes!

Lying Down on the Job



Would you believe that one of the most demanding aircrew jobs is done lying down? It's true. The vertrep (vertical replenishment) aircrewman has a very unusual job. He's an individual who must love the feeling of flight and the challenge of demanding physical work.

The CH-46 *Sea Knight* is the Navy's vertical replenishment aircraft. A cargo hook, located in the center of the helo, is the vertrep aircrewman's work station. His responsibility is to ensure the safe and speedy hookup, transport and delivery of external cargo. Lying face down on the deck of the aircraft, he positions himself above the hook. From that vantage point, he carefully directs the pilot and aircraft past the ship's edge and over the cargo. Directional commands are relayed over the intercom.

The prone position is usually relaxing, but during a mission it requires demanding and grueling effort to maintain it.

It takes a lot more than lying above a cargo hook to earn the gold wings of a vertrep aircrewman. These specialists come from various aviation ratings. Each volunteer is carefully scrutinized by the squadron's Flight Order Board. Reliability, knowledge, motivation and exceptional performance are prerequisites for entry into the training program. A physical examination by a flight surgeon confirms eligibility, and training begins.

Swimming and water survival are taught first (and reevaluated every three years); aviation physiology training follows. Various subjects covered include night vision, vertigo, high altitude pressure chamber and lectures on the effects of flight. During the night-vision phase each trainee experiences *total* darkness. He learns the importance of maintaining visual references at sea on a dark night. This is critical on a night vertrep where he is responsible for the safe transfer of cargo from one ship to another, relying only on the ship's lights for reference. He may experience vertigo or disorientation and may not be able to discern his true direction of movement. Next, he will climb to 25,000 feet in a pressure chamber and learn about the effects of high altitude flight. The lectures emphasize proper physical conditioning, anatomy and diet.

After aviation physiology, the volunteer becomes a vertrep aircrew candidate. He will attend aircrew, landing signal enlisted, nuclear weapons loading and survival evasion, resistance and escape schools.

He will then practice and learn the aircraft's systems, emergency procedures and various missions including his specialty — vertrep. The trainee will be designated a second crewman when he demonstrates his ability in all these areas. To earn his aircrew wings he must acquire 100 hours in the CH-46, participate in the many missions it performs and pass a check ride given by an aircrew Natops instructor.

The result is an aggressive, hard-working professional who is capable of executing many missions. For instance, any vertrep aircrewman is capable of conducting personnel hoist and internal cargo operations, passenger transfers, special weapons transport, rappelling, parajump operations, drone recoveries, medical evacuations, some photographic missions, vertical replenishment and virtually any other mission the CH-46 is capable of.

The next time a *Sea Knight* delivers food, ammunition, people, mail or movies, remember that vertrep crewman inside the aircraft. He may be lying down on the job, but his expertise holds the key to the successful and rapid delivery of needed items.

CORONADO & CREW

Story by JO2 Lon Cabot Photos by PHC Milt Putnam

The amphibious transport dock USS Coronado is one of Navy's newest amphibious ships. Named after the California city across the bay from San Diego, she is designed primarily to deliver Marine Corps troops and their equipment to the beach in either an amphibious or helicopter assault. In addition, the 16,800-ton, Norfolk-based ship has the capability of operating vertical takeoff aircraft from her flight deck. Coronado presents a well-rounded amphibious assault capability.

As a helicopter touches down on *Coronado's* flight deck, off to the side stands the man who has just finished directing it to the deck — AB3 Michael L. Palumbo.

As a landing signal enlisted (LSE), he must not only know the characteristics of different types of aircraft, but also the means of recovering various planes. He maintains communications with the aircraft crash crews so that life and equipment saving efforts can begin immediately in the event of an accident. "You've got to be alert. It's absolutely necessary to know as much about the aircraft you deal with as you can. Knowing when and how to react under any circumstance might very well save

your own life as well as the lives of the aircraft's crew and those standing by.

"I'm happy with my job," says the young sailor. "I feel that what I do is a vital part of the amphibious capabilities of this ship. I'm glad I can be part of such an important team." During his Navy service, Palumbo has been to more than 20 different countries and feels he has seen many things that most people his age have only read about. He likes the Navy and hopes to reenlist. "For me, it's been an exciting four years. I'm looking forward to a few more just like them."

During a lull in helo operations, ABAN Frank S. Smith III, looking like a man from outer space, took off his heavy asbestos hat to enjoy a break. He talked about his job. "I wear this 30-pound asbestos suit because if a plane crashes on the deck, I have to go in and pull out the pilot and crew. My partner and I sit out here in the ready position whenever there are flight operations."

ABAN Smith is a South Carolina-licensed paramedic. He also completed the Navy's aircraft fire-fighting school in Norfolk. While a Navy student in Pensacola, Fla., he worked as a paramedic for a local ambulance service.

The 19-year-old sailor showed confidence as he talked about his ship and his responsibilities. "I have some working knowledge of all the types of aircraft that land on *Coronado*. This includes emergency engine shutdown procedures, location of onboard fire-fighting equipment, different means of rescue and the location of all exits." He feels that everyone should serve a tour in the military "because it helps to develop the person and teaches him responsibility. You have to take a lot of orders but that's all part of the learning experience." Fire-fighter Smith is planning on resuming college after his discharge in several months. As he looks back on his Navy tour he comments, "I can honestly say that it's been a good three years."

The commanding officer of *Coronado*, Captain Geo.ges E. LeBlanc, reflecting on his more than a quarter of a century in the Navy, says, "I was pretty naive when I started my career as a naval officer but the system kept it moving at a very brisk pace."

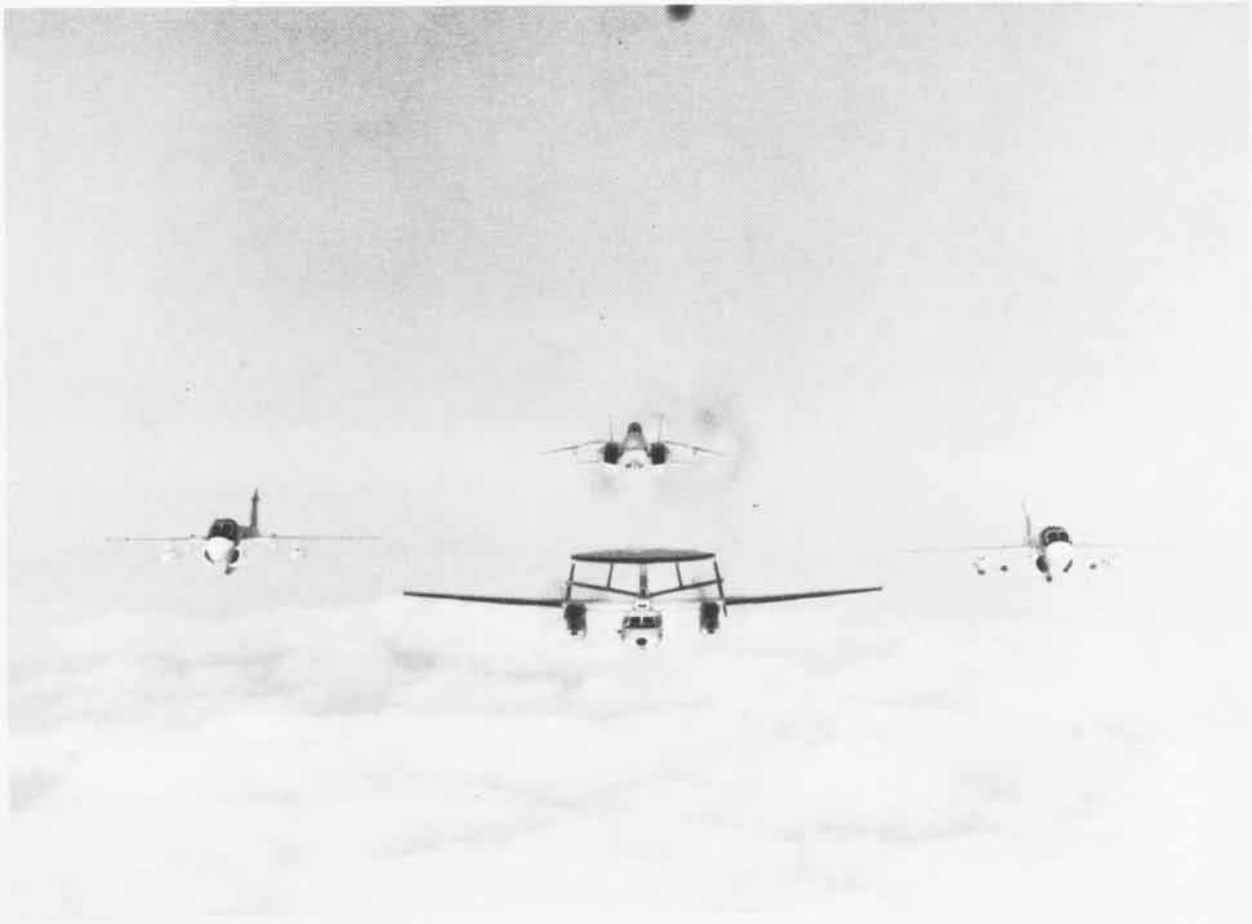
His career began in 1950 when he joined the naval reserve in New Orleans. He was designated a Naval Aviator in 1952. En route to his first duty station, a car accident put him in the naval hospital at Corpus Christi, Texas. There he met his wife-to-be. She was his nurse.

From 1953 to 1971, Capt. LeBlanc served in various capacities with aviation commands that included attack squadrons, research and development projects and aviation staff positions. In 1967, while assigned to a carrier squadron off Vietnam, he earned four DFCs on combat missions.

"Coronado is my deep-draft command," says the captain, "which is a prerequisite before assuming a major command afloat. I've always been fortunate to be surrounded by hard-driving people. I don't care if a man is an aviator or a fleet sailor. If he's a hard worker, I value him. On this ship, like any other ship, it's the people who give it purpose and value. It takes all kinds of talents and strengths to make a machine of this type useful."

Under his command, *Coronado* has participated in a number of major amphibious exercises and operations. In July 1976, the ship played a key role in the evacuation of more than 300 American and foreign nationals from war-torn Beirut, Lebanon.

As Capt. LeBlanc tells it, "On a ship you have many individuals working together to ensure the smooth operation of a common unit."



AIR BOARD

The Air Board is a top level group of Navy and Marine Corps officers who discuss and act on matters of broad policy affecting all of Naval Aviation. Vice Admiral F. C. Turner, Deputy Chief of Naval Operations (Air Warfare), chaired the board at its May meeting in Washington, D.C. "It is expected," he said, "that the deliberations of the Board will result in common understanding of the major problems confronting Naval Aviation, as well as a determination of the concerted actions required to improve the aviation readiness of the Navy and the Marine Corps."

