

NAVAL AVIATION

NEWS



47th Year of Publication

JANUARY 1966

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ONE CARRIER'S FORCE

'The particularly useful characteristics of attack carriers have been that they move in an assault configuration, prepared to take control of the air. Tactically, carriers have been able to concentrate as a single force to obtain desirable odds.'-Adm. David L. McDonald

NAVAL AVIATION NEWS

FORTY-SEVENTH YEAR OF PUBLICATION JANUARY 1966

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- Izetta Winter Robb** Managing Editor
- Ltjg. Richard Booth**
John D. Burlage, JO1 Associate Editors
- Captain Mack Wortman**
Harold Andrews Contributing Editors
- Janis C. Burns** Assistant Editor
- Russell Pace** Art Director

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■ COVERS

The salute to the New Year by its namesake, USS America (CVA-66), was provided by Lt. K. G. Riley who took the photograph. Above shot from deck of USS Franklin D. Roosevelt was taken by J. H. Perkins, AN.



NAVAL AVIATION NEWS

Twin-Turbine Seasprite Kaman Plans its Engineering

Kaman has announced a \$2.8 million program for the engineering of a twin-turbine version of the U. S. Navy's UH-2 *Seasprite* rescue/utility helicopter.

Since much of the mission of the *Seasprite* is performed over water or at night, the installation of a second turbine in the UH-2 will increase reliability and air-crew confidence. The high-speed UH-2 has complete electronic navigation equipment for all-weather operation.

Kaman has already flown a twin-turbine version of the *Seasprite*. With the second G. E. T-58 engine installed, the *Seasprite* will have improved reliability and payload performance under altitude and hot-day conditions.

Security Film is Ready CNO Urges Activities to Show It

In the belief that the pitfalls of security violations and compromises can be avoided if due care is taken, CNO is releasing for distribution a 20-minute, unclassified, color, animated movie entitled, "RPS Custodian."

The purpose of the movie is concerned with the security of registered publications. Its objective is to improve the efficiency of operation and security involved in the Registered Publications System (RPS). CNO urges the showing of the film.

The film is available at Training Aids Libraries through normal channels and from the various issuing offices of the RPS. This film is extremely important to all hands.



HEADING WEST are members of Air Transport Squadron 22 as they board a C-130E Hercules bound for their new home port at NAS Moffett Field, Calif. The transfer from NAS Norfolk is scheduled to be completed by January 15. A unit of Military Air Transport service, now called Military Airlift Command, VR-22 will supplement West Coast squadrons in providing increased logistic support of U. S. Forces in S. E. Asia and WestPac.



ON NOVEMBER 16, in his Pentagon offices, SecNav Paul H. Nitze presented the Legion of Merit to Astronaut/Aquanaut Commander Scott Carpenter for exceptionally meritorious service to Sealab II as the Senior Team Leader. Of the 45 days of oceanic exploration, Cdr. Carpenter spent 30 below the surface of the sea at 250 feet.

Improved Radar for Navy New System for Air Stations

The Federal Aviation Agency has awarded a \$2.6 million contract to Texas Instruments, Inc., of Dallas to buy 20 airport surveillance radar (ASR) systems.

Seventeen of the 20 ASR's will replace obsolete systems now in use at Navy and Marine air stations and will be paid for by the Navy. Two of the remaining systems will be paid for by Brazil and installed in that country. One is being paid for by the U. S. Army for its use.

Eight of the 17 radar systems will be installed at Navy and Marine air stations which are staffed by both Navy and FAA air traffic controllers and serve nearby civil airports as well as the military airfields. The systems will provide

radar coverage 60 miles in all directions from the airport terminal and up to 30,000 feet.

An improvement over the old type equipment is an updated Moving Target Indicator (MTI) system. MTI eliminates "clutter" on the radar display caused by stationary targets, leaving only the moving radar targets in which the controller is interested.

The 17 new radar systems will be installed at the following air stations: Miramar, Corpus Christi, El Toro, Quonset Point, Lemoore, Meridian, Moffett, Pensacola, Kingsville, Whidbey, Oceana, Cherry Point, Beaufort, Argentia, Patuxent River, Jacksonville and Glynco.



CAPTAIN Raymond R. Powell is congratulated by Lieutenant General Richard C. Mangrum, Assistant Commandant, USMC, after being awarded the Cunningham Trophy as the 1965 Marine Aviator of the Year.



NET RETRIEVES PRACTICE DUMMY New Rescue Net Devised Improved Stability in Pickups

An unusual rescue net has been developed by Kaman Aircraft Corporation for use in the UH-2 heli-

copter. During a recent research and development program, company engineers came up with a pilot-operated rescue boom and a rescue net with a ladle-shaped handle.

The handle provides stability and allows the pilot to tow the net directly toward a downed airman. The net has the capacity for handling two persons in the event a crewman is lowered into the water. Extensive operational tests have been successfully conducted by Navy crews under a variety of rescue conditions.

The device has been incorporated into the UH-2 production program and will be retrofitted into all delivered *Seasprite* aircraft.

Second COIN OV-10A Flies First One-Hour Flight Success

On November 30, at Columbus, Ohio, the first flight of North American's second OV-10A counter-insurgency aircraft was performed at the Columbus Division.

Test Pilot Ed Gillespie, who flew the maiden flight of the first OV-10A aircraft last July, piloted the second of the twin-engine turboprop aircraft on its first flight, which lasted approximately one hour. It was termed a complete success by a Columbus Division spokesman.

Since it first flew, the first OV-10A has logged nearly 30 flight hours proving low-speed characteristics.

VMFA-513 in Cherry Point Returns to Point of Origin

After an absence of some 21 years, Marine Fighter Attack Squadron 513 returned in November from Vietnam to the area of its origin. Lieutenant Colonel Guy M. Cloud, Commanding Officer, accepted the squadron colors in formal reorganization ceremonies November 10 at MCAS CHERRY POINT, N. C.

VMFA-513 was first commissioned in 1944 as a fighter squadron at MCAAS OAK GROVE, N. C., and went to MCAS MOJAVE, Calif., the end of that year.

After WW II, the squadron was at El Toro until the Korean Conflict. Deployed to the Far East, it



LCOL. CLOUD HANDS FLAG TO LAKE

flew the then new F4U-5N *Corsairs* and the F7F *Tigercats*. The squadron now flies the F-4B *Phantom II*.

VMFA-513, through the Korean conflict and more recently in Vietnam, from which it has returned, has had a distinguished career.

During the squadron's four months in Vietnam, VMFA-513 delivered 1,000 tons of bombs and 16,814 rockets against Viet Cong troops and positions. As a result, 1,072 structures were destroyed, 345 damaged, and there were 31 secondary explosions.

Members of VMFA-513 wear an insignia featuring the great horned owl which, according to Maj. E. W. Miller, X. O., can best be described as a veritable tiger, with eyes as keen as an eagle's, both day and night.

In the picture above, Lieutenant Colonel Cloud (C), C. O. of VMFA-513, passes the squadron colors to 1st Lt. Harry E. Lake (R), VMFA-513 adjutant, after accepting them from Colonel J. H. Finn (L), MAG-24 commander, during the squadron's reorganization ceremonies.

TPS Graduates Class 41 Seventeen Test Pilots Certified

The U. S. Naval Test Pilot School at Patuxent River graduated 17 aviators during ceremonies at the Naval Air Test Center on the 22nd of October.

The Outstanding Student Plaque of Class 41 was awarded to Lt. George W. Berg by Mr. B. D. Greeson, Vice President of the Patuxent River Council, Navy League. Principal speaker for the event was Rear Admiral D. F. Smith, Jr., Commander, Naval Air Test Center.



GRAMPAW PETTIBONE

Over the Side

While conducting night carrier qualifications, an A-4C made a normal approach and landing, engaging No. 3 cross-deck pendant. The pilot was instructed by priority to leave the hook down in order to pull the aircraft back by retracting the engaged pendant. This was to be done so as to position the aircraft aft of the ship's island structure for a "hot refueling." Although this pilot had been briefed on this procedure, he had not previously experienced it.

The aircraft was pulled aft approximately 100 feet after which the director gave the "hook up" signal, followed by "come ahead." The pilot complied with these signals and, with a power setting of 85-90% (estimated by witnesses), lunged forward, angling to left of center-line and continued forward over the side.

As power was not reduced after the nose wheel straightened out, the director gave an "emergency stop" signal, but to no avail. Examination of the flight deck revealed skid marks from the main gear for the last 42 feet of travel prior to the deck edge.



Grampaw Pettibone says:

What a waste! After demonstrating an above average ability to get off and on that deck safely, a newly qualified aviator and his aircraft were needlessly lost.

Although the accident board didn't list the ornery A-4C nose wheel as the direct cause, we've all seen how cantankerous it can be for the less experienced A-4 drivers. This lad had completed a total of 15 CV landings in the A-4C and had much to learn about the operation of the nose wheel after arrestment.

More than likely, the excessive power (80-90%), applied as a result of the nose wheel being eastered or cocked, regardless of the possibility of a broken throttle linkage, perpetrated the whole fiasco. Monday morning quarterbacking can't say a tiller bar



would have prevented this accident, but having seen so many of these young fellas cuss, stomp brakes, pump the stick, and cause waveoffs just trying to get the ornery beast clear of

the gear, I'll bet my last sawbuck that more frequent and judicious use of the nose tiller bar would save a lot of frayed nerves, ulcers, near misses and A-4's from straying into the catwalk and over the side.

A look at the past 18 months' record lends credence to the old adage, "It's not over until you're choked and chained." Twenty-two aircraft have unintentionally exceeded the bounds of our flight decks and dented appropriations to the tune of \$7,032,900.00. Breaking these 22 aircraft down, we find that six were being towed when they entered the catwalk, six rolled over the deck edge and ten were taxied over the side or into a catwalk. Grim results: Four fatalities and nine strikes.

When the Captain rings up 30 knots and turns that airfield into the wind, he rightfully expects action and the pace on deck has to be fast; but when is haste waste?

The pilot who doesn't know his aircraft and its peculiarities, including its present handicaps (weak brakes, sticky throttle, etc.), is waste! Checking brakes at the 180 doesn't cost a dime. Of course, it's not prudent to grow whiskers in the gear and cause a buddy to go around, but it'll cost less time than plucking catwalks, un-



tangling crunches or scanning the wake for the ace who barrels across the foul line without brakes.

"Aircraft Handlers" thru the college of hard knocks, trips to pri-fly, and much sweat compiled those aircraft handling instructions, but they might well be in the archives when the handlers ignore this bible or are permitted to. Each time a director elects the easier/faster way to move, direct, or spot an aircraft, he is leading his entourage down the old primrose path to waste. Each aspect of tending the flock on the bird farm is, or darn well should be, covered in these instructions and executed that way! If they ain't right, change em; don't ignore em!

No Gas—No Fly

An SAR duty pilot was requested to launch early one afternoon on a local flight to look for a tow banner that was supposed to have been dropped just outside the field.

The pilot with two lookouts manned the UH-19F after a quick pre-flight and prepared for the search hop. The pilot had turned the aircraft up in the morning. After a normal start and mag check, he went through what he described as an "abbreviated check-off" list.

The lookout, who was flying up front in the left seat, pointed to the alt fuel warning light during turn-up, but the pilot assured him it was OK.

After receiving taxi and takeoff clearance the pilot made a routine lift-off and climbed to approximately 100 feet to search for the tow banner. He made a couple of circles, at about 55 knots, over the area where the tow banner was supposed to be, but as he turned down wind on the second turn, the engine coughed, caught, then quit.

The pilot immediately dropped the collective and attempted to turn into the wind. During the initial turn, he broadcast a quick "MAYDAY." As the aircraft approached tree top level, a flare was initiated to stop the sink rate, then full collective was brought in as the helo fell through the flare. Touch-down was relatively smooth with very little forward speed and the rotors stopped almost immediately. After securing the mixture and mags the pilot yelled for the crewmen to get out, then followed them to the ground.



Grampaw Pettibone says:

Well, singe my old gray whiskers! This sad tale is older than I am, but it appears some pilots just refuse to learn from others' mistakes.

You can call it over-confidence, complacency, preoccupation, distraction or anything else you want to, but to me it's downright FOOLISH to fly any airplane without makin' sure the fuel selector is where it ought to be.

Many of Uncle Sam's bucks were doled out to install fuel warning lights on the birds we operate but guess some people don't really believe 'em.

Like a Rock

A student aviator launched at 1815 in his F-9 on a scheduled night instrument flight in CAVU weather. Departure went well and he was cleared to flight level (FL) 330. Arriving at the approach fix after an uneventful round robin, he was cleared by approach control to descend to FL 180 for a TACAN penetration. The aircraft's TACAN DME was intermittent at this time, and the pilot failed to notify approach control of this discrepancy.

Nevertheless, he commenced the penetration at 27 to 28 miles vice 32. All was "normal," except for being high "in close," owing to the late initiation of the descent. The power was reduced to 70% in the descent to increase vertical speed and further reduced to idle passing 4,000 feet and eight miles

from the runway. Speed was slowed to 210 knots, at which time the gear and flaps were extended. Approaching 1,100 feet, he was cleared to 850 feet and, while passing 900 feet, he applied power but the descent continued. The pilot was concentrating on resetting the radio altimeter when GCA alerted him to check his altitude.

In rapid order, a surprised aviator acknowledged GCA's challenge, added 100% power, raised the nose, and struck the ground a severe blow.

The aircraft sheared all the landing gear on initial impact, slid along the ground for 100 yards, shedding parts, and became airborne. The pilot activated the face curtain as the aircraft passed over a 40-foot-high, 72,000-volt electric power line.

The Martin-Baker functioned beautifully and deposited a bruised and shook student about 50-60 feet from the flaming wreckage and clear of the power lines.



Grampaw Pettibone says:

That wasn't a close shave, that was a narrow escape.

There aren't many left who have tried this type of penetration and lived to tell it. The lad can thank his lucky stars for an alert GCA controller who jolted him sufficiently—and in time—to adjust his attitude before impact. The ole Martin-Baker really salvaged what might otherwise have been a completely ruined day.

EARLY PILOTS JOIN AVIATION HALL OF FAME

ON DECEMBER 16, 1965, in Dayton, Ohio, three pioneer pilots closely connected with Naval Aviation were among those honored by election to the National Aviation Hall of Fame at ceremonies attended by leaders in aviation.

The three who received the accolade, two of them posthumously, were Eugene Burton Ely (deceased), the first pilot to land an airplane on a ship and take off



EUGENE B. ELY ON 'PENNSYLVANIA'

from it; Lieutenant Colonel Alfred A. Cunningham, USMC (deceased), who was Naval Aviator No. 5 and Marine Corps Aviator No. 1; and Rear Admiral Albert C. Read, USN (Ret.), who commanded the first airplane to complete a crossing of the Atlantic Ocean by air.

ELY MADE his great contribution to the future of carrier aviation as a civilian when, on January 18, 1911, he landed a Curtiss biplane on a specially built platform aboard the armored cruiser, USS *Pennsylvania*, at anchor in San Francisco Bay. After spending about an hour on board, he flew back to his base ashore, duplicating an earlier successful takeoff he had made from USS *Birmingham*, November 1910.

These were not only the significant highlights in the history of aviation, particularly Naval Aviation, but also the highlights of a brief, but brilliant, aviation career.



RADM. ALBERT C. READ, USN (RET.)

In a little more than a year and a half between early 1910, when he learned to fly, and October 19, 1911, when he crashed to his death at the age of 25, Ely had established a permanent reputation as an expert aviator.

Over 21 years later, on February 16, 1933, President Herbert Hoover presented to Colonel Nathan D. Ely, USA, the Distinguished Flying Cross as a posthumous award to his son, for the young Ely's extraordinary achievement in "flying aboard the USS *Pennsylvania* in 1911 assisted by retarding gear of primitive design," a feat which "called attention for the first time to the possibilities of landing airplanes on shipboard."

LIEUTENANT Colonel Alfred A. Cunningham, USMC, who died in 1939 at the age of 57, after a trail-blazing career of more than a quarter of a century, is recognized as the "Father of Marine Corps Aviation." His first attempts to fly were made at his own expense while he was attached to the Marine Corps Barracks, Philadelphia Navy Yard in 1911. These efforts brought him the opportunity to train in aviation and become the first Marine Corps pilot and the Navy's fifth.

He reported on May 22, 1912, to Annapolis, Md., for instruction at the aviation camp the Navy had

set up. In late July, he transferred to the Burgess Plant, Marblehead, Mass., for further training and while there, he soloed. Detailed to duty involving flying on March 5, 1913—the first officer of the Marine Corps to be so ordered—he was temporarily detached from aviation in September of the same year. He returned in 1915 and, after refresher training at Pensacola, was designated a Navy Air Pilot on September 17, 1915. He later went to the Army Aviation School at San Diego, Calif., for a course in piloting landplanes.

In the first month after U. S. entrance into WW I, Cunningham took command of the Marine Aeronautic Company, Advance Base Force, organized at the Philadelphia Navy Yard. In October



LCOL. ALFRED A. CUNNINGHAM, USMC

1917, an element of that company, designated First Aeronautic Squadron, trained under Cunningham at the Army field at Mineola, N. Y., and later at Lake Charles, La.

On April 15, 1918, he transferred to Miami where he organized and took command of the First Marine Aviation Force, composed of four squadrons. He commanded that unit in France from July 30 to December 20, 1918, and for that service received the Navy Cross.

LCol. Cunningham continued to serve in the Marine Corps in assignments of increasing responsibilities until retirement in 1935.

A destroyer, the USS *Alfred A. Cunningham*, DD-752, is named in his honor, and annually "the Marine Aviator of the Year" is honored by being presented the Alfred A. Cunningham Trophy.

REAR ADMIRAL Albert C. Read had a long and distinguished career in Naval Aviation. From 1915 until his retirement in 1946, he was associated with Naval aeronautics, but his greatest feat occurred when he commanded the NC-4 and completed the first crossing of the Atlantic by air May 27, 1919, at Lisbon, Portugal.

The landing was the goal of a flight that began May 8 when three NC flying boats took off from NAS ROCKAWAY, N. Y., on the first leg of an attempt to forge an air link with the continent of Europe.

The three aircraft, designated Seaplane Division One under the command of Commander John H. Towers, were headed for Trepassey Bay, Newfoundland, where the over-water flight would begin. The performance of the NC-4 at the start was anything but promising. Low oil pressure cut out one engine, a broken connecting rod cut out another and brought the plane down off Cape Cod, 80 miles at sea. Repairs and bad weather



PRESIDENT HOOVER GIVES COL. N. D. ELY HIS SON'S POSTHUMOUS AWARD

held the plane at NAS CHATHAM, Mass., for six days, but Read brought his plane into Trepassey Bay in time to join the others, held up by bad weather.

When a clearing next day permitted takeoff for the Azores, NC-4, lame duck of the first leg, reversed her form and was first in the air. The NC-4 was the only one to reach the intended destination by air and the only one to carry on to the European mainland at Lisbon. Although the elapsed time from Rockaway was a little over 19 days, and from Trepassey Bay almost 11, the Atlantic had been conquered and the air routes between Europe and North America had been opened.

Admiral Read opened his aviation career in the U. S. Navy

July 8, 1915, when he began flight training at Pensacola. He was designated a Naval Aviator (later being assigned No. 24, now the lowest number carried by a living Naval Aviator) on March 7, 1916.