Other members of the board are:

VAdm. P. N. Charbonnet, Jr., Chief of Naval Reserve

VAdm. E. C. Waller III, Director, Antisubmarine Warfare and Ocean Surveillance Programs

VAdm. H. E. Greer, Commander, Naval Air Force, Atlantic Fleet

VAdm. R. P. Coogan, Commander, Naval Air Force, Pacific Fleet

LGen. T. H. Miller, Jr., Deputy Chief of Staff for Aviation, HQMC

MGen. R. H. Spanjer, Deputy Commander, Fleet Marine Force, Atlantic

MGen. F. C. Lang, Deputy Commander, Fleet Marine Force, Pacific

RAdm. W. L. McDonald, Deputy Chief of Naval Personnel

RAdm. F. H. Baughman, Vice Commander, Naval Air Systems Command

MGen. W. J. White, Commanding General, 4th MAG/Marine Air Reserve Training Command

RAdm. B. H. Shepherd, Chief of Naval Air Training.

More than 20 major items were discussed at the spring session. The agenda normally has a central theme. This time, attention was focused on aircraft material readiness. However, numerous items from other areas were examined. A random sampler of issues and action taken follows. They are not listed by degree of impact but have been selected to convey the nature of subjects analyzed and acted on.

Funding requirements for logistic support are being understated due to current budgeting criteria. Examples are the 85 percent supply material effectiveness and 70 percent material readiness goals of CNO.

Re-examine internal goals for the funding of all logistic support to ensure they represent total requirements, not budgetary compromises. Restate new goals as the baseline from which programs will be justified.

The management organization that supports Naval Aviation logistics is inherently inefficient due to excessive fragmentation of responsibilities and functions among several commands. There is a lack of clearly defined authority and accountability.

Develop a proposed reorganization for the improvement of the logistic management functions of Naval Aviation.

Inefficient configuration management is a major factor in current degraded material readiness. The present control system permits too high a rate of aircraft configuration changes. Discipline must be applied to ensure that changes are fully justified and properly supported logistically before being approved.

Evaluate the present procedures proposed by NavAir and establish the necessary mechanism to bring aircraft configuration changes under control. It is envisioned that aircraft configuration would be frozen to permit stable, adequate support and that changes will be approved only at specified long intervals.

Small communities of aircraft represent special support problems that might be best addressed by establishing full contractor maintenance/support for a guaranteed level of material readiness.

Implement the concept. Develop full contractor support for the C-2 as the first step.

Several support areas such as GSE and GSE repair and calibration remain seriously under-funded and out of balance with other readiness related funding.

Improve support funding. Present deficiencies need to be clearly documented. DCNO(Air Warfare) will establish a higher priority for such funding.

NARFs are experiencing large backlogs. The fleet would prefer to have the NARFs expand their scope of work on certain aircraft, such as a systems check on the F-4 AWG-10 and associated wiring.

Investigate the feasibility of expanding the use of commercial contracts for certain repairs in order to free the NARFs to do more work that only they can perform.

Squadron commanding officers and executive officers need formal training in logistics management in order to improve the interface between the users and the supply system in such areas as asset visibility, attention to retrograde, validity of requisitions and system discipline.

Implement PXO/PCO training at the Navy Supply Corps School, Athens, Ga.

A dedicated training command carrier is essential for efficient student pilot carrier qualification.

Make every effort to retain a training command carrier.

CNATra is short of personnel to carry out its assigned PTR. A shortfall of 400 squadron, staff and station officers is expected in FY 78. A shortfall of enlisted personnel is already affecting training capacity.

Evaluate the impact of 100 percent fleet manning on the command. Recommend exceptions to policy as may accommodate the problems of CV overcrowding and AIMD and TraCom manning.

Because of operational aeromedical support deficiencies, the fleet continues to experience an unacceptable high rate of human-error accidents. Increased clinical responsibilities of the flight surgeon have resulted in a corresponding decrease in aeromedical surveillance and in the prevention aspects and solutions to human-factor-caused accidents, i.e., preventive medicine has been overshadowed by diagnostic and curative medicine.

Establish an ad hoc committee of operators and senior flight surgeons chaired by ComNavSafeCen to identify existing deficiencies related to the low utilization of flight surgeons. The committee will recommend actions required to establish more clearly the requirements for flight surgeon support of aviation units.

At the close of the meeting, Adm. Turner said, "In the past, we have convened on an annual basis. I believe it would be worthwhile to get together twice a year to address salient matters. Therefore, the Air Board will meet again this fall."

THE ENLISTED RATING SERIES

AX2 Robert Manning (left) inspects MAD gear in P-3C tail section as AX2 Randy Downs looks on. Below, A VS-22 Viking, MAD boom extended, keeps submarine under surveillance. Opposite page, close-up of AX trouble shooting cable contacts.

From a tactical point of view there is only one kind of submarine and that's an unidentified one. The problem in the hide-and-seek of anti-submarine warfare is locating and identifying submarine contacts. Today this is largely an airborne mission carried out by Navy aircraft equipped with the latest sophisticated electronic devices. Inspection and maintenance of these devices are the responsibility of the Aviation Antisubmarine Warfare Technician, AX.

Some may claim that it's the aviation ASW operator's skill that makes the mission. In reality it's the AX's equipment which often makes the operator.

Men and women in the AX rating are electronics technicians responsible for keeping ASW systems and equip-

AVIATION ASW TECHNICIAN

ment in good operating condition. In addition, they are involved in safety instructions related to avionic equipment and facilities and perform a number of administrative duties.

The AX rating was created in 1961 because the Navy needed specialists to inspect and maintain aircraft ASW systems, equipment and associated testing gear. The continuing sophistication of airborne ASW detection technology virtually forced the creation of these experts.

ASW includes both land and carrier-based patrols. P-3s fly from land and S-3s from carriers. Short-range missions are flown by helicopters. The long-range aircraft carry a full array of ASW radar, electronic countermeasure, magnetic anomaly detector and sonobuoy equipment. The key system used on helicopters is active sonar.

Since malfunctions can render the operator useless, the success of an entire ASW operation rests largely on the skills of the Aviation ASW Technicians. They make daily preflight and post-flight inspections, checking cables and connectors for short circuits, grounds, breaks and pressure leaks. They ensure that all connections and mounts are firm, tight and clean, and they lubricate all gear on a regular schedule.

They may make repairs on the aircraft or replace the component or module with a test-certified part while entering the defective item in an electronic repair shop. They evaluate the performance of overhauled or newly installed equipment and receive reports from crew members on equipment operation during flight. They analyze discrepancies between how the equipment should have worked and how it actually functioned, and make recommendations for correcting problems. As engineers design changes, technicians receive instructions and then make sure that the equipment in their aircraft is changed. A typical modification might require inserting a larger resistor in a circuit.

AXs use a variety of test devices to measure voltage, current and resistance, signal generators and oscilloscopes. The technician is responsible for selecting test devices and for deciding on the most appropriate unit for a particular test. Technicians also maintain and make minor repairs on the test equipment.

The AXs know their way around technical manuals and can follow diagrams and schematics through labyrinths of electronic circuitry. They must know all the tools of their craft.

AXs keep records of inspections and repairs. They accumulate a record of airborne ASW equipment, take inventory and order replacement parts. Since most of the devices have high power ratings, AXs determine safe procedures and implement safety instruction programs. Schooling at NATTC Memphis, Tenn., covers basic electricity, electronics and components, maintenance materials and techniques, corrosion control and marking systems for cables, wires and connectors.

There are approximately 1,800 AXs serving today aboard aircraft carriers or at naval air stations. The AX stands behind the equipment that stands behind the mission.

NEWS naval aircraft

F3F

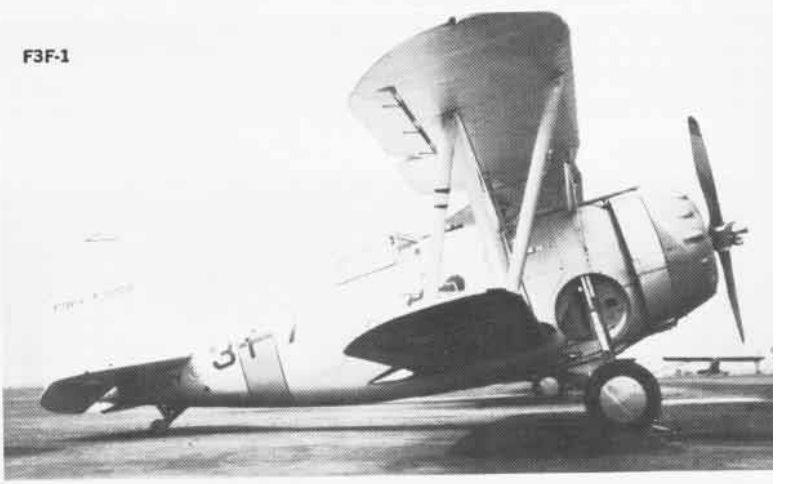
Carrying fighter squadron insignia that can be found on any Navy fighters today, the Grumman F3Fs were the last Navy and Marine Corps biplane fighters. F3F-1s were first delivered to fleet squadrons in early 1936; the last F3F-3 in May 1939. October 1941 saw the last fleet squadron F3Fs turned in by the Marines. Monoplanes had finally supplanted the biplanes less than two months before Pearl Harbor.

Following the success of Grumman's first experimental single-place fighter, the XF2F-1, and before production F2F-1s were delivered to the Navy (*NANews*, January 1976), the prototype XF3F-1 was ordered in October 1934. Initially using the same P&W Twin Wasp Jr. engine as the F2F-1, it was generally similar but larger with greater wing area, reducing the tubby appearance of the F2F. Prototype flight testing was in sharp contrast to the ultimate success of the F3F. The first experimental airplane failed structurally during dive tests and the second crashed after an unrecoverable spin. Subsequent tests with the final XF3F-1 indicated the problems were corrected and 54 F3F-1s were delivered in 1936 to serve with Navy and, subsequently, Marine squadrons.

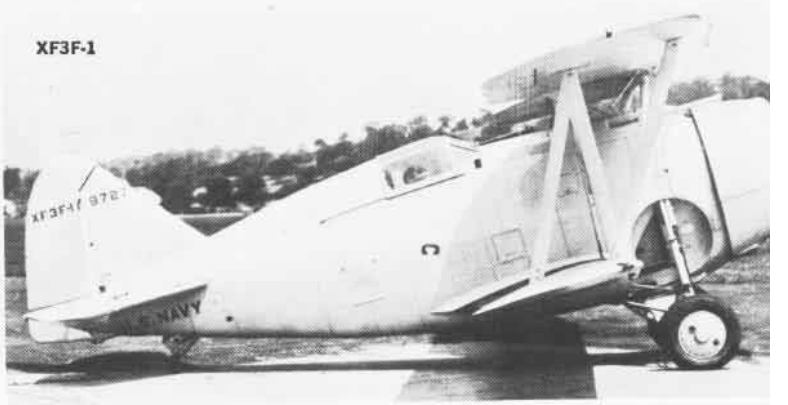
Replacement of the Twin Wasp Jr. with the higher-powered Wright Cyclone in the XF3F-2 led to delivery of 81 F3F-2s starting in mid-1937, going directly to both Navy and Marine squadrons. Delays in delivery of the initial F2A-1 monoplane fighters led to a final order for 27 F3F-3s with improved fuselage streamlining. These were the last Navy biplane fighters delivered. They went into service in early 1939. After phasing out of squadron service, the F3Fs served as fighter trainers until the last was retired late in 1943.

Three modified versions of the F3F series were built for civilian use. One of these, the Grumman *Gulfhawk*, survives and can be seen in the National Air and Space Museum. With their many streamlined features, the attractive appearance of these last Grumman biplane fighters was fully in tune with their excellent maneuverability and flying qualities, which will always be remembered by those who flew them.

F3F-1



XF3F-1

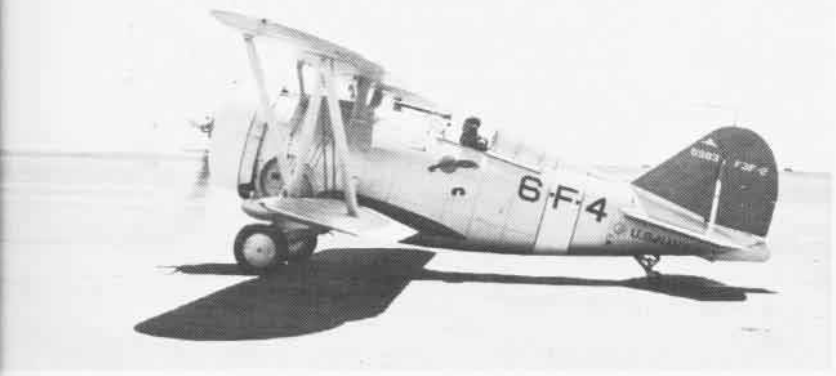


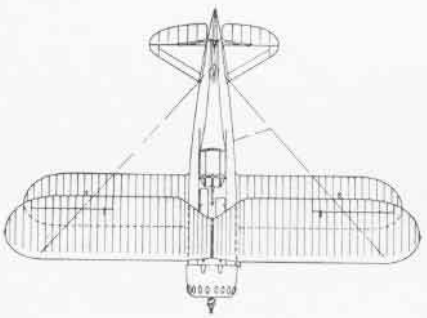
F3F-3

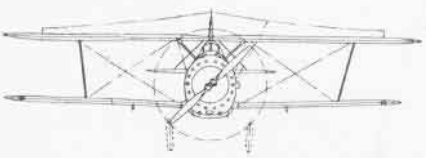
F3F

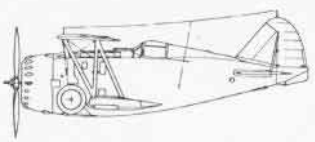
Span		32′
Length		
1		23′3″
2, 3		23′2″
Height		9′4″
Engine		
1	P&W R-1535-84	700 hp
2, 3	Wright R-1820-22	950 hp
Maximum speed		
1		231 mph
2		256 mph
3		261 mph
Service ceiling		
1		28,500′
2		32,300′
3		33,200′
Maximum range		
1		1,000 miles
2		1,130 miles
3		1,150 miles
Armament		
		One .50 machine gun, one .30 machine gun, and two 100-lb. bombs

F3F-2









XF3F-2

Cross Country to Peoria

Another episode from the memory book and prolific pen of Harold "Kiddy" Karr, Naval Aviation Pilot No. 1.

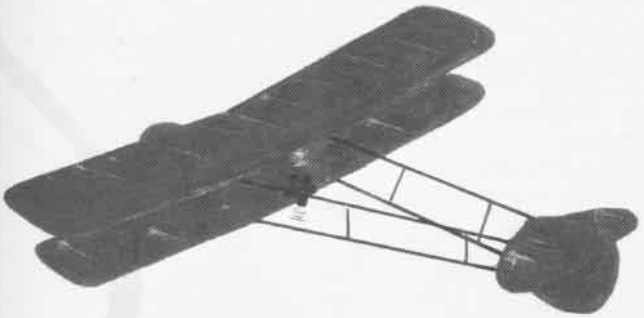
In 1911, after learning to fly in a glider towed by an automobile at McCormick Field, Chicago, my engineer friend, William C. Dennis, and I bought a French Gnome rotary engine. It had 50 horsepower and with the efforts of the faculty of Crane Tech, where I was a student, and Ted Archer, an experienced pilot, we built an airplane around it.

It was a five-cylinder engine with a huge exhaust valve in the top of each cylinder. The intake valve in the head of the piston allowed gasoline vapor to enter the combustion chamber on the intake stroke. Non-soluble castor oil was used for lubrication. There was no throttle. Idling was achieved by intermittently shorting out the magneto with a switch on the top of the control stick in addition to the permanent short switch.

With the rotaries, the crankshaft was bolted to the engine bed and the radial cylinder group, with the attached propeller, rotated. This generated a gyroscopic effect when changing direction on any axis. If the nose was suddenly pushed down, it would also throw a wing down. The rotaries were very light — a Gnome weighed only 2.97 pounds per horsepower and, later, in WW I, we found them much less vulnerable to enemy gunfire than water-cooled power plants. Several times I had bullets harmlessly strike a rotating cylinder, which would have downed a water-cooled engine.

Ted and I called our plane the Gull and decided to make a cross-country flight from Chicago to Peoria, and return.

I had piled up 20 hours of solo



By Kiddy Karr

time in the Gull earning pilot wings from the Illinois Aero Club in September 1912. Infected by the flying bug, I couldn't concentrate on high school work. My thoughts were constantly soaring with the Gull in the wide blue yonder.

Ted and I often spoke of the fun it would be to make a cross-country flight. We also discussed possible drawbacks like weather, navigation and engine trouble.

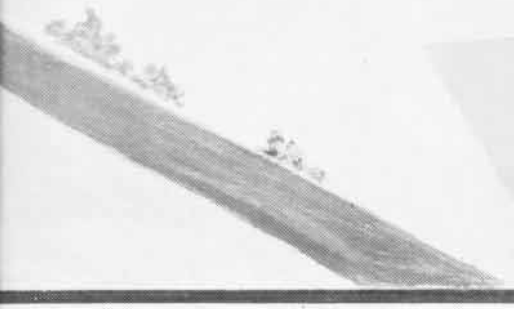
The dream stayed with us and one day we decided to do it. The classroom became a prison. All day I would hear the blipping of the Gnome. Ted and I studied local maps, not too easy to get, incidentally, since free road maps didn't really exist then.

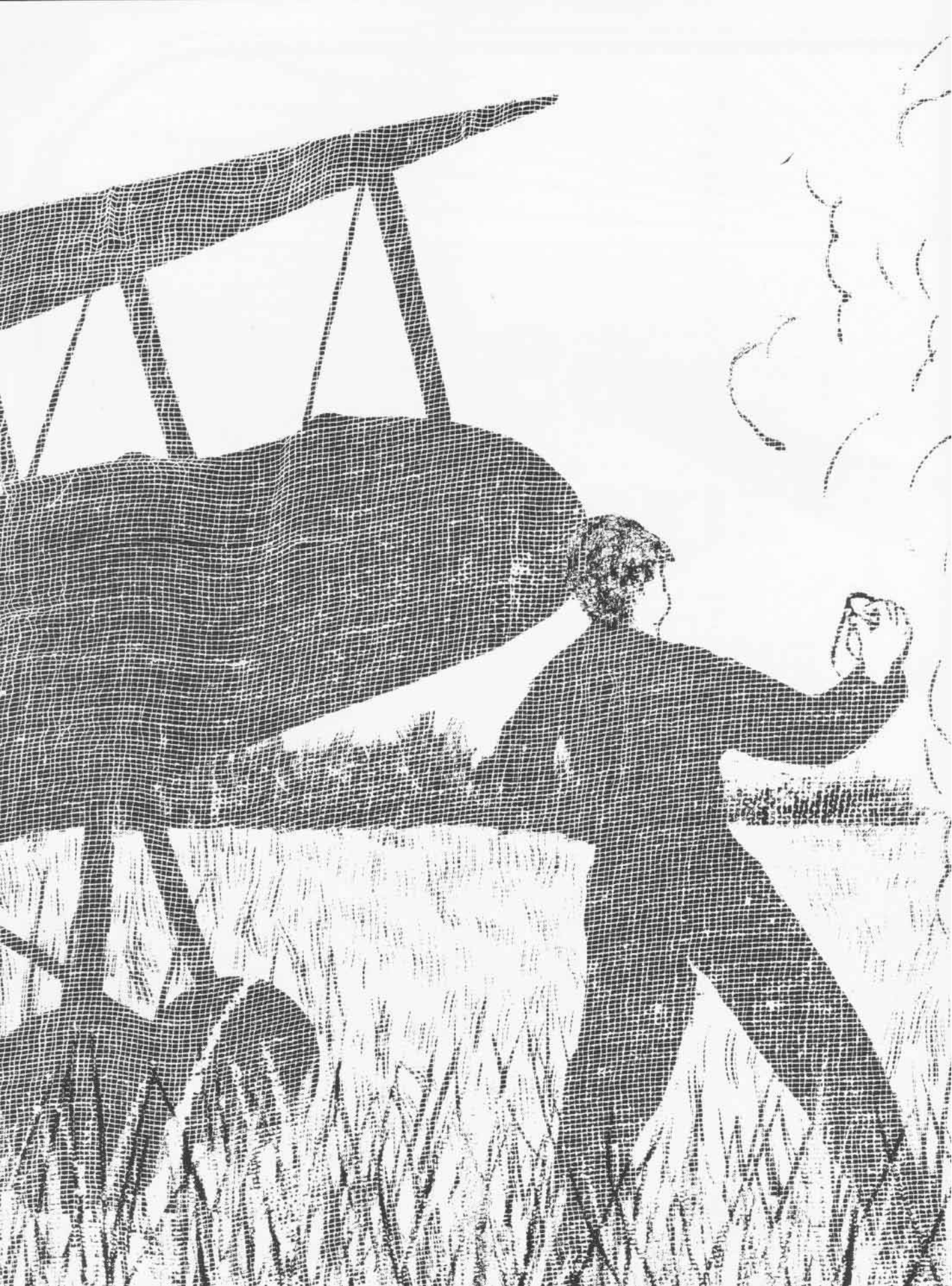
We picked Peoria as our target, 130 miles away. To us it had the lure of strange places, a new land over the horizon. The autumn leaves had fallen from the trees and we planned to leave on the first clear Saturday in late autumn.

We figured two days for the trip. We'd use cow pastures en route, every 40 minutes or so, to land and change plugs. At the 30-minute mark, for safety purposes, we'd start looking for a landing field. This would give us 15 minutes leeway on each plug change.

Spare plugs were placed in an acetone can. Soaking them overnight in the acetone would clean them up for repeat use.

We decided it would be a good idea to make a dummy run before we tackled the 130 miles to Peoria. We would fly due west for 30 or 35 minutes and then land in the most





likely looking pasture, change plugs and return. A school half-holiday on a Thursday was just perfect for this and the day was clear and warm. I was to pilot the first leg and Ted the return.

I made a good takeoff—not over four bounces! The engine ran sweetly. In 35 minutes I spotted a smooth looking field with plenty of room beside a grove of trees for a landing. I checked wind direction by the smoke from a nearby farmhouse, cut the gun and blipped down. Ted and I turned the plane around, heading upwind and started to change plugs.