During WW I, he commanded training stations first at Bay Shore, N. Y., and later at Miami, a station which also supported patrol operations over coastal shipping lanes.

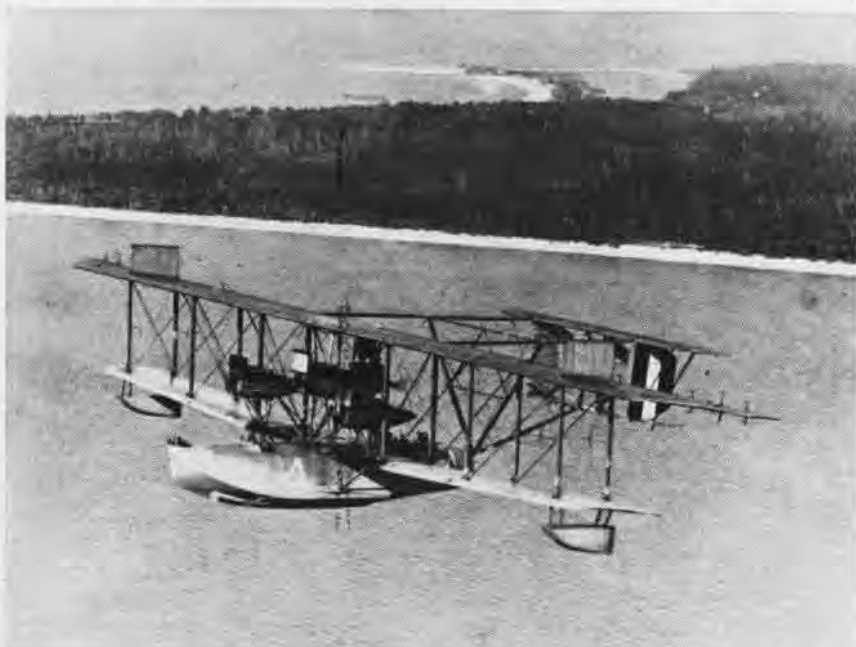
After the successful flight of the NC-4 which brought him the Distinguished Service Medal, Adm. Read's career involved assignments of increasing responsibility.

His name will long be associated with Naval Aviation training in WW II, for in April 1940, he became Commandant of NAS PENSACOLA where he was in charge of the flight training program during one of its periods of rapid expansion. Later, in October 1942, he became Chief of Air Technical Training with headquarters in Chicago.

In January 1944, he was designated Commander Fleet Air Norfolk and served in that capacity throughout the rest of WW II.

Rear Admiral Read holds in addition to the Distinguished Service Medal, the Legion of Merit for his leadership of Commander Fleet Air Norfolk; the NC-4 Medal, commemorating the NC-4 flight; the Cuban Pacification Medal, the Victory Medals (WW I and WW II); the American Defense Service Medal and the American Campaign Medal.

OTHER pioneers installed were Captain Eddie Rickenbacker, A. Roy Knabenshue, Thomas E. Selfridge, Charles E. Taylor and Alexander Graham Bell. Those chosen were in aviation before 1920.



NC-4, COMMANDED BY LCDR. READ, MADE FIRST TRANS-ATLANTIC FLIGHT

THE BRITISH WAY WITH TEST PILOTS



PROBABLY the best presentation of what we could expect as students of the Empire Test Pilots' School was given by its Commandant, Group Captain R. A. Watts, RAF, at a meeting of Fixed-Wing Course 24 and Rotary-Wing Course 3:

"The Empire Test Pilots' School was formed in 1943 with the task of training specially selected operationally experienced pilots for flight test duties in the aircraft research and development establishments of the United Kingdom.

"The task is the same today and the fundamental characteristics of the test pilot are the same as they ever were, but the responsibilities he has to accept are immeasurably greater. They demand a much more extensive knowledge of aerodynamics, thermodynamics, electronics, and systems engineering and a higher standard of flying ability and airmanship. The range of flight test duties in the Ministry of Aviation is from prototype testing through aerodynamic research, service release standards, weapons and radio development, structural test, engine and systems development.

"Quantitative flight test work is vital but it is the qualitative assessment by the test pilot which mat-

DURING its 22 years of existence, the Empire Test Pilots' School (ETPS) in Farnborough, England, 32 miles southwest of London, has had more than 35 U.S. Naval Aviators among its students. The school is designed to provide military and civilian pilots qualified to test-fly prototype aircraft for the British Commonwealth, its Ministry of Aviation, its allies and friends. Student pilots have come to the school from Holland, Belgium, Norway, France, Greece, China, Poland, Italy, India, Siam, and Sweden, in addition to America. The course lasts about 10 months and covers a wide range of subjects: Mathematics, aerodynamics, thermodynamics, aircraft performance, stability and control, test flying, report writing, lectures, student projects. Visits to aircraft and accessory firms are a part of the training students receive. They are graded on their technical progress, flying ability, and personal qualities. One recent Navy pilot ordered to the school was Lt. William Davies, 31-year-old graduate of Villanova University who has served with Attack Squadron Ninety-Four and with a number of other aviation commands since he entered the Navy in 1958. Before his assignment to ETPS, Lt. Davies was a production test pilot attached to the BuWeps Representative's Office, McDonnell Aircraft Corp., St. Louis. At NANews' request, he took time off from his training to write about his experiences at the Empire school and to make arrangements for photographs to accompany his article. Lt. Davies received orders to report to the Naval Air Test Center, Patuxent River, Md., after graduation from the Empire Test Pilots' School.

By Lt. William Davies, USN

ters most in the ultimate analysis. Sound qualitative assessments can only be made on the basis of wide experience of aircraft types.

"That is why the school aircraft range from gliders to four turbo-prop transports and from light piston engine trainers, communications and STOL aircraft to twin-jet light bombers and transonic jet fighters. . . .

"As the diversification of the student test pilot's experience is one important aspect of the school's



AUTHOR (L) AND LT. NICK TEMPLE

philosophy, another important and valuable contribution to the school is the inclusion of students from all the major armed forces of the western world. The cross-fertilization of experience, ideas, operating procedures, and techniques is stimulating to staff and students and challenging to the individual. This is absorbing work.

"The aim is that, on graduation, the student is prepared to face the challenge of the specialized work to which he will be assigned and that he is capable, after a period of probation, to make a useful contribution to a flight test team.

"To be a good test pilot one requires many special qualities; among these are determination and the ability to absorb and impart knowledge. The syllabus of instruction at the school is designed to develop these qualities which the student must basically possess. The process involves a lot of honest hard work."

Work was not long in coming.

The first three weeks were an intensive general view. With it completed, ground school settled into its routine of an hour and a quarter lecture a day. Subjects covered the fundamentals of airplane



ROYAL AIRCRAFT ESTABLISHMENT, FARNBOROUGH. EMPIRE TEST PILOTS' SCHOOL IS IN BACKGROUND AT LEFT

performance, stability, and control, with details emphasized as necessary to bring out points related to test flying.

In addition to theory, a test flying tutor introduced by lecture each test flying exercise performed. Guest lecturers from research establishments also presented the latest developments in specialized fields. This ground instruction was backed by regular field trips to research and manufacturing facilities to obtain valuable background on how airplanes come into being.

Since I arrived at ETPS directly from duty as a production test pilot who had considerable association with a large manufacturer of military aircraft (McDonnell), the trips made me feel right at home. Non-corrupting free lunches were cautiously enjoyed; they provided time for informal discussion with the manufacturers' test pilots, who sometimes draw different pictures of the

aircraft than do the sales brochures.

With lectures and visits providing vital support, one may carry on, suitably enlightened to the primary job: Flying.

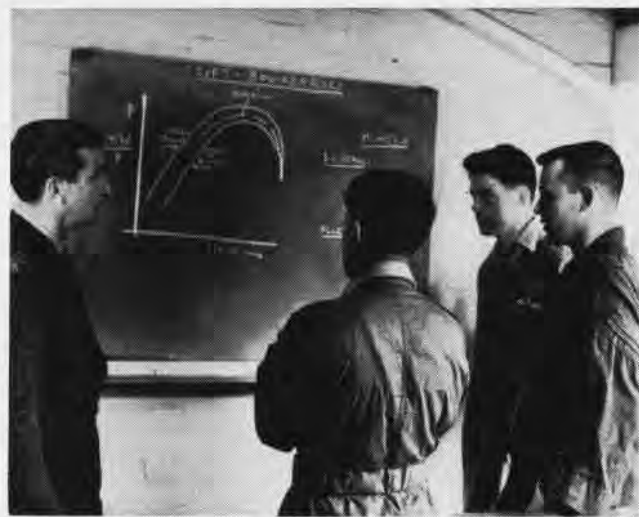
The course in this phase was divided into "syndicates" of about four students apiece, headed by an experienced test pilot as tutor. Prior to each of the 20-odd exercises flown on the course, the tutor supplemented the previous lecture with more details and time-saving hints on personal techniques to use on the test.

Freshly charged with wisdom and experience, the student then finds a quiet corner and plans the exercise. The tangible result of this effort is a stack of kneeboard cards, covered with notes on techniques and many blank spaces to fill in. The first card, for example, is inevitably a check list of things to take—like a stopwatch, spring balance, tape recorder, copilot, and

the rest of the kneeboard cards.

The flying is done in an enviably diverse collection of machines, each with a personality of its own. The aircraft vary from the "strap-on" to the "walk-through" type. The *Viscount* is used for such tests as takeoffs and landings, asymmetric handling, lateral and directional stability and control, and autopilot assessment. It is also a useful transport for course visits. The *Hunter* is used for most high performance tests, including spins, longitudinal maneuverability, and handling at high Mach.