With only five cylinders and only one plug per cylinder, the task took only minutes. As we removed the last plug we heard a familiar sound — the bellowing of a very unhappy bull! The "king of the harem" was trotting toward us. We got the plane between us and the bull and yelled at him. He yelled right back. There was nary a sign of a club or a rock around to repel him. Our four-legged friend fully intended to do battle with the "big bird from the sky" which had disrupted his family routine.

I remembered the bucket of acetone in the plane and retrieved it quickly. I fumbled for several precious seconds trying to remove the lid. Old Mister Calamity was getting closer! Finally, I tore the lid off and ducked under the tail. When he was 10 feet away, I tossed the acetone in his direction. All hell broke loose! I rolled under the plane and saw the bull's feet, swirling in anger. He let loose with a horrendous roar.

Luckily, he moved away slowly, then broke into a run toward the woods. Never have five spark plugs been installed faster than that day. Ted jumped in, I grabbed the prop and pulled it through. The engine sputtered to life, I jumped into the passenger seat and we were off. We hurried back to Chicago. Lesson learned: Don't land in a pasture populated by a bull and his bovine friends.

Looking back, I had more butterflies before the cross-country hop than all the other ones which were to follow. On D (departure) day we ran the plane out, warmed up the engine, then pushed it to the downwind end of the field. A small group of friends and flyers was waiting. We put our caps on backward, tightened the automobile goggles and leather jackets, and we were ready to launch.

I made the first takeoff (we had drawn straws). It was smooth and straight. We climbed to about 500 feet, no altimeter, of course. They were too expensive. We did have an oil pressure gauge and a tachometer, a luxury none of the open-seat pushers had.

Both Ted, who was the navigator, and I had pocket compasses. He shouted out the course and we were on our way southwest to Joliet.

We had practiced holding a course by watching the position of the sun and checking the compass. Every once in a while Ted would turn around, point out something below and then shake hands with himself! He may have been older than I but on this day we were both kids. The engine ran smoothly. We were enjoying every minute of the flight.

Soon, all the buildings were behind us. We saw farms stretching out in every direction, good landing fields if needed. We saw a cluster of houses — Joliet. We were on course! It was the first time I have ever looked *down* on a river in my life. It gave me a queer feeling to see it stretching out in both directions to infinity.

We had covered 24 miles in our first 20 minutes, thanks to a following wind. We turned west after Joliet in order to cross the river at right angles. Although it really was a small river, it looked pretty wide to me, and *very wet* for a landing.

We went off course after Joliet and 10 minutes later the engine lost power and began to vibrate. A plug had fouled.

I made a shallow turn, picked a spot that looked smooth and started blimping down. I was glad we had spent so much time practicing spot landings for my exam. I could gauge distance pretty well. The field had small hummocks and wasn't as smooth as it looked from high above, so we had a rough ride on touchdown.

Checking the time, we found that we had been in the air for 45 min-

utes and had covered just about that many miles.

We had no chocks, so we jammed clods of dirt in front of the wheels and changed the plugs. Then I pulled the prop and tore around the wing and jumped into my seat. Ted took us off. I navigated with my pocket compass and a map torn out of a school geography book. Ottawa was our next checkpoint. We passed Morris, making 60 miles per hour. The engine purred.

We figured on one more plug change before Peoria. The Illinois River passed on our left. Sometimes people would run after us as we chugged by. We were an oddity. We passed a ball game in progress and the fans threw their caps at us.

Later, Ted spotted a field and signaled descent, so I grabbed a longeron and hung on. The approach was perfect but we saw a bump which had been covered with dead grass. It was too late to turn. We hit. Crack. Part of the landing gear gave way. The wing dropped and we made a wild ground loop to a stop. One strut was damaged, the other bowing under. Some ribs at the wing tip were broken, the paper covering torn.

The spare ash board we had could be used to fix the strut — if we had a ripsaw. Several men came by in a farm wagon, whipping the horses, thinking we had crashed. Other buggies came toward us from the opposite direction.

A farmer's wife loaned us a saw and hammer. The crowd now numbered a dozen-plus and Ted quickly appointed several as security guards. Some were disappointed to find us hale and hearty. Seems they expected us to be tangled up in the wreckage. Ted and I had built and repaired planes, so we went right to work on the damage. Two or three strong men in our audience lifted the wings so we could slip a 2x4 under as a jack.

By noon, the strut was in place, the brace wires tight again, the broken ribs temporarily fixed and new paper stretched tight. We applied a coat of fast drying varnish to keep moisture off the paper and out of the wing.

The lady who loaned us the tools brought us a hot lunch. What a welcome surprise. We told her about the flight and she could hardly believe we left Chicago that morning. Ted told her that I flew the first 45 minutes. "A mere boy, still wet behind the ears," were her words. She was astonished. Ted laughed, "Would you like to take a flight?" "Not on your life," she screamed.

People came by, by wagon and buggy, on horseback, on bicycles and even in automobiles, but Ted was a diplomat, keeping people away while we worked but also explaining the aircraft to them. He told his "guards" that each would get a piece of the torn paper wing covering for a souvenir.

Repairs done and a takeoff lane ready, Ted waved at the crowd like a preacher. "Everybody back please! Get too close and the prop blast will knock you off your feet. Move to the tree lines!" Several young men helped us move the plane into position.

I revved the Gull and up, up and away we went. I circled back over the crowd, gave them a couple of zooms and wiggled the wings. After that we leveled off, headed for Peoria.

We were only 15 miles from our goal when the engine began to vibrate. A plug had fouled again. I found a spot and landed.

Changing plugs was routine by now. We put one set in and dumped the others in the acetone can. They cleaned themselves with the vibration of the engine.

Ted asked me to continue flying so I could say I had taken off at Chicago and landed at Peoria. I refused. We had agreed to alternate at the controls. It was his turn.

Ted gave us a fine view of the whole city before he picked a pasture east of the city for a runway. He made a smooth landing and our first cross-country flight was completed, in one day, on schedule.

We made 130 miles in 115 minutes flying time, with four landings. We were both feeling cocky about the achievement. If the Chamber of Commerce had asked, we would have been great advocates of safe air travel. Fortunately, they didn't. The return leg to Chicago was to be much more troublesome than the first one.

Ted again appointed plane guards since a crowd of people, larger than that at Ottawa, surrounded us. About 600 people were milling around the plane.

One fellow had the foresight to notify the authorities. He returned a half hour later with 10 uniformed policemen equipped with stakes and line to rope off the area. Arrangements were also made for relief guards for overnight security.

The police chief went so far as to arrange a dinner for us that evening at one of Peoria's largest hotels. A car was placed at our disposal. We had one set of clothes, those on our backs. A fine pair we were at the reception, wrinkled suits spattered with castor oil from the engine. But we were *Aviators!* The city officials got a kick out of us because we looked the part — weary flyers who had flown all the way from Chicago in one day.

The dinner was excellent and after it, the speeches began. Until he was introduced I had no idea that the mayor was there, but he rose and welcomed us to Peoria. Others followed, then Ted was introduced and gave a sensible talk about the future of aviation. "It is just starting," he said. "One day engines and planes will be greatly improved. Even today, flying is the most enjoyable method of getting from here to there."

We were showered with questions and I was praised as a boy aviator. Keep in mind, it had only been eight years since Kitty Hawk. That night I went to sleep seconds after my head hit the pillow.

The next morning, we were driven by courtesy car to the pasture. We thanked the guards and went about preflighting the Gull. We removed the protective rubberized cloth from the magneto and, with tisue paper, wiped dry the copper wires and terminals on the collector ring and spark plugs.

There was little breeze. We could take off from where we were. The old Gnome growled awake with a fine roar and, after a few minutes warm-up, I shorted out the mag for a few seconds, then gave it full power. We rolled merrily down the field. I loved the rapid acceleration, then the liftoff. We were airborne. I flew a large circle to come back over the gathering crowd and waved goodbye. I nosed over a bit, nodding to the crowd, then pulled the stick back.

Suddenly the nose reared up and a wing dropped rapidly— gyroscopic force caused this. I quickly discovered the value of our design. With shoulder yoke ailerons — we called them wing flaps — you could lean into the direction you wanted to go. I righted the plane and we drove on out of view.

We roared happily over the grain fields and pastures. I dreamed of flying all over the country as soon as school was out. The engine never ran better. The air was smooth. I was learning the Gull. I tried to eliminate abrupt control movements and to combine the action of rudder, elevators and ailerons into a single smooth operation.

We were heading into the same wind that had given us a boost yesterday, so it would take us longer to get home. What the heck, we were oblivious to little else but soaring happily through the sky.

All of a sudden, a terrible vibration and clanking erupted from the engine. I quickly shorted the mag which helped a little but the noise continued. In that moment I learned a lesson to remember the rest of my flying days. Never fly along, dreaming. Have an emergency landing field in sight every minute. Nothing under us looked satisfactory. A pocket of flat terrain to the left had possibilities, so I headed for it. I stretched out the glide in a desperate effort to save altitude. With the wind ahead, I could make two 90-degree turns which was better than one 180 with a tail wind.

I wished Ted was flying. His experience was needed. But the job was in my lap. To this day I have only the haziest memory about that approach and landing. Seems we just cleared a rail fence and made the field. Luckily it was as smooth as ours at home. All the way down the clatter and banging from the Gnome had my heart in my throat. But we landed and the prop continued to turn after we stopped, even though the mag was shorted.

Ted and I jumped out. The ring cowling was intact but when Ted rotated the engine, a hole appeared where there had been a cylinder. "Good Lord," he said, "we lost a cylinder!"

This was an experimental engine with the cylinders secured with studs. We quickly noted that all but one stud had pulled out. Another had broken off. Luckily, it had been thrown out the bottom through the ring cowling. Had it come free at the upper side, it surely would have wrecked the cowling and the engine as well.

We sadly sat down on the sod — a man and a boy staring silently at their wounded bird. Finally Ted said, "Well, to get back to Chicago we need a cylinder and a push rod. Let's get going."

Getting a new cylinder was out of the question. American firms didn't sell Gnome engines. Several Gnomes had been brought in to power American planes or for use in French exhibition planes. We might find a spare somewhere.

The connecting rod and piston were intact and all the rings looked OK. The trailing side of the crankcase was battered and we had lost our oil. But we had a spare can of that. It could have been worse. We turned the engine over. The rod seemed straight enough and the burr built up around the hole could easily be filed off to install a new cylinder.

Ted remembered about the wreck of another French plane near Elgin, Ill., and wondered if the engine had been shipped back to France. Friends of Ted in Chicago might know of another Gnome. He decided to start walking to McNabb, a few miles north, where he would call them and try locating a cylinder.

After he left I had an attack of the blues. We were stranded far from home field, the engine seriously damaged, no spares and no assurance that we could get needed parts. No longer was I the self-confident aviator of the night before. I was just a small, 15-year-old boy, a long way from home. It took awhile but I determined that no matter what the disappointment in a situation, it's best to start looking for solutions right away.

I was safe. I had made my first emergency landing, the plane was not damaged, the weather was fine, I had Ted with me. And there was hope of getting another cylinder. I started planning in my mind procedures for putting the new cylinder in.