Cussedness has been bred out of modern aircraft by the critical test pilots who came before us, and honesty is something induced artificially now with stability and control augmentation. Even so, ETPS is more than ready to offer actual demonstrations of those textbook problems of pitch-up and compressibility, overbalanced rudders and



A PRE-FLIGHT CHECK COMMENCES ON A VISCOUNT EMPIRE 'SYNDICATE' IS BRIEFED FOR UPCOMING TEST

fin stall, and poor lateral and directional stability—to keep students alert to the fact that the “good old days” can repeat themselves.

This is, however, only one reason a variety of aircraft is flown. Pilots are by nature very conservative. They will judge any controls with which they are familiar as the best, so new aircraft, with new concepts of control, will be rated against an old standard and very little improvement results. Flying many different aircraft is the best way to cure this habit; it also provides for an unbiased view.

For those of us with no previous experience in British aircraft, the diversification was doubly effective. Many unnoticed details of flight operations suddenly became glaringly apparent because of differences in construction: Hand brakes, millibar altimeter settings, manifold pressure in PSI, and jet RPM in actual revolutions rather than per cent

provided an interesting background to the conversion phase.

Nav aids are fitted in only a few of the aircraft, but this presents no problem. England's habitually poor weather has produced a very capable radar air traffic control system which provides all the surveillance or control services desired. Dual radio installations provide the necessary reliability.

A small language barrier also has to be surmounted, as “rollers” and “overshoots” replace “touch-and-go's” and “waveoffs.” There's one controller still trying to figure out “pigeons to home plate”.

Flying England's personable aircraft was pleasantly awe-inspiring. Each flight disclosed new and previously unnoticed subtleties and there has been no sign they will run out. For example, the *Meteor* recently reached voting age and is a WW II veteran. With gear down and flaps up, its directional stability is zero to

somewhat negative—which means it has a slight preference for flying backwards.

Preventing this phenomenon takes some concentration, especially on one engine when the pilot must supply most of the directional righting moment. “Leg twitch” may limit the plane to one GCA.

Landing techniques used for some of the aircraft leave this mirror-trained aviator with sweaty palms and weak knees, but since *Canberras* and *Viscounts* don't have to land on carriers their low-speed rate of roll is allowed to suffer for the sake of better performance elsewhere. A decelerating approach is used to keep speed and roll rate adequate as long as possible, but it always creates visions of sinking meatballs and ramp strikes for me.

Conversion flying lasted three weeks, after which test flying started with a handling report on stalls. Then came a few quick performance reports, such as ceiling climb, optimum rate of climb, and pressure error corrections.

A report on handling at high Mach was done in the *Canberra*, which proved to have some very interesting effects at its limiting Mach number. *Phantom* Flyers who no longer believe in compressibility may relive the past and quite adequately simulate a high Mach *Canberra* by removing the tires from their cars and taking on a cobblestone road at 60 mph.

A much-needed two-week leave completed, we came back to start



ETPS 'FAMILY PORTRAIT': PLANES RANGE FROM CHIPMUNK TO VISCOUNT



NO. 24 FIXED WING AND NO. 3 ROTARY WING COURSE IN GROUND SCHOOL. AUTHOR IS SEATED CENTER LEFT

the second term with spinning tests. After two dual trips in the *Hunter* 7, which included inverted spins, I was turned loose on the *Hunter* 6 for report-writing purposes.

Looking at a spin as something other than a maneuver entered only by accident—or by primary students—proved to be somewhat challenging. The first two turns in the *Hunter* were very oscillatory,

with the nose pitching through 60 degrees, sudden lurching yaws, and neck-snapping rolls. There were times I was convinced the airplane had eight degrees of freedom instead of the standard six. Describing the action into a tape recorder can be compared to boxing Cassius Clay and doing a radio commentary on the fight at the same time.

While it was hard enough to see

what was going on, getting the description out before the scene changed made life even more difficult. A trace recorder relieved some of the load by recording "G," stick force, height, and speed, but the essence of the spin, attitude, and angular rates of change were left to the pilot to record.

Unlike drinking double martinis, practice at spinning built up a tol-



GLIDER FLYING IS ENCOURAGED FOR RECREATION



VISCOUNT IS FOR TAKEOFF, LANDING, OTHER TESTS



TAKEOFF DIRECTOR SYSTEM TRIED

erance. My original limit of seven spins per flight went up to 12, which was, happily, the fuel limit of the airplane. (My martini limit remains lower, but analysis has shown some relationship between the rates of spins per flight and the number of martinis per day.)

The exercises continued into systems assessments, takeoffs and landings, fuel consumption, longitudinal maneuverability, and lateral and directional stability. The reports grew longer in direct proportion to their titles. These were all aimed at illuminating separate aspects of an aircraft, leading toward the final report of the course.

That report, the preview, is a quick look at the essential characteristics of an aircraft to discover any serious difficulties before full production starts.

For our exercise, aircraft we never flew before were collected. Five flying hours and about four weeks were allowed for the test. Aircraft assignments were mainly of the type with which each of us was most familiar, and which we could expect to test in the future.

The joys of flying in no way compare to the varied emotions involved in report writing. Many times, after spending a few exasperating hours unproductively staring at blank pages, I had a longing for the "good old days" of flight testing. In those less complicated times, the test pilot was also the aerodynamicist, engineer, manager, and board of directors, and if the plane didn't roll fast enough he put on bigger ailerons. Who needed reports?

That happy state of affairs unfortunately ended when planes started pushing Mach two point. Now we must explain to the ground-bound multitudes of designers, managers, and bureaucrats—in appropriately insistent terms—that their airplanes do or don't work as advertised. Doing this with responsibility requires a thorough knowledge of the specifications, understanding of the aerodynamic principles involved, accurate observations, coherent writing, and the courage to stand behind your work.

All these things must be expressed in that report; it may be your only form of contact with many persons.

Examinations receive less attention at ETPS than in our schools. Two two-hour essay-type papers are written at the end of each term, one covering ground school theory and the other test flying practice. The questions vary from jet range performance calculations to "Explain how you would conduct spin tests on a new swept-wing fighter."

"Carefully" is not answer enough; the aspects of model dropping, instrumentation, pilot practice, techniques, and special aircraft equipment come to mind.

Since it's usually associated with examinations, let me mention the nasty word "pressure" as it relates

to ETPS. It's more associated with air than emotions at the school, even though the work is sometimes long and unusually hard.

The school's motto, "Learn to Test—Test to Learn," is quite descriptive of the course and its philosophy. The use of English instead of the traditional Latin in the school's crest is symbolic of a desire for clarity. "Learn to Test" signifies the school's mission, and "Test to Learn" represents both the future employment of its graduates and the never-ending education required of test pilots.

Difficulty is inevitable in work as exacting and technical as test flying, but the rewards are in proportion to the effort. So, to those individuals inclined toward this sort of hard work, let me highly recommend ETPS. The variety of aircraft is unmatched, the flying is as far from routine as possible, and you're on your own—both in the air and on the ground.

There is no standardization program, and an extremely professional approach to flying results from close adherence to personal standards of good airmanship.

If somewhat limited experience allows for speculation, an opinion of the future could be: The continuing expansion of aircraft performance at both ends of the speed scale should provide many years of challenge for test pilots.



GUEST NIGHT FOR USAF RESEARCH PILOTS' SCHOOL WAS HELD AT ETPS

MIDWAY HOME FROM VIETNAM CONFLICT

USS MIDWAY returned to home port, Alameda, Calif., after 8½ months of extensive combat operations off Vietnam, operations that won her and her embarked air wing, CVW-2, the second Navy Unit Commendation given a carrier for Vietnam action. USS *Coral Sea* received the first.

The 62,000-ton *Midway* moored at Alameda as thousands of relatives and friends welcomed the 3,800 officers and enlisted men she brought home from WestPac.

Each of them is now eligible to wear the Navy Unit Commendation Ribbon. Secretary of the Navy Paul H. Nitze signed the citation which read, in part:

"For exceptionally meritorious service from 16 April to 4 November 1965 while participating in combat operations in Southeast Asia in support of United States national policy. Carrying out over



USS MIDWAY leaves Subic Bay, R.P., en route home to Alameda, Calif., after 8½ months of combat operations off Vietnam. The ship steamed 80,000 miles on WestPac cruise.



CAPTAIN James M. O'Brien, *Midway's* Commanding Officer during combat operations.

11,900 combat sorties during this period of intensive operations. USS *Midway* and her embarked air wing conducted a sustained series of devastating air strikes against enemy military targets and logistics installations in North and South Vietnam. Additionally, in airborne encounters, *Midway*-based aircraft succeeded in destroying the first three MIG interceptors to be credited to U. S. forces in Southeast Asia"

Midway aircraft dropped more than 16 million pounds of ordnance on Communist targets during the period. The ship lost 17 aircraft over enemy territory; 14 flyers were killed in action, three are missing, nine were rescued.



SEASPRITE helicopter sets down on *Midway* flight deck during flight operations. Helo was plane guard for CVW-2 planes sent on strikes.



MIDWAY F-8 Crusader is launched from the CV. Its squadron VF-111, and other CVW-2 units, flew more than 11,900 combat sorties.

WITH THE MARINES IN VIETNAM

Talking Helicopters

The Vietnamese population in the Da Nang area is as used to hearing the whirr of helicopters overhead as Americans are to the thunder of trucks on highways.

Except when the helicopter talks.

The chattering copter is a UH-1E attached to Marine Observation Squadron Two at the Marble Mountain Air Facility, two miles east of Da Nang. Armed only with a sound system which can be heard a mile, the helicopter has two functions.

Newspapers and radios are practically non-existent in the hamlets surrounding the vast air-ground complex, so the sound helicopter is used as a modern town crier. Interpreters or, as often as possible, Vietnamese district chieftains are flown over the villages to transmit progress reports of the Republic's fight against the VC and ask the farmers to report any VC who might contact them.