We'd had problems with the metric thread on the engine but any machine shop could make the American thread. We would have to ream the old holes out so we could use the standard thread tap for the studs. It would also mean that the stud holes in the flange at the base of the cylinder would have to be reamed out. Plus, one stud would have to be made with the metric thread to fit the one good hole and act as our guide for the reamers on the other holes. It wasn't going to be any 15-minute job.

With a chisel and hammer from the tool kit, I loosened the stud and carefully removed it. I smoothed the burr on the edge of the opening into the case with a file. To keep the filings out of the opening, I turned the engine so that the opening was at the bottom. I had to twist my body rather uncomfortably to do this. I then removed a stud from another cylinder. It would be the guide for the reaming and tapping of the bad cylinder. My experience in the machine shop at Crane was paying off.

Before I knew it, Ted was back from McNabb with some lunch. "I called my friend about the French plane," he said. "He's going to call back at eight tonight in McNabb. I see you've done some work. You figured things right."

Ted felt we'd be staying put for a while. So, we planned on borrowing a tent and eating with a farmer family two miles north. We would alternate security watches at night. I secured the plane against any wind and did some more burring while Ted visited the farmer.

He came back with a tarp and a couple of quilts, no less, for a bedroll. Mr. Nelson, the farmer, and his boy, Harry, came by to see the flying machine. He was startled when he saw the hole in the engine. "Your flying days are over with that machine," he said, shaking his head. Nevertheless, I talked about our repair plans, for the benefit of Harry.

"Anyway," said Nelson, "this field's mine and there's no stock in it. You're welcome to stay as long as you want." Then, with a twinkle in his eye, he added, "When you decide to ship your machine back to Chicago, I'll haul it down to the depot for you."

After supper that night, Ted went to McNabb and I stayed with the plane. He took the stud with him in case he found a machine shop which


Cooney

could make some for us. A bit lonely, but tired, I easily fell asleep under the wing.

Next morning I ate a couple of Mrs. Nelson's doughnuts and drank some water while I waited for Ted. He ambled in about noon, a disconsolate expression on his face. A few words said it all. "Sorry, kid, there's no spare cylinder available any place."

It was silent for a long time, I could almost hear him thinking.

"You know," he said, finally, "The odds are against it, but maybe we ought to look for the one we lost." He scratched his chin, looking toward the horizon. "Chances are 100 to 1 that, even if we do find it, it will be ruined. But," he hesitated, "if it didn't hit on the thin end . . . well, it's worth a try."

We figured that somewhere within a 30-acre spread that cylinder lay in the grass or weeds. I was dubious, but we lined up 10 feet apart and began the search. We would walk 10 feet, stop, look all around, then move on. Needle in a haystack? I'll say. At noon, we broke for lunch at the Nelsons.

After chow, we looked again, going back and forth over a wider area. By supper time we had looked at every square foot of the field without result. Ted tried to cheer me up. "I'll bet that cylinder was so scared when it hit that it took off, running, and hid in that grove of trees over there." He pointed out a spot half a mile away. He patted me on the shoulder, "We'll find it in the morning," he said.

Next morning we searched again. After a time, re-examining a spot we'd checked the day before, Ted saw something. "There it is!" he yelled. Standing upright, on its valve end, half buried in a gopher hill, was the cylinder. The weight of the head had acted like the head of an arrow and the loose dirt in the gopher hill cushioned its fall. This protected the extended valve stem so that it was not bent. A couple of the cooling fins were marred as if they had struck small rocks in the hill. It was a marvel that the valve stem was unscathed. Ted picked up the cylinder, brushed away the dirt and placed it on the ground. He operated the valve with his foot and was able to push it wide open.

We thoroughly cleaned the piece and then managed to get the cylinder up over the piston rings, a difficult job without a ring compressor. The base fit up against the crankcase perfectly. Ted smiled at me and I smiled at him. We were in business again.

Ours would have been a major operation even in a well equipped hangar. Enlarging stud holes by drilling and reaming, then tapping to the required oversize was far from easy. And that was only part of it. Ted took the cylinder and a push rod from another cylinder so that a pattern could be made. He traveled 25 miles by train to LaSalle where the nearest machine shop was.

He left a sketch of the studs at the shop and had the cylinder stud holes reamed to take the larger studs. He borrowed drills, reamers and taps and returned late in the evening of the fifth day after the accident.

We really went to work then. The stripped holes in the case had to be drilled out and reamed to size for the new studs. So the holes would line up perfectly, we put the cylinder on with the one good stud and adjusted it till the hole was in the right place. It was tiring because we had to work with the cylinder opening at the bottom of the rotation so that no metal chips would fall inside the crankcase when we drilled and reamed. We took frequent breaks to get the kinks out of our backs.

We were buoyed up, however. We had undertaken an almost impossible problem, arrived at a solution, and were accomplishing the repairs. Each mechanical action was bringing us closer to our home field.

We didn't have any visitors while we worked on the engine, so we slept in beds at the Nelsons.

Then Ted went to La Salle to pick up the parts and I had a vacation too. Mr. Nelson took me around the farm — a real treat for a city boy. I even rode one of the horses.

"The shop people did a tremendous job!" Ted said jubilantly when he returned. Everything was exactly as ordered, to the last detail. The five studs were threaded with dies but the one for the stud hole, which had not been damaged, had to have a metric thread cut on a lathe — a job that took a *real* machinist.

One hole in the cylinder flange gave us some trouble, but work progressed rapidly and in no time at all the engine was back together. Luckily, we carried extra castor oil. The engine had emptied itself in the few seconds after the cylinder blew.

Ted was much stronger than I, so he pulled the prop. I watched for his signals as soon as it started.

Time and again he spun the prop. But we couldn't get ignition. We took each plug out and put a little oil in the cylinders and rocked the engine back and forth to spread the oil over the pistons. Ted pulled, no luck. He grunted. "OK," he said with determination. He pulled again and she roared into life. He came around and felt the engine bed for vibration. There definitely was more than usual due to the extra weight of the oversized studs. But he didn't think it would be felt after we were in the air with the engine at full rpm.

The Nelsons came out to watch. Ted was at the controls. We bumped along noisily and, with a mental crossing of fingers, we leapt into the air. It was a Saturday. We had begun this journey a long and eventful two weeks ago. Now we were on our way home. The engine was roaring right along. I looked at Ted and he was smiling confidently.

We stopped for a plug change in a smooth pasture. "You can fly her the rest of the way," Ted said. "Then you can tell your friends, "I started it and I ended it."

We had arranged for Harry Nelson to return the tools to the shop in La Salle and use the deposit to defray our room and board costs. Nothing could have made him any happier for, although he was also 15 years old, he had never been farther from home than McNabb.

On the final leg, we droned on. Soon the smoke cloud on the horizon told us we were approaching Chicago. The Windy City never looked better. We were happy to be flying back instead of riding a train with our machine on a flat car. We could see quite a crowd at the field waiting for us. I landed and taxied the Gull in and threw the mag switch. We were home!

It was many days before we had answered all the questions which were fired at us. Even now, 62 years later, I look back on it and am still amazed that everything worked together so beautifully and that the engine with the gaping hole in it brought us back to where we started.

PEOPLE PLANES AND PLACES

Harry Gann of McDonnell-Douglas photographed this delta formation of VF-51 F-4N *Phantoms* passing over the San Diego Padres' baseball stadium.

An EA-6B *Prowler* made a touchy landing with a blown tire recently on the pitching deck of *Independence* during a storm. Afraid that high winds would blow the canopies off the aircraft, the crew was told they had to wait until the wind died down to disembark. According to forecasts, that meant a possible 36-hour stay in the aircraft. The VAQ-136 maintenance crew solved the problem by placing a cargo net, held down by several men, over the canopies to help restrain them while the crew disembarked.

Former members of HC-2 (and HU-2) are invited to attend the squadron's disestablishment ceremony September 30 at NAS Jacksonville. The disestablishment of HC-2, announced in July, will mark the end of operations for the oldest Navy helicopter squadron, a distinction shared with HC-1. After 30 years of existence and over 2,300 rescues to its credit, HC-2's mission will be assumed by sister squadrons in the HS community. C.O. is Cdr. Bob Redmond. Personnel interested in attending the ceremony should contact Lt. Rick Meade on autovon 942-3197/3179, or by writing him at HC-2, NAS Jacksonville, Fla. 32212.

Helicopter Attack Squadron Light Five was officially established at NAS Point Mugu on July 11. C.O. of the reserve unit is Cdr. R. W. Womble, an American Airlines pilot from Woodbury, Conn.

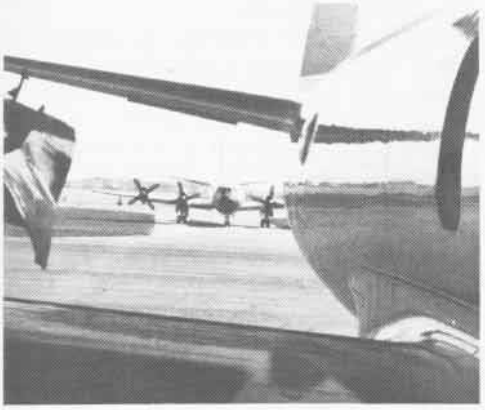
The Navy has set dates for the disestablishment of CVW-19 and seven West Coast squadrons based at NAS Lemoore and NAS Miramar. As a result of President Carter's FY 78 budget, the Navy will reduce its forces to 12 active carrier air wings and 13 aircraft carriers.

The units and dates are, at Lemoore: VAs 153, 155 and 215, September 30, 1977; and VA-125, October 1, 1977. CVW-19 was disestablished June 30. At Miramar, VFs 191 and 194, March 1, 1978. VAW-111 was disestablished June 2.

Also announced was the home-port change of *Forrestal* from Norfolk to Mayport, replacing Roosevelt, scheduled for decommissioning this fall. *Dwight D. Eisenhower* is slated to replace *Forrestal* in Norfolk. Specific dates have not been announced.

There's a pair of new kids at NAS Willow Grove, augmented units VPs 1123 and 2493, born in March out of former VP Selected Reserve Units 1604, 1704, 1804 and 1904. Their mobilization objectives are the same. However, where the old SRUs filled vacancies throughout the fleet VP community, VP-1123 personnel under Cdr. Arthur T. McManus are targeted for only VPs 11 and 23 at NAS Brunswick. VP-2493 personnel, skippered by Cdr. H. Nuissl, will go to VP-24 at Jacksonville. Since commissioning, the squadrons have conducted joint AcDuTra at NAS Willow Grove, taken NAS Bermuda 0693 to an on-site pre-cruise conference, shuttled visitors from the German Navy to and from NAS Brunswick and conducted a tour and briefing for representatives of the Belgian Navy. In other words, the new kids are going strong.

During its current deployment, VP-44 is flying P-3A *Orions* for the last time. When the *Golden Pelicans* return to their home base at Brunswick, Maine, in September, they will begin transition to the



P-3C Update II, Navy's newest ASW weapons system (*NANews*, p. 4, May 1977).

Recently RAdm. Henry P. Glindeman, CTF-77, and his staff deployed aboard *Coral Sea* for WestPac. This brought together four gentlemen who have something in common. During the past 13 years, each has at one time or another commanded CVW-15 aboard *Coral Sea:* RAdm. Glindeman; Capt. George Aitcheson, C.O. of *Coral Sea;* Capt. Dan A. Pederson, CTF-77 assistant chief of staff for operations; and Cdr. Bert Terry, present commander.

Maj. R. D. Hearney, C.O. of VMA-513, congratulates Capt. Toby Griggs on his 1,000th hour in an AV-8A *Harrier*, the 3rd American to log the record hours.

More than 800 military and civilian personnel from the rotor community attended the two-day Naval Helicopter Association symposium held in San Diego. The 29th annual convention, stressing safety and the role of the helicopter, was a combination of presentations, workshops and displays. Technical representatives from 10 major aviation contractors and NavAirSysCom attended, providing an opportunity for the users of the manufacturers' products to exchange opinions and see the latest equipment available.

The *Gun Slingers* of VA-105 came out on top in the recent Light Attack Wing One Bombing Derby. Nine Cecil Field-based light attack squadrons participated. Each squadron entered six pilots and used six different aircraft in the five required weapons delivery events. Day events included high-angle dive bombing, roll-ahead bombing and laydown deliveries. Night events were radar and dive bombing. All were observed and scored by an airborne umpire from the wing. The *Gun Slinger* pilots were Lieutenant Commanders Joe Frenzel and Pete Levin, Lieutenants Larry Schrade, Ken Grubbs and Don Saer and Ltjg. Dennis Gillespie.

In a recent at-sea operating period aboard *Independence* in the Med, VA-65 participated in a mining exercise, *Damsel Fair*. C.O. Cdr. D. L. Hahn led the six-A-6E formation over 300 miles of Turkish coastline to a small harbor where

they successfully made practice drops of 12 mines.

Here, a very heavy squadron *Intruder* goes off the cat with two MK 45 mines aboard.

Star of the Saturday morning TV Shazam-Isis Hour, JoAnna Cameron, as-

sisted by *Blue Angels* Lieutenants Al Cisneros (left) and Bruce Davey, "suits up" for a flight at MCAS El Toro. Miss Cameron flew and made a TV spot with the *Blues* for a Johnny Carson show.

Naval Air Engineering Center test group's *Skyhawk* is ready for launch from

the TC-13 Mod 1 steam catapult as part of training at NATTC Lakehurst for *Eisenhower* catapult officers and senior enlisted personnel. This five-week course familiarizes the crew with the unique equipment, such as the integrated catapult control station, they'll be working with on *Eisenhower*.

Changes of command:

CVW-7: Cdr. William R. Westerman relieved Cdr. Arthur Page.

HML-167: LCol. James A. Gress relieved LCol. M. W. Lutes.

HMM-264: LCol. John M. Solan relieved LCol. William R. Carroll.

H&MS-29: Maj. William W. Ogle relieved LCol. James A. Gress.

MAG-12: Maj. John Butchko relieved LCol. Billy H. Draffen.

MAG-26: Col. Donald C. Heim relieved Col. J. L. Shanahan.

MAG-29: Col. Lloyd W. Smith, Jr., relieved LCol. H. P. L. Miller.

MCAS(H) New River: Col. J. L. Shanahan relieved Col. Bobby R. Wilkinson.

NATSF: Cdr. Ronald W. Pyle relieved Cdr. John G. Wurth.

RVAH-9: Cdr. Thomas A. Myers relieved Cdr. Michael J. Madden.

TraWing 4: Capt. Marion H. Isaacks relieved Capt. Robert D. Colvin.

VA-42: Cdr. Jackson E. Cartwright relieved Cdr. William H. Greene, Jr.

VA-81: Cdr. Jerry O. Yarborough relieved Cdr. Richard Birtwistle III.

VA-94: Cdr. John A. Moriarty relieved Cdr. Steven R. Briggs.

VC-6: Cdr. George R. Brown relieved Cdr. Frederick R. Lickfold III.

VF-151: Cdr. Jay H. Hall relieved Cdr. James D. Curry.

VFP-306: Cdr. T. C. Irwin relieved Cdr. R. G. Hoch, Jr.

VMFA-312: Maj. C. T. Hucklebery relieved LCol. F. B. Craig.

VP-11: Cdr. Marino Bartolomei relieved Cdr. David Hilty.

VP-45: Cdr. Charles J. McKinley, Jr., relieved Cdr. Stephen F. Loftus.

VP-50: Cdr. Gary C. Ledbetter relieved Cdr. George T. Lloyd.

VT-6: Cdr. Richard D. Stout relieved Cdr. Paul E. Brooks.

VXN-8: Cdr. Thomas R. Ryan III relieved Cdr. M. D. Lewis.

NAS Norfolk: Capt. Ralph A. Turner relieved Capt. Paul L. Merwin.

FDR: Capt. Everett F. Rollins relieved Capt. Richard P. Bordone.

touch and go

IWSR

Taking a *Phantom* in for a checkup can be as easy for a pilot as taking a car in for a diagnostic check is for a driver. But, the technician on the F-4J *Phantom* certainly has a much bigger job.

Numerous systems of the F-4J must be investigated by highly trained specialists when a thorough check of the aircraft is done in an integrated weapons systems review (IWSR). In the radar system alone there are more than 36,000 electrical parts and the *Phantom's* electrical skeleton is packed with miles of wire.

A special team of 18 technical representatives from NAS Miramar, PMTC Point Mugu and MCAS Kaneohe Bay recently conducted an IWSR for Kaneohe's VMFAs 212 and 235.

This is the first time that the IWSR team has given a full systems review at a Marine Corps activity. The purpose was to train a nucleus of squadron maintenance technicians in operating, testing and trouble-shooting F-4Js.

In an IWSR, all areas that affect the squadron's ability to perform its mission are reviewed — supply, intermediate maintenance activities, calibration laboratory, ground support equipment, weapons center, aircrew and technician training.

These experts watch squadron personnel perform their tasks. If an error is noted, it is corrected. When classroom training is required, it's given. If parts are found to be a problem, they are identified and at the same time systems and correction procedures are recommended. When test equipment is missing, it is obtained and new maintenance procedures are developed and written if necessary.

The reviewing team experts pass their knowledge on to squadron maintenance technicians and, when the team is finished, the verification of its work is measured by conducting actual flight of the aircraft with full systems capabilities.

The team also provided a rough plan for MAG-24 to conduct its own IWSRs on helicopters.

The team is also scheduled to visit Marine Corps air stations in Japan.

Weather

Are weather predictions subjective or scientific conclusions?

A forecaster replies, "Ten of us work here. If six of us say that it will rain, then there is a 60 percent chance of rain."

At the Pacific Missile Test Center's Weather Center, Point Mugu, forecasting is done differently. Predictions are based on information gathered from satellites, computers and other weather stations around the world. Judgment is involved, but it is not guesswork.

AG1 Larry Ingram of the center explains, "Weather forecasting is somewhat subjective. You can come close, but it is hard to tell when a cloud is going to move over and the last drop of rain come out."

Ingram estimates his accuracy at better than 85 percent. His forecasts are used by pilots, squadrons, range operations and others.

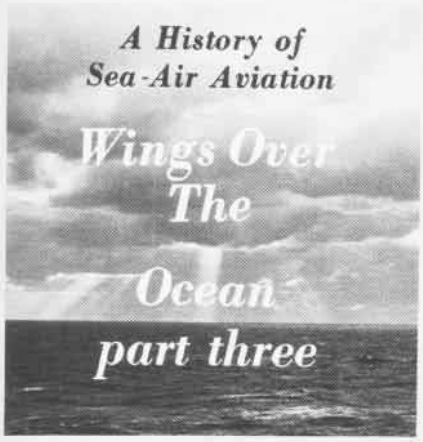
His main job is flight forecasting, which requires knowledge of conditions throughout the flight route and at the landing destination. Thunderstorms, turbulence, icing, precipitation, cloud ceiling and flight level winds and temperature are included.

Information comes into the weather center from a variety of sources. Laser-fax satellite receivers produce copies of photos taken by a stationary satellite over the equator. Computers provide feedback from weather balloons which are launched twice daily, and from rockets launched several times a week. About 100 charts and maps are received daily from Fleet Numerical Weather Central, Monterey, Calif., and the National Weather Service, Suitland, Md. Two teletypes provide constant weather data, in addition to a COMEDS circuit, which provides information at 1,200 words per minute for any location, within 30 seconds.

For Ingram, weather forecasting pervades his lifestyle. His wife, Donna, is also an AG1. She prepares forecasts for Naval Support Force, Antarctica.

Latham attempts to cross the English Channel in his Antoinette.

By John M. Lindley



Both in the United States and Europe other aviation pioneers would extend and refine the Wrights' ideas about flying. One outgrowth of this work that is of particular importance for sea-air aviation was the development of the hydroplane, or seaplane, between 1910 and 1912. A Frenchman, Henri Fabre, made the first hydroplane flight in March 1910. Using a float-plane powered by a 50-hp Gnome engine, Fabre took off, flew about a third of a mile, and alighted on the water at Martigues near Marseilles. Later that year, Fabre made seaplane flights up to two miles in length.

The honor of having built a practical seaplane belongs, however, to Glenn Curtiss of the United States. Born in Hammondsport, a small village in central New York situated on Lake Keuka, Glenn Curtiss got his business start as the owner of a bicycle shop. From bicycles his interest turned to motorcycles and, in 1902, he formed the G. H. Curtiss Manufacturing Company to make and sell motors, motorcycles and accessories. The following year Curtiss won his first national motorcycle championship. In 1907 he set a record by riding a motorcycle of his own design and construction 136.3 miles per hour, a speed faster than any man had ever gone.

Glenn Curtiss became involved in aviation when Thomas Scott Baldwin, who was a dirigible balloonist, ordered an engine from the Curtiss firm. The Curtiss engine performed so well that other balloonists sought Curtiss power plants. In 1905 Baldwin and Curtiss collaborated in building the first Army dirigible. But two years later Curtiss turned his attention from dirigibles to airplanes, after meeting Dr. Alexander Graham Bell and learning of his ideas about aviation.

On September 30, 1907, Bell, Curtiss, Bell's wife and three other aviation enthusiasts (one of whom was Lt. Thomas E. Selfridge, USA) formed the Aerial Experiment Association (AEA). The sole purpose of the AEA was to build a man-carrying, powered aircraft designed by Bell. Curtiss served as director of experiments for AEA. In the 18 months during which AEA existed (it was dissolved by mutual agreement on March 31, 1909), Curtiss helped to build several aircraft. The third of these machines, *June Bug*, won the *Scientific American* Trophy at its first public flight in the United States.

This prize was the first of three *Scientific American* Trophies which Curtiss would win. He also won the first Gordon Bennett Trophy at Rheims, France (1909), in competition with Europe's finest pilots, and *The World* (New York) prize of $10,000 for a flight from Albany to New York City in 2 hours and 51 minutes.

While Curtiss was working with AEA and also becoming a famous aviator, he fitted the *June Bug*, in 1908, with twin floats which were little more than covered canoes. The result was a seaplane which he named the *Loon*. Despite having mounted a more powerful engine on the *Loon*, Curtiss was unable to get it airborne.