Whenever Republic of Vietnam soldiers or U. S. Marines plan to search a town, the airborne P. A. system precedes them, informing the civilians of the operation and directing them to nearby havens where they are fed, housed and protected until the search ends. This eliminates the VC tactic of driving unarmed civilians in front of them when they are trying to escape a clearing patrol.

The "Hollering Huey" as the Marines have dubbed it, has been flying with outstanding results. The farmers like it. The VC don't. For example, the copter was rotoring over some paddies south of Da Nang, explaining that VC rice tax collectors were known to be somewhere in the area and would be apprehended when found "because the VC are cowardly rice thieves."

From hills around the paddies, the tax collectors gave away the fact they had already arrived. They made the fatal mistake of trying to quiet "Hollering Huey" with lead, not realizing that the copter had jet support directly overhead.



LT. J. M. MATTICE and Vietnamese interpreter talk to hamlets near Marine base.

Close Call

On the side of Cpl. Dan P. Sheehan's helicopter is the chalked exclamation, "WOW," with a ragged bullet hole forming the "O." That's how Sheehan feels about the slug which would have hit him had he been in his usual position in the helicopter.

Sheehan is crew chief of a troop-carrying UH-34D with Marine Medium Helicopter Squadron 363, stationed 180 miles south of Da Nang. He was on an emergency supply hop when the hole-in-the-side occurred.

"We got the hurry-up at nine in the morning," said Capt. Darrell T. Bergan, pilot for the mission. "A patrol six miles away was in heavy contact with the VC and needed ammunition. So we loaded up and took off immediately."

When YZ-80, designation number of the copter, arrived in the fighting zone, it was waved off by the ground troops because of the intensity of the firing. The "bird" scooted back for help.

It returned flanked by two U. S. Army armed Huey helicopters. Hit by withering rifle fire from the ground as well as from rockets and machine guns from above, the VC broke off the fight. Cpl. Sheehan's YZ-80 dropped into a field and the crew chief left his seat to help unload the ammunition.

That's when a single rifle round plowed through the side of the copter, inches above the vacated canvas chair.

Though both Capt. Bergan and Col. Sheehan knew the plane was hit, neither had time for an inspection. The Hueys were tearing up the field's flanks because of the renewed fighting. As soon as YZ-80 was empty, Capt. Bergan lifted off, but he didn't stay airborne long. The copter had hardly cleared the treetops when the ground force radioed, asking for another landing to put the wounded aboard.

"We were lucky," Cpl. Sheehan said of the second trip into the landing zone. The Marines got out with the wounded and no additional bullet holes.

When they returned to base, the crew took a second look at the hit. Cpl. Sheehan yelped a single word. Now, it's chalked on the side of the helicopter—WOW.

In the Dark

There was a dim glow in the mobile van near the *Phantom* jets of MAG-11 at Da Nang. A briefing officer finished his explanation: "You have your mission, takeoff time and frequencies. Are there any questions? O. K., gentlemen."

The flight leader of the two-jet strike took over, explaining what he expected from each RIO while they were in the air. And, finally, both pilots huddled with their RIO's, exchanging the signals which would weld the two into a single, supersonic air unit.

The two crews waited. Their first briefing had been at 2330. They were scheduled to lift off at exactly 30 minutes after midnight.

They would bomb a Viet Cong rally point. Yet the *Phantom* crews would never see their target and the VC would not see them.

At takeoff time, the two jets whined down the runway, their jet blasts like fiery fingers behind them. They were swallowed up by the darkness. From then on, the planes, figuratively speaking, were flown by other Marines.

A radar control center knew precisely where the target was located, and monitors watched on scopes as the two dots (the F-4's) approached it. The proper altitude, speed and approach were continually radioed to the jet crews. When electronics had wedded planes to target, the monitors said, in effect, "Let her rip."

Each of the *Phantoms* dropped their 500-pound bombs. Though the two teams couldn't know it, their radar seeing-eye guides had led them to a middle-of-the-night Viet Cong build-up.

Hitting the Jackpot

The Elevens rolled into the Seven one day, the Viet Cong faded, the Elevens made their point and the VC crapped out.

The aerial dice game occurred when four *Skyhawks* from Marine Attack Squadron 311 were called to wipe out an enemy encampment 35 miles southeast of Chu Lai. The VC had built along the contours of a river and their base resembled a "7" from the air.

Maj. Speed Shea rolled in first. His bomb mushroomed through the structures. Then the other '311-ers attacked. First Lt. Brendan M. Greely nosed his jet into a dive, boresighted for a specific building. Behind him, the *Skyhawks* of 1st Lt. Roderic S. Daley and Capt. Donald M. Stone duplicated the diving throw.

One structure after another—all of them hastily emptied of VC after the first hit—was powdered during the Marines' 14 passes. Then with their bombs expended, the pilots decided to break the bank. They strafed with 20mm cannon fire whatever was left standing. But boiling smoke and flames made their headings impossible, so they banked around and again raked

the camp with cannon fire.

Later, the "house man" an American observer in a helicopter counted results. The *Skyhawks* had taken the pot—35 VC buildings.

Super Service

When a service station attendant rotates the tires on your car, it is a simple job. But for the mechanics of Headquarters and Maintenance Squadron 11, Da Nang, it takes two men an hour to change a tire.

The tires are on the *Phantom*

In one emergency re-supply mission, 10 helicopters from '361 lifted 13 tons of artillery shells to a besieged outpost ten miles south of Da Nang. The outpost was shelling a VC ambush when it ran out of rounds. So—the call went out to the Marines.

The word came while they were eating evening chow. In a matter of minutes, the pilots were ready.

The shells were delivered and the ten heli-crews started back to Da Nang and their interrupted



ON A SUNNY MORNING in late November, squadrons of Vietnamese Army troops flew in U. S. Marine helicopters to launch a vertical assault against VC southwest of Da Nang.

II's of Marine Fighter Attack Squadrons. A change after three landings is the rule, owing to the heavy bomb loads which increase the rubber wear on landings.

The operation requires dismantling the wheel assembly, which weighs about 100 pounds, then removing the tire, another 55.

During an average week, H&MS-11 men disassemble and reassemble 100 aircraft tires.

Chow Can Wait

When the word "Scramble" is shouted to a group of pilots, one pictures them climbing into sleek, supersonic jets and throttling into combat. Yell the word into a mess-hall and you have nothing but confusion—unless it happens to be the chow hall of HMM-361.

meal. They didn't make it. Instead Republic of Vietnam officials asked them to evacuate some civilians caught on the outpost.

The HMM-361 birds carried them out, then turned back for home and the by-now cold food. Still, they didn't get back. While in the air, the copter contingent was radioed a medical evacuation mission.

Food is always a remote thought when there's a call for help, so not many of the crews attempted to recap their meals when they finally finished, at 1930.

Besides, some of them had been lucky, like Maj. Henry Steadman, squadron X. O. He shrugged and said, "For me, the call couldn't have been better timed. I'd just finished my last bite."



SEA KING helicopters are launched from the ASW carrier USS Wasp in the Atlantic. The helicopters are bound for an early-morning ASW practice mission. At right, an S-2E Tracker moves up for a catapult launch. Helos double as plane guards for fixed-wing planes.

ASW: A MISSION FOR DEDICATED MEN

By Frank J. Delear
Sikorsky Aircraft Company

THE HATCH at the rear of the low-ceilinged ready room swings open and the men file in. They enter quietly and hang their bright-hued helmets and other gear on hooks along the bulkheads. Then they slump into airline-type seats set three abreast on either side of a passageway dividing the narrow room. Leaning back, they zip open the collars of their rumpled orange flight suits and wait. It is almost midnight.

These men are pilots and sonar-men assigned to Helicopter Anti-submarine Squadron 11 and their business is antisubmarine warfare. More than six hours before they sat in the same room, somewhat less disheveled and infinitely less tired. During those hours they underwent a 35-minute pre-flight briefing, sat 40 minutes on the flight deck in their Sikorsky SH-3A Sea King helicopters completing further prepara-

tions for a practice mission, and flew four hours (half the time hovering only 40 feet above the sea in the black of night). During the long flight, they made numerous sonar dips, flew intricate search patterns and kept in constant radio contact with fixed-wing aircraft and destroyers also engaged in the exercise as well as with the nerve center of the whole operation—the Combat Information Center in the carrier USS Wasp.

Now, as the men wait for a half-hour debriefing, their minds dwell on showers and sacktime soon to come. Overhead, on the flight deck, several twin-engined Grumman S-2E Trackers are returning to the carrier. The rumble and thump of their cable-arrested landings are clearly audible in the ready room.

HS-11's busy history dates from June 1957 and includes Caribbean, Mediterranean, and eastern Atlantic cruises—as well as many nearer home. The news highlight, probably, was the squadron's recovery of Astronauts McDivitt and White last June 7. The pickup was made by Commander Clarence O. Fiske, former commanding officer, and Lt. Douglas C. Ballard; James J. Cummings, AX2, operated the rescue hoist.

HS-11, with 16 SH-3A's and about 265 personnel, is one of nine such squadrons operating with ASW carrier groups (formerly called Hunter-Killer, or HUK, task groups) in the Atlantic and Pacific Oceans. Two other ASW helicopter squadrons serve as replacement air groups: HS-1 at Key West and HS-10 at Ream Field, San Diego. The RAG squadrons train the new pilots in ASW missions, so the pilots

reach the ASW carrier forces ready to go to work.

NAS QUONSET POINT is HS-11's home base, while *Wasp's* home port is Boston. Other ASW carriers operate out of Quonset Point and Norfolk, on the East Coast, and from San Diego and Long Beach, on the West Coast. Included are such ships as *Essex*, *Lake Champlain*, *Intrepid*, *Randolph*, *Hornet*, *Kearsarge*, *Bennington*, and *Yorktown*. Each carrier spearheads an ASW group that includes aircraft, destroyers, submarines, and even the support of long-range land-based patrol planes.