Undeterred, Curtiss kept experimenting. For example, when he made his prize-winning flight from Albany to New York City in May 1910, Curtiss attached an inflated tube of rubberized cloth in a fore and aft direction along the landing gear. He also fixed a small hydrofoil on the end of the tube to prevent the plane from capsizing. Flotation tanks mounted on the wing tips also helped to balance the plane if it had to land on water. Curtiss never tested this crude flotation apparatus because he planned to use it only if he had to make an emergency landing in the Hudson River.

When the U.S. Navy encouraged Curtiss to continue experimenting with hydro-aeroplanes, he subsequently hit upon an efficient flotation system more by trial-and-error methods than by scientific theory. He tested all sorts of floats, secured in various places on his aircraft. Eventually he found that a large float, six feet wide, seven feet long, and up to ten inches thick with a flat bottom positioned in a downward angle of about ten degrees, worked satisfactorily. Curtiss kept tinkering with this configuration until he had modified it to a single float 12 feet long, 2 feet wide, 1 foot thick and weighing about 50 pounds, which was mounted under the center section of the plane. For balance he mounted tubular floats and paddles on the wing tips.

Glenn Curtiss first tested this single main (or sled profile) float successfully on San Diego Bay on February 1, 1911. A little over two weeks later, on the 17th, he convincingly demonstrated the adaptability of the airplane to naval uses when he taxied his tractor hydro-aeroplane across the bay to USS *Pennsylvania*. Using a boat crane, the ship's deck force hoisted Curtiss' plane aboard and then lowered it back into the water. Whereupon Curtiss returned to his base at North Island. A few days later the inventive Curtiss added a tricycle landing gear which could be raised or lowered with a lever by the pilot. The result was the first amphibian which Curtiss called the *Triad* because it could operate from land, from water and in the air.

In recognition of his pioneering development of the seaplane, Curtiss received the Robert J. Collier Trophy and the Aero Club of America Gold Medal in 1911. Sale of a hydro-aeroplane and a land-plane trainer to the U.S. Navy, along with a few other sales to aviation enthusiasts, soon enabled Curtiss to expand his enterprise. Within a few years he had sold similar machines to England, France, Italy, Germany, Russia and Japan.

Curtiss was not satisfied, however, with just having converted a landplane for use on the ocean. Using his trial-and-error technique once more, he began work on producing an airplane with wings, engine and propeller on a true boat hull. Together with Naval Constructor Holden C. Richardson, a naval officer and engineer, Curtiss found that he could improve the performance of a flat-bottomed boat hull by mounting blocks athwartships on the bottom of the hull to make a step. The effect of the step was dramatic. While taxiing the flying boat across the water, these blocks broke up the suction effect of the water on the after portion of the hull, thereby providing a much quicker getaway. This first Curtiss flying boat had a 26-foot hull that was three feet wide and three feet deep. A single hydroplane step ran the width of the flat bottom. The flying boat also had biplane wings and an 80-hp Curtiss Model O, V-8 water-cooled engine. Cylindrical floats on the wing tips gave additional balance to the aircraft.

Two years after he had developed the flying boat, Curtiss built the *America*, another flying boat, for wealthy aviation patron Lewis Rodman Wanamaker. When it was finished in 1914, the *America* was the first heavier-than-air craft designed for transAtlantic flight. While Curtiss had been busy with these projects, the Smithsonian Institution had awarded him the coveted Langley Medal for his development of the hydro-aeroplane.

Thus in a period of less than 10 years from the first powered flight at Kitty Hawk, Glenn Curtiss had initially adapted the landplane for practical use on the water and then had built the amphibian and the flying boat. Aviators now had practical aircraft for use on the land or on the sea. The next logical step in the development of sea-air aviation was the conquest of distance, particularly the Atlantic and Pacific Oceans. In the attempts to conquer over-ocean dis-

tance, modern descendants of Daedalus would try to shrink the globe by reducing the time necessary to travel between any two major cities, say New York and Paris. Some of these brave pilots would give up within hours after they had started because of some unexpected problem or unforeseen danger. Others would fall from the sky like Icarus, doomed by a failure in the oil line, or a faulty compass, or bad weather conditions — instead of the heat of the sun. Nevertheless, there were others who were careful, as well as brave, who would succeed, and although their destinations differed from that of Daedalus, their goals were very similar.

The Development of Transoceanic Flight

Once mankind had taken to the highways of the air, flying only over the land would not suffice as a means for conquering distance and for providing freedom of geographical mobility. Mankind would also have to learn to fly over the oceans. The development of sea-air aviation would not, however, come easily. The oceans of the world cover nearly three-quarters of the earth's surface. There are few landmarks by which aviators can navigate once they have left friendly shores behind. The weather over the seas is often stormy and uncertain. The surface of the oceans, even near land, provides few safe havens for an aircraft in trouble. Yet these obstacles had to be confronted and overcome if man was going to fulfill the ancient promise of flight.

The gradual development of transoceanic flight came through a series of historic flights over the Atlantic, Pacific and Polar Oceans. Yet an account of the important firsts in sea-air aviation is an inadequate chronicle if it fails to illuminate the process by which aviators learned to fly the oceans as easily and as safely as they learned to fly over land. Today the air traveler thinks no more about the problems of flying from New York to Paris than he thinks about the difficulties involved in jetting from New York to Los Angeles. Within a few hundred miles, the distances are nearly the same; however, one flight is over the Atlantic, the other is over the continental United States. Yet any reader of Lindbergh's account of his flight from San Diego to New York via St. Louis, prior to his nonstop solo flight from New York to Paris, is aware that he and the public weighed the difficulties involved in the two flights quite differently. In 1927, Lindbergh's San Diego to New York air time of 21 hours, 45 minutes set a record; yet his 33½-hour flight from New York to Paris rightly received public acclaim as the more difficult achievement.

Before beginning an account of the various historic flights over the oceans of the world, one additional point needs to be made about them. In 1919, C. G. Grey, the editor of the British aviation weekly *The Aeroplane*, assessed the impact of the dramatic first flight across the Atlantic by LCdr. Albert C. Read and his crew in the U.S. Navy flying boat NC-4. In his analysis, Mr. Grey remarked: "After the first non-stop journey we shall begin to introduce an illimitable series of minor classes in the competition. We shall have the 'first one-man flight,' then we shall have the 'first flight with one engine,' 'the first flight with two engines,' . . . 'the first flight with one passenger,' 'the first flight with ten passengers,' 'the first flight with a woman passenger,' and so forth and so on *ad infinitum.*"

Editor Grey's point was very simple. What really counted was that the NC-4 had been the first aircraft to cross the Atlantic and that it deserved full credit and honor for having been first. In making this point, Grey showed great prescience. An "illimitable series" of competitions did spring up after the flight of the NC-4 in a manner very similar to what he had predicted. Within the limits of space in this history it is neither possible nor productive to recount all the firsts in sea-air aviation. Nevertheless, Mr. Grey's warning is, in one sense, misleading. If aviators around the world had been content to let the achievement of an aviation first stand unchallenged in other classes of competition, then there would have been a much slower and more hesitant development of transoceanic flying. The very competition among the illimitable classes which Grey frowned upon was, in part, directly responsible for fostering the development of over-ocean flying. When sea-air aviation

Curtiss hydro-aeroplane

firsts became commonplace, the general public no longer had grounds for looking upon transoceanic flying as a dangerous sport fit only for a few gallant souls. Instead commercial aviation began to gain broad acceptance as a means of safe transportation for the great mass of persons who wanted to get quickly from one place to another, even when that meant flying over the ocean.

Sea-air aviation began with balloons. Two years after the Montgolfiers had invented the balloon, Jean Pierre Blanchard and a rich American physician, Dr. John Jeffries, crossed the English Channel from Dover to a forest near Calais on January 7, 1785. When Blanchard and Jeffries reached France, they had trouble with a too-rapid descent. These pioneer aeronauts had to throw out all their ballast and even part of their clothing to slow the descent of the balloon and to avoid crashing. Two Frenchmen, Pilâtre de Rozier and P. A. Romain, tried to duplicate the feat of Blanchard and Jeffries in the reverse direction on June 15, 1785. They used a hydrogen-filled gas bag fitted with a hot-air cylinder heated by a large burner beneath it, which they expected would help in controlling the altitude of their craft. Unfortunately the device worked for only a short time before it ignited the hydrogen, causing both men to fall to their deaths. They were the first aeronautical deaths.

Aeronauts were not deterred by the disaster which killed de Rozier and Romain. Jean Pierre Blanchard came to the United States in 1792 and made what is believed to have been the first air voyage in America using a hydrogen-filled balloon. Blanchard ascended, on January 9, 1793, from the yard of the old Walnut Street Prison in Philadelphia leaving behind a throng of people, including President George Washington, who had given Blanchard a letter of introduction. The flight lasted 46 minutes and Blanchard descended some 15 miles to the southeast, across the Delaware River near Woodbury, N.J.

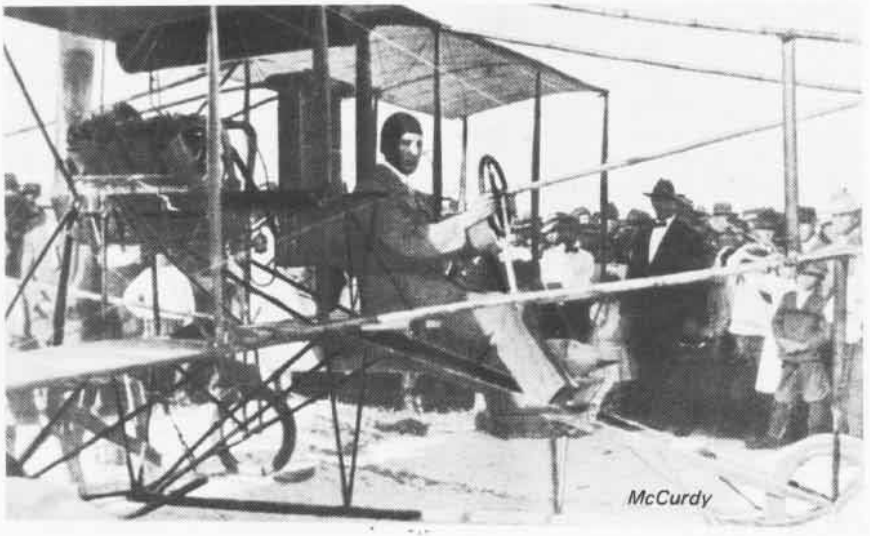
Balloonists soon began to make greater demands on their craft than crossing the English Channel or the Delaware River. By 1836 an English aeronaut named Charles Green predicted that crossing the Atlantic Ocean by balloon would be possible. Four years later, Green built a small model balloon which was powered by spring-driven propellers. This forerunner of the dirigible was further developed by a fellow aeronaut, Monck Mason, who in 1843 built a model balloon with a clockwork motor that propelled it at about five miles per hour. At the same time an American balloonist, John Wise, petitioned Congress for a grant of money to construct a balloon capable of making the crossing from the United States to Europe. Congress refused, however, to support Wise's scheme.

With the public growing more conscious of ballooning, the *New York Sun* published, on April 13, 1844, an account of what it thought was the first crossing of the Atlantic by air. The English aeronaut Monck Mason and seven others had made the trip in 75 hours in the "steering balloon" *Victoria* from Great Britain to Sullivan's Island, S.C. The *Sun* account waxed grandiloquent. "The great problem is at length solved. The air, as well as the earth and ocean, has been subdued by science and will become a common and convenient highway for mankind. The Atlantic has been crossed in a balloon and this, too, without difficulty, without any apparent danger, and with thorough control of the machine, and in the inconceivably short period of seventy-five hours from shore to shore."

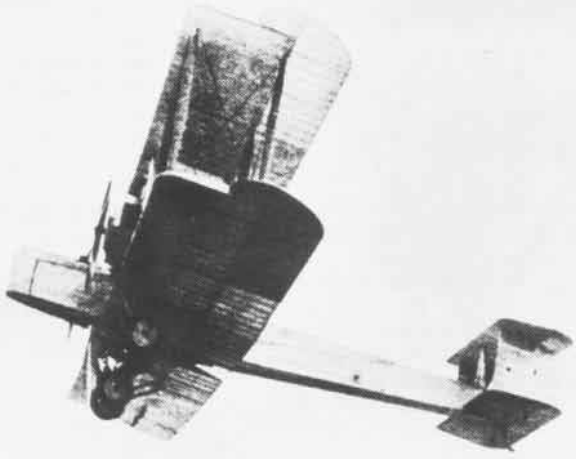
Alas, the *New York Sun* was a victim of Edgar Allan Poe's "Balloon Hoax." There had been no crossing by Mason and companions. Poe had merely written an account of what a transoceanic flight might have been like.

Although John Wise made a second request to Congress in 1851 (which was again rejected) and actually attempted a crossing in 1873, which ended in a crash in Connecticut, the Atlantic has never been crossed by free balloon. The first air crossings would not come until the twentieth century and they would be made by heavier-than-air craft rather than balloons. But before the U.S. Navy's NC-4 and the British aviators Alcock and Brown made those historic flights of 1919, early aviators, like early balloonists, first had to conquer the English Channel.

In 1909 the London *Daily Mail* offered a prize of £1,000 (about $5,000) for the first airplane flight across the Channel. Twice in 1909 Hubert Latham tried to make the crossing in an Antoinette monoplane. On July 19th he left France for England, but engine trouble forced him down into the sea seven miles short of his goal. A French torpedo boat rescued him. Undaunted, Latham tried again on July 27th. This time he got within a mile of the English coast before engine trouble again forced him into the water. Again he was rescued.


McCurdy

Even if Latham had succeeded in this second try, he would not have been first because another Frenchman, Louis Blériot, had already flown across the Channel on July 25th. Blé-



Vickers Vimy

riot had been building and flying aircraft for several years before he took off from Sangatte on the coast of France at 4 a.m. At the time, Blériot was suffering from a leg injury received in an earlier aircraft accident. Shortly after 5 a.m. the French pilot arrived over the English coast having made the crossing in an official time of 37 minutes. Blériot's plane was his #11 monoplane which had a 25½-foot wingspan and a 25-hp engine.

As if as a forecast of future difficulties in sea-air aviation, Blériot reported to his English hosts that within 10 minutes after having left France, he had lost sight of land and become uncertain as to where Dover was. Lacking a compass, Blériot let the plane take its own heading, which took him to Deal, a town far to the north of where he expected to land. One British authority, Sir Alan Cobham, commented that Blériot's flight "marked the end of our insular safety, and the beginning of the time when Britain must seek another form of defense besides its ships." Although he may have been aware of the consequences of his flight on England's insular safety, Blériot was probably more immediately gratified by the celebrity and wealth which he gained as a designer and builder of aircraft following the flight.

Bleriot

The next significant step in the development of over-ocean flying occurred in 1911 when John A. D. McCurdy, a former member of the Aeriel Experiment Association of Alexander Graham Bell and Glenn Curtiss, tried to fly from Key West, Fla., to Havana, Cuba, a distance of about 106 statute miles. McCurdy took off from Key West early on the morning of January 30 in a Curtiss biplane and headed for Cuba using a magnetic compass and visual checks on a series of four U.S. Navy destroyers which were stationed along the route of the proposed flight to guide him toward Havana. Flying at an altitude of from 700 to 1,500 feet and at speeds between 40 and 50 miles per hour, McCurdy had covered about 90 miles when the oil lubricating system in his engine malfunctioned forcing him to alight on the sea. The destroyer *Terry*, which was following McCurdy, immediately rescued the aviator and his plane.

Although he did not reach Havana, McCurdy did stay aloft for 2 hours and 11 minutes before he had to ditch his plane. Besides making the longest over-ocean flight to date and the first sea flight out of sight of land, McCurdy's effort also had its financial rewards — a $5,000 prize from a Havana newspaper and a $3,000 prize from the Havana city fathers. Prior to the flight, the *New York Times* had editorialized that McCurdy's proposed flight would "in no degree advance the art of aviation" and would "prove nothing except the aviator's willingness to risk his life unnecessarily," but the brave Canadian pilot proved the *Times* to be wrong. His flight not only showed the effectiveness of having naval vessels stationed along the aviator's proposed route to minimize the risks involved and to aid in navigation, but also demonstrated that airplanes could safely fly long distances out of sight of land. Thus McCurdy set the aerial stage for others who would come later to attempt a crossing of the Atlantic, and he showed the U.S. Navy how that crossing might possibly be done.

To be continued

NAVAL AVIATION NEWS letters

Navy Crosses

I must take exception with the news brief on Admiral Noel Gaylor on page 13 of the February 1977 issue of *Naval Aviation News*. Adm. Gaylor is *not* the first man to wear three Navy Crosses. In fact, he is not even the second. Marine Gunnery Sergeant William A. Lee won his third Navy Cross for actions in Nicaragua in 1932. Lieutenant General Lewis B. "Chesty" Puller won his third Navy Cross at Guadalcanal in 1942, as a lieutenant colonel. Puller won a total of *five* Navy Crosses plus an Army Distinguished Service Cross.

Jane Blakeney's book, *Heroes—U.S. Marine Corps 1861-1955*, lists the following dates for Lee's three Navy Crosses:

Lee, William A. 118214, 20 Mar. to 19 Aug. 1930; 11 Dec. to 20 Dec. 1930; 20 Sep. to 1 Oct. 1932.

I hope this clears things up.

C. F. Hamilton, Capt., USMC
NROTC Unit, VMI
Lexington, Va. 24450

Ed's Note: Capt. Hamilton is partly correct. For the record Puller received his Navy Crosses for actions from 16 Feb-19 Aug 1930; 20 Sep-1 Oct 1932; 24-25 Oct 1942; 26 Dec 1943-19 Jan 1944; and 5-10 Dec 1950. Gaylor's dates are 20 Feb 1942; 10 Mar 1942 and 7-8 May 1942. So, Adm. Gaylor's third Navy Cross pre-dates Gen. Puller's third one.

Correction

We COD pilots of VR-30 Det NorIs thoroughly enjoy your issues of *Naval Avation News*. However, we do have a slight correction to make to our commissioning date on page 15 of the February 1977 issue. It should read: Fleet Logistics Support Squadron Thirty Detachment North Island . . . August 1, 1976. (VR-30, NAS Alameda has been in existence quite awhile.)

K. V. McCloskey, Ltjg.
VR-30 Det NorIs
NAS North Island
San Diego, Calif. 92135

However

As usual, I enjoyed your February issue and it never lessens one's interest to find his own unit mentioned.

On page 17, in the article about the reserve carrier cruise, you state that VRC-1421 provided logistics support with its C-1A CODs. While not inaccurate, it would be more complete to say the VR-30 Det NorIs and VRC-1421 provided logistics support with VR-30's C-1A CODs.

As you no doubt know, the arrival in a squadron of *Naval Aviation News*' latest issue brightens the whole day. Keep it up.

A. J. Moore, Cdr.
C.O., VR-1421
NAS North Island
San Diego, Calif. 92135

Command

You are to be complimented on the fine article on General Roy Geiger, USMC, in the May issue of *Naval Aviation News*. As a good friend and strong supporter of the Marines and all they stand for, I hope you will not misunderstand even a small critical comment on the article.

It is true that Gen. Geiger assumed command of Tenth Army when General Buckner was killed, and so merited the distinction of being the only Marine officer to command an Army. However, Gen. Geiger served as Tenth Army Commander only from June 18, 1945, until June 23, 1945, when he was relieved by General Joseph W. Stilwell. The Ryukus operation ended officially on July 2, 1945. These facts hardly support your statement that Gen. Geiger directed the Tenth Army through final combat operations in the Pacific.

I served under them all and was only a short distance away from Gen. Buckner's observation post when he was killed by a stone fragment from the explosion of a Japanese dual purpose gun shell.

John Rice
24 Monroe Place
Brooklyn, N.Y. 11201

Barbers Point

I enjoyed your article "Pacific Crossroads," but would like to point out that you left out one squadron, the *Hawaiian Warriors* of VP-28, which should have been included in the history of Barbers Point. VP-28 was decommissioned in August 1969.

Let's not leave out the best.

"Dusty" Bruce
Navy Wife
NAS Patuxent River, Md. 20670

Help!

I am attempting to contact all hands who served aboard USS *West Virginia* (BB-48) on December 7, 1941; also aboard USS *Indianapolis* (CA-35) from 1942 to the spring of 1943; and aboard USS *Liscomb Bay* (CVE-56) from the spring of 1943 until she was torpedoed and sunk somewhere in the Gilbert Islands on November 24, 1943.

Wally Taylor
P. O. Box 597
Hanalei, Kauai
Hawaii 96714

Silver Dollar

By all rights the Marine Drill Instructor on page 36 of the March '77 *Naval Aviation News* owes a silver dollar to the Eager Ensign who is confused on who initiates and who returns the first salute. Some things never change.

Tom Frazier, Lt.
Navy Recruiting District
Montgomery, Ala. 36116

PatWing 10

The article on PatWing 10 in the February issue of *NANews* was an excellent piece. I enjoyed the article tremendously. That's the way history should be done!

Peter Kilduff
57 Sefton Drive
New Britain, Conn. 06053

Reunion

NROTC Unit, UC-Berkeley is trying to locate all graduates of the unit or the university to update its locator file. A 1978 reunion (52nd year) is being planned. Please contact YNC McCormick, NROTC Unit, 25 Callaghan Hall, UC-Berkeley, Berkeley, Calif. 94720 or call 415-642-3551.

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SQUADRON INSIGNIA

Recently approved reserve insignia include, clockwise from top, Naval Air Station 408 which augments NAS Cecil Field's working force; Marine Air Reserve Training Detachment, Dallas which trains units in its F-4Ns and CH-53s; Naval Station 1008, a support unit at NAS Atlanta, Ga.; and Massachusetts' Naval Air Station, South Weymouth which is a focal point for reserve training activities in the New England area.

Naval Aviation
NEWS