An ASW group's capability, thus, is three-dimensional: air, surface, and sub-surface.

Each element of the ASW group has its own strength and limitations, so teamwork is the key to the group's ultimate effectiveness. An airplane, with its long range and multiple sensors, may be the first to detect a sub. The helicopters, with their ability to hover and lower their sonar gear, will converge on the scene to make contact with the sub, track it, and, if possible, attack it with torpedoes. If time and distance permit, two or three destroyers will reach the area to conduct their own attack.

Vital to the team is *Wasp's* CIC, a three-room unit amidships just below the flight deck. In the eerie gloom of the main CIC room, radar operators sit hunched over their scopes while red and green lights blink and illuminated wall charts cast a dim glow. "Our job here," says Commander Gordon R. Otis, a veteran of 23 years as a Naval Aviator, "is to keep in touch with all the surface and air units through radio and radar, collecting and evaluating information and sending it to the bridge and to the admiral's staff."

HS-11's 46 pilots and two ground officers range in age from young men in their early 20's to veterans like Commander Norman H. McLaughlin, the squadron's 41-year-old commanding officer, and Commander James R. Williford, III, 40.

The newer pilots, like Lts. James H. (Ned) Davis, Alex Daunis, Roger McPherson, and Tom Calkin, and Ens. Jack O'Brien, all have a youthful exuberance. Like their

colleagues, however, they are sobered by the responsibilities of their job. They know that in an age of missile-firing submarines ASW is one of the nation's first lines of defense, and one of its most difficult. They realize, too, that day and night, in fair weather and foul, they are entrusted with some expensive property—the aircraft and the lives of their crewmen.

Davis, a soft-spoken economics major from Lehigh University, '63, puts it this way: "We get a lot more responsibility a lot earlier than in civilian life. We take a million dollars in aircraft and equipment, plus two sonarman . . . and hover 40 feet off the water at night when you can't see your hand in front of your face." Davis, however, found no civilian jobs that appealed to him, likes his new work, and hopes to make the Navy a career.

A typical sonarman is 22-year-old Michael E. Malloy, a lanky six-footer from Connecticut. Malloy is an AX3 (AC) which translates into the lengthy "aviation antisubmarine warfare technician third class, and designated aircrewman." The Navy gave him 36 weeks of intensive training, at a cost of some \$35,000, and although he has been with HS-11 since early 1964 he's still learning, both on the job and through special courses.

"We learn the basic techniques in school," Malloy says, "but it isn't until after we get into the Fleet that we develop our skills and get the most out of our sets." On a mission, the first and second sonarman split the sonar duty, about an



HOVERING 40 feet above the water, SH-3A dips sonar dome to listen for submarine.

hour on and an hour off. The off-duty man handles radio messages.

HS-11's executive officer, Commander Williford, a 1949 graduate of Georgia Tech, set a world helicopter distance record last March by flying an SH-3A from San Diego to Mayport, Florida. "In addition to its primary search and attack mission," he says, "a HUK force can also provide escort for attack carriers and for convoys. The helicopters give defense in depth by getting out far ahead of the destroyers and the carrier. We try to keep a sub in the center of the helicopters until we, or the destroyers, or the S-2E's can make an attack."

Recently, so-called hot-fuel missions have added an hour to the SH-3A's normal mission duration of four hours. "During these missions," says Commander McLaughlin, "we return to the carrier after three hours, refuel using a pressurized system, which takes only a couple of minutes compared to 15 or 20 by gravity fueling, and then take off for another two hours. We don't even shut down the engines. One advantage is that if you make a contact late in a flight you can stay with it and not have to launch another aircraft."



INSIDE the Sea King, sonarman Michael E. Malloy operates set on four-hour mission.

One of HS-11's most seasoned ASW men is the squadron's operations officer, LCdr. Walter H. (Bud) Brown, whose ASW experience includes flying patrol planes, *Trackers*, and helicopters, as well as CIC duty.

"Much of the time we practice only segments of a complete ASW exercise," he explains. "We may



DUANE R. POMEROY, AX2, works on helo sonar rig; SH-3A uses cable to dip sonar.

know where the sub is and do just the finishing segment—the attack. Or we may do a screening operation, or a night operation. Every so often, though, we take on a full ASW problem, one that requires round-the-clock work for 36 hours or even as long as 96 hours.”

An ASW exercise, from takeoff to landing, is a precise procedure with little left to chance. The helo pilots and sonarmen, for example, are first briefed by an ASW officer on the tactical situation, the kinds of subs to look for, the other units of the carrier participating, and their own positions in relation to the other aircraft and surface units. If a sub has been detected, its location (or datum) is given to the crews. Next comes a weather forecast for both the search area and their shore-based alternate (or “Bingo”) landing field.

A man from Antisubmarine Environmental Prediction System (ASWEPS) brings word of vital concern to the mission. “He talks weather, too,” says LCdr. Brown, “but he’s considering the water conditions, temperatures, the depths of the various temperature layers beneath the surface. From these he predicts sonar ranges and effectiveness. Earlier, destroyers and helicopters lowered special thermometers into the water to obtain bathythermograph, or BT, readings. The sound-deflecting thermal layer may be as deep as 500 feet, or it may be much less. Knowledge of sub-surface conditions is vital because

sonar signals are deflected by the temperature changes and subs can hide under the layers.”

With takeoff time approaching, the mission’s flight leader takes over, giving headings, altitudes, formation positions, and mission stations. He covers safety, pre-flight checks, emergency procedures, job assignments. His aim is an orderly flight without confusion—no matter what happens.

As the helicopters take off they are under control of the carrier’s air officer. They are soon switched, however, to control of the CIC whose radio and radar provide central coordination of the mission. From then on, it’s a fox and hounds chase as the ASW force uses all its skills to detect, track, and kill. The kill is made with low power practice depth charges which cause no damage but which the sub crew can hear. They send up an air bubble, or a flare at night, to acknowledge their demise.

At night, or under instrument flight conditions, a helicopter’s sonar dips are fully automatic. The pilot simply pushes a button and his automatic flight control system takes over, carrying him through an automatic transition in speed and altitude and into an automatic hover at 40 feet off the water.

“Night dipping,” Brown says, “is the ultimate in our field—putting the aircraft on automatic and hovering with no horizon.”

What if the weather socks in zero-zero? Again, planning prevents confusion. “The aircraft climb to assigned altitudes with 500 feet vertical separation,” says LCdr. Brown. “They use Tactical Air Navigation (TACAN), which gives them the bearing and distance to the carrier, and fly a holding pattern about five miles from the ship. Then they are brought in one by one by Carrier Controlled Approach (CCA), which is similar to an airport’s ground controlled approach, or GCA.”

How well the bad weather system works is recalled by Commander Frank Ford, *Wasp’s* assistant air officer. “Earlier this year we were searching for survivors of an Air Force radar picket plane who ditched at sea,” he says. “It was so foggy you could hear the helicop-

ters hovering off the fantail but you couldn’t see them. They came in so low they picked up the ship’s wake and followed it in. But we got them aboard. We even brought in a land-based Coast Guard HH-52A that needed fuel.”

Aircraft need maintenance, and good maintenance demands experienced men. Lack of such experience, chiefly because of a rapid turnover of personnel, gives HS-11 a king-sized headache. “We have a 75 per cent turnover each year in our maintenance force,” says Lt. William H. Carder, assistant squadron maintenance officer. “It’s not like it used to be when we kept men eight or ten years.”

The complaint is echoed by HS-11’s maintenance chief, Harry A. King. A towering, straight-talking man, he says: “We could keep 85 per cent aircraft availability without strain if we had the people we need. But most of our people are new—and we’re short-handed as well as short-talented. It’s a problem all through the services.”

WHAT OF THE future prospects and needs of ASW? Aboard *Wasp* one finds a high authority in Rear Admiral William N. Leonard, since June 1965 commander of Carrier Division 14 and before that in high positions with the U. S. Atlantic Fleet and NATO.

Rear Admiral Leonard, a much-decorated fighter pilot in WW II and, in 1948, commander of the Navy’s first jet aircraft squadron, sees ASW as “not merely a single problem, but a whole world of military interplay.”

“We are organized,” he says, “to contend with the opposition in many different ways—which is characteristic of any good military program. There is a role in this for aircraft off the beach, there is a role for patrol aircraft, a role for carrier-based aircraft, for surface ships, and even for our own friendly subs—first in helping us train and even in hunting enemy subs.

“For each role there are special weapons. The carrier’s ability to base helicopters is one of its great strategic strengths. The helicopter, with the magic of zero ground speed, is a very useful implement which we exploit to its fullest. The



CARRIER DIVISION commander, Rear Admiral William N. Leonard, discusses operations with staff officer Captain S. A. Sparks.



FROM CIC, Commander Gordon R. Otis relays information to Car-Div commander. Cdr. Otis is a 23-year veteran in Naval Aviation.

helicopter used to be a very fragile, fair-weather, daylight vehicle. But now, in its second generation, it's an all-weather aircraft asking no special treatment from anyone. Today we feel we can use helicopters under conditions that would stop all other aircraft—and we've done it."

Rear Admiral Leonard sees the helicopter squadron as "a highly respected member" of the CVS group. "We operate helicopters like interceptors," he says. "They are directed to the target area by the carrier and other surface ships. Once on station, they operate in a third dimension and tell us what

they hear under the water."

Combining this capability with all the other weapons and sensors available to the HUK force provides a broad capability, he believes. "To repeat," he says, "we have many different ways to get at the problem."

The admiral predicts a growing usefulness for the helicopter in ASW. "We see the helicopter today as such an able vehicle that we know it can do more than it is doing," he says. "We hope to see the day when it will carry additional sensors and become even more valuable. Now we have only the capability of dipping sonar; we would

like to see it carry other sensors."

Another veteran Naval Aviator, Captain Gordon E. Hartley, skipper of *Wasp*, believes the improvements in recent years in helicopters and fixed-wing aircraft have caused "marked increases in our ASW capability." But he describes the missile-carrying nuclear sub as "a real tough nut to crack—a problem not yet licked."

ASW's future is a favorite subject among HS-11's pilots during bull sessions in *Wasp's* wardroom. There, over a hot chocolate or coffee—in the rare moments when they're not being briefed, de-briefed, taking courses, or tracking submarines—they kick the topic around.

"Why not," asks Lt. Charles C. Oyler, squadron personnel officer, "design the helicopter specifically to land on water in calm seas and dip its sonar? That would avoid some of the night hovering, would use less fuel, and would be a lot easier on the nerves."

"And why not," adds another, "make the cable longer to get the sonar dome through thermal layers?"

In the view of those close to ASW technology, the answers to these and other questions will come as ASW capabilities continue to grow. Meanwhile, the men of HS-11 and other ASW squadrons, both rotary and fixed-wing, continue the practice they hope will make them perfect, which, in wartime, would demand nothing less.

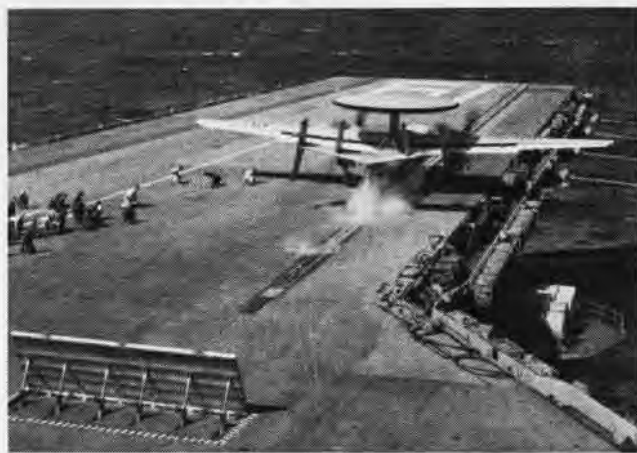


TEAMWORK is the key to efficiency in the Navy's ASW efforts. Some members of that team include helicopter, destroyer, fixed-wing aircraft, and the aircraft carrier.

AT SEA WITH THE CARRIERS



PHOTOGRAPHER E. N. Bauman, AN, takes motion pictures of an F-4C launched from Bon Homme Richard on strike over Vietnam.



USING the new "nose-tow" launching system, an E-2A Hawkeye is catapulted off USS Ranger. The Pacific carrier was having sea trials.

PACIFIC FLEET

BON HOMME RICHARD (CVA-31)

Captain William R. McClendon, *Bonnie Dick's* C.O., was on the CVA's flight deck to direct his ship's 75,000th accident-free catapult launch. Bound for an air strike on North Vietnam military targets, LCdr. Robert E. Weedon, VF-194, piloted the F-8 *Crusader* that made the launch.

With all their pilots designated Centurions, VF-194 personnel also reported the squadron has compiled well over 1,600 combat flight hours.

The flight deck was cleared. Fog foam fire stations were manned. Ltjg. Richard I. Millson was about to attempt an emergency landing in his little A-4 *Skyhawk*—and he was coming in almost literally on a wing and a prayer.

The VA-192 pilot was on a bombing run over North Vietnam when he felt a sharp jolt and heard an explosion in his plane's left wing. He couldn't see the damage, but a severe fuel loss and his flight leader's report of a hole in the A-4's wing told him he could be in for serious trouble.

He called off his bombing run

and made for the open sea. Refueling from another *Skyhawk*, he decided to try to get back to the carrier. He did; landing was normal.

Then Ltjg. Millson got out of his plane to survey the damage. "I don't believe it," he said.

A third of the *Skyhawk's* left wing was torn beyond recognition.

Ltjg. David B. Gibson, Jr., VA-196, made *Bonnie Dick's* 120,000th arrested landing in his A-1H *Skyraider*, and chalked up his 100th arrestment at the same time.

RANGER (CVA-61)

Ranger steamed out of the Hunter's Point Naval Shipyard, San Francisco, to complete sea trials shortly before she headed for San Diego to be the backdrop of the change of command ceremony that saw Vice Admiral Thomas F. Connolly relieve retiring Vice Admiral Paul D. Stroop as ComNavAirPac.

Some 40 drills were conducted in a 24-hour period. Two Grumman-built E-2A *Hawkeyes* were also launched, using the new "nose-tow" system for the first time in CVA-61.

Ranger entered the shipyard May 14. Work accomplished included overhaul and rebuilding of the CVA's main and auxiliary boilers

and installations of several service and maintenance systems, including automated supply accounting gear.

CONSTELLATION (CVA-64)

"Deadloads" were fired off *Constellation's* flight deck as the carrier's catapults were tested for the first time since CVA-64 began an eight-month, \$14-million overhaul at the Puget Sound Naval Shipyard, Bremerton, Wash. *Connie* was expected to leave the yard in early December for San Diego.

BENNINGTON (CVS-20)

Rear Admiral Eli T. Reich relieved Rear Admiral Robert A. Macpherson as ComASWGru 5 in ceremonies aboard *Bennington* while the CVS was in Long Beach. Admiral Macpherson's new assignment is as Chief of Naval Air Advanced Training; Admiral Reich came from Washington.

Bennington's new skipper, Captain Wiley B. Howell, made the ceremony, in which he assumed command of the carrier, a reunion of three Americans who were officers in the British Air Force during WW II.

One of the Americans is Captain



THE PACIFIC sun glints off a formation of A-4 Skyhawks as they fly over USS Coral Sea. Picture was taken before the carrier returned to home port, Alameda, after a lengthy WestPac cruise that included months of operations off Vietnam and hundreds of combat air strikes.

Howell; the other two are Colonel William Edwards, USAF, and Charles A. Cook. They sailed together from Nova Scotia to England in 1941 and were commissioned in the RAF. Cook and Colonel Edwards were assigned to the same squadron, while Captain Howell served with a British Coastal Command unit.

HORNET (CVS-12)

With squadrons of CVSG-57 embarked and ships of ASWGru One steaming in company, *Hornet* reported for duty with the Seventh Fleet. The carrier is skippered by Captain William M. Pardee and serves as flagship for Rear Admiral Evan P. Aurand, commander of the ASW group.

During operations in the South China Sea that followed, *Hornet's*

90,000th landing was made by Cdr. R. J. Harlow and Ltjg. J. E. Gray in a VS-35 s-2 *Tracker*.

KEARSARGE (CVS-33)

Recipient of the first-quarter FY 1966 Outstanding Bluejacket Award presented aboard *Kearsarge* was Donald R. Miller, IC3.

INDEPENDENCE (CVA-62)

Five pilots and a bombardier/navigator received medals aboard *Independence* for what was termed the first successful destruction of an active mobile surface-to-air missile site in North Vietnam.

The presentations, made by Rear Admiral James R. Reedy, included a Silver Star to Commander Harry B. Southworth, VA-72 X.O. The

admiral also presented Distinguished Flying Crosses to LCdr. John B. Davis, Lt. Richard L. Kofarnus, and Ltjg. Carl F. Moslener, all of VA-72; and LCdr. Cecil E. Garber and Ltjg. Kenneth E. Jones, VA-75.

A device for re-transmitting Fleet broadcasts from a carrier's communications equipment to other ships in company has been built by an *Independence* sailor.

Charles Broadwater, RM1, created the instrument to help destroyers receive a Fleet broadcast from a carrier, decreasing the "small boys'" reception requirements from hundreds of miles to hundreds of yards and freeing limited equipment.

He also said the device is designed to enhance the "readability" of broadcasts; if all ships in company are unable to copy a teletype signal, his creation will relay it.



SURROUNDED by a rain cloud's haze, ships of ASW Group 1 steam in company en route to assignment to the Seventh Fleet. USS Hornet is surrounded by the destroyers McCain, Epperson, Nicholas, Fletcher, DesDiv 251; O'Brien, Eversole, Benner, Cunningham, DesDiv 323.



MIDWAY pilot Ltjg. Michael Weakley gets a close look at strike damage to his A-4.

MIDWAY (CVA-41)

What was called the first U. S. Navy helicopter combat rescue in North Vietnam has earned two HC-1 aviators and a crewman the Distinguished Flying Cross.

Medals were presented aboard *Midway* by Rear Admiral Marshall W. White, ComCarDiv 7, to LCdr. Wesley W. Wetzel, OinC of the squadron's Alpha Detachment; Ltjg. Kent M. Vandervelde, and Charles V. Bowman, AD1. They flew through heavy ground fire to rescue a downed Navy pilot.

LCdr. Dee Roberge logged VA-23's 1,000th flight hour in an A-4E *Skyhawk* as the squadron passed that mark in 23 flying days to better its previous 862-hour record.

ORISKANY (CVA-34)

An HC-1 helicopter crew rescued Marine Capt. Ross Chaimson from the South China Sea after he ejected from his damaged F-8E *Crusader*. The pilot was returning from a night mission over Vietnam when his F-8 crashed onto *Oriskany's* flight deck during a landing attempt.

Capt. Chaimson got the jet airborne again, but had to eject. Minutes after he dropped into the water, he was hoisted aboard the helo. Its crew included Lt. E. T. Saintsing, pilot; Ltjg. J. F. Blakely, copilot; J. C. Smith, ADJ3; and J. L. Hug, AMS3.

Lt. Larry Spear, VA-163, is a



ANOTHER sturdy little *Skyhawk* brought Ltjg. R. I. Millson (L) back to *Bon Homme Richard* despite severe wing damage. Also plugging the hole is Ltjg. Michael Allum.

man who believes in keeping fast company, which is a bit hard to do when you're aboard an aircraft carrier hundreds of miles at sea.

But maybe not. In the lieutenant's case, the "fast company" is his A-4E *Skyhawk*. In it, he became a quadruple Centurion, flew more than 100 combat missions, and earned five Air Medals and a Navy Commendation Medal. All his landings were made on *Oriskany*.

PRINCETON (LPH-5)

Princeton crew members were notified by Commander Amphibious Squadron Three that their ship won the Amphibious Assault Award and was authorized to wear the green "E". It was the second such award for the LPH.

TICONDEROGA (CVA-14)

More than 124 aviators and aircrewmen from *Tico's* embarked CVW-5 completed a course in jungle warfare survival while the carrier was moored at Subic Bay, R. P.

ATLANTIC FLEET

F. D. ROOSEVELT (CVA-42)

Ltjg. Terry O. Warner piloted a VAW-12 F-1B *Tracer* for *FDR's* 147,000th arrested landing. Earlier, No. 146,000 was made by LCdr. R. A. Hendricks, VA-172, in an A-4.

AMERICA (CVA-66)

Records, especially in Naval Aviation, are fleeting things that seem to be made to be contested. So, when *America* crewmen reported they were "cautiously" claiming a record for night carqual landings, the caution was understandable.

Specifically, the record claim was for a "mixed bag" of jet aircraft landings. "Other carriers may have completed more night landings," a report from the ship said, "but *America's* 102 were all made by 'heavy' type aircraft." They included F-8 *Crusaders*, RA-5C *Vigilantes*, and F-4 *Phantoms*.

America has also received an unofficial title that may be as hard to top as the complicated night landing record claim: "Electronics Tender of the Year."

At least, that must be the opinion of crewmen of the destroyer escort USS *Hartley*. The "small boy" was undergoing a yard period at the Norfolk Naval Shipyard, Portsmouth, Va.; a heavy workload and lack of time forced yard personnel to forego overhaul and repair of the DE's communications equipment. *Hartley's* two ET's were left swamped.

Seven experienced *America* ET's learned of the escort's difficulties and volunteered to lend a hand. Working on liberty and chow time, they were able to complete a large percentage of the needed work. The volunteers included ET1's P. J.



ASW CARRIER *Intrepid* returns to home port, Norfolk, after completing a six-month, \$10 million overhaul at the shipyard in New York.



HER CREW at flight deck parade, *USS Randolph* leaves port for ASW operations in the Atlantic. Carrier recently turned 21 years old.

Wardle and M. J. Kaster; ET2's K. M. Schleihert, W. E. Hon, and D. F. Gouine; and ET3's R. J. Kasow and N. J. Wainio.

FORRESTAL (CVA-59)

A West Coast pilot was credited with an East Coast carrier's x000th landing when Ltjg. J. D. Bradford, VA-112, brought his aircraft aboard *Forrestal* in the Med to make it No. 111,000 for the CVA.

Normally based at NAS LEMOORE, Calif., and usually a unit of CVW-11 aboard *USS Kitty Hawk*, VA-112 is making a Med deployment with CVW-8.

Commander R. G. Thomson, VF-74, made his 600th carrier landing when he brought his F-4 *Phantom* aboard *Forrestal* during NATO exercises off the coast of Greece.

Commander O. H. Oberg relieved Commander P. E. Spencer as commander of CVW-3 aboard *Forrestal*.

LEXINGTON (CVS-16)

Lex's 136,000th arrested landing was made by a T-28 *Trojan*. Student pilot Ens. E. G. Marakovity, Jr., was at the controls.

Contributions by *Lex* crew members to the Pensacola area's Combined Federal Campaign totaled \$7,135.35, or 104% of her goal.

Lt. Frank M. Graham, VAW-33, made *Lexington's* 137,000th landing in an EA-1E *Skyraider*.

RANDOLPH (CVS-15)

Rear Admiral Edward C. Outlaw,

formerly ComCarDiv 1 in the Pacific, became ComCar Div 16 during a ceremony aboard *Randolph*. Relieving Rear Admiral William A. Stuart, Admiral Outlaw also became Commander Hunter-Killer Forces, Atlantic Fleet, and Com-ASWGru *Alfa*.

Admiral Stuart was bound for duty in the office of the Chief of Naval Personnel.

She's just turned 21 years old, but she's got a brood of nine.

And some specialists say she has kept her shape a lot better than some women her age—especially considering the amount of running around she does.

She is, of course, *Randolph*, and the "brood" is composed of the destroyers and submarines of Task Group *Alfa* for which she serves as flagship.

As might be expected for a lady of her gray background, there

wasn't much of a celebration when she added another year—just a ceremony and a "birthday cake."

Anyway, she was soon to be all at sea over a new man in her life.

That would be Captain William B. Morton, her new C.O., who was soon to make his first cruise as her skipper.

SHANGRI LA (CVA-38)

Rear Admiral George P. Koch relieved Rear Admiral Robert L. Townsend as ComCarDiv 6 during a ceremony aboard *Shangri La* at NS MAYPORT. Vice Admiral Charles T. Booth, ComNavAirLant, was guest speaker.

Admiral Koch was formerly CNAREsTra; Admiral Townsend was ordered to Washington for duty.

Shang departed Mayport to begin a six-month overhaul and modernization at the Philadelphia Naval Shipyard. The \$11-million face-lifting is designed to update the carrier and increase her capabilities.

Among projects scheduled for completion are resurfacing the after third of the flight deck with aluminum-clad planking, installation of a new evaporator capable of producing 40,000 gallons of fresh water a day, overhaul of all eight boilers, modernization of the ship's CIC, installation of a new Fresnel lens landing system, overhaul of the ship's four five-inch gun mounts, and installation of new air conditioning units to cool berthing, messing, and office spaces.



SHANGRI LA'S bow is swung out so "dead load" cat test will clear *USS Saratoga*.



CARRIERS CRUISE to far-away places on missions and training exercises. Here the *Intrepid* steams through Arctic mist during Operation

Crosswind as an F-6 Skyraider is positioned on the port catapult. The job of a ship's navigator is exacting, requiring detailed attention.

The Modern Aircraft Carrier

DEAD RECKONING AND 'SINS' OF NAVIGATION

"Their [the ships masters'] only care now being to lie off in the night and make in [enter port] in the day, when they think themselves drawing in toward any shore . . . so that it is by God Almighty's providence and great chance and the wideness of the sea that there are not many misfortunes and ill chances in Navigation than there are."—Samuel Pepys

THE MOMENT of truth comes," said Cdr. Edward P. Stafford, author of *The Big E* and himself a navigator, "when you tell the Old Man the night before that the lighthouse will come up off the starboard bow at 0800—and you're standing right alongside the Captain on the bridge the next morning when the ship's clock strikes eight bells. All your work—the hours of computing, consulting charts, cranking in wind and tide and current variables, checking and rechecking—your very reputation is hooked onto that lighthouse. And it had better be there!"

The nightmares of ship's navigators, then, are not filled with ghosts and goblins, but empty hori-

By Scot MacDonald

zons when they should be broken or broken horizons when they should be empty. Such a nightmare occurred to the navigator in the first aircraft carrier named *Saratoga* (CV-3) during Fleet Problem IX in 1929. In a memorable wide-sweep maneuver, unanticipated by the "enemy" force, the carrier prepared a surprise attack on the Panama Canal. Her aircraft were launched successfully. LCdr. James M. Grimes, in a monograph on the Navy's war games, tells what happened next:

"The overall success of *Saratoga's* operations during Fleet Problem IX

was now marred by navigational failure. The *Saratoga* and the *Omaha* were to rendezvous with Battleship Division Five so that the carrier might have maximum protection until she recovered her planes. Through discrepancies in navigation, contact was made with the [enemy] Battleship Division Two. The carrier was under heavy fire at short range and was considered destroyed. [An enemy] submarine also attacked the *Saratoga* during the early morning, firing four torpedoes at short range (1200 yards). The carrier would probably have been destroyed on this occasion as well."

Another memorable wide-sweep maneuver in a surprise attack a dozen years later by aircraft carriers of another nation had just the opposite effect—complete suc-

cess. The *Akago*, *Kaga*, *Hiryu*, *Soryu*, *Shokaku*, and *Zuikaku* of the Imperial Japanese Navy, with accompanying destroyer squadron and support force, advanced on Hawaii in December 1941, moving from the north through gales, moderate to high seas and thick fog. Samuel Eliot Morison describes the success of advance this way in *The Rising Sun in the Pacific*:

"Admiral Nagumo reached his launching point slightly before 0600 [December 7th]; and, as the planes hit Oahu 'right on the nose,' it is evident that his fleet navigating officer had done an excellent job of dead reckoning. For several days there had been little or no opportunity to check the flagship's position from the heavenly bodies, but the proper allowances for current and leeway had been made, and the ships arrived on time at the designated spot on the ocean where winged death was to be released."

The history of sea-going commerce is marked with stunning successes and crushing disasters. There have been many touch-and-go instances (such as those described by Samuel Pepys in his diary) occasioned by inept navigation. Times have changed considerably since then, for new instruments and more accurate charts are available to the navigator in a modern aircraft carrier. Despite these aids, such a navigator, unless he is methodical, careful and accurate, can repeat the inaccuracies of the early *Saratoga* navigator, and this could spell disaster for an exercise or mission.

Navigation is the process of directing the movements of a craft from one point to another, says the latest edition of Bowditch. To do this safely is an art. In perhaps 6000 years—some writers make it 8000—man has transformed this art almost into a science, and navigation today is so nearly a science that the inclination is to forget that it was ever anything else.

Bowditch is the navigator's bible. It is the *American Practical Navigator, An Epitome of Navigation*, originally compiled and published in 1802, by the Salem, Mass., mathematician Nathaniel Bowditch. He kept revising his book, including new information as obtained, until

he died in 1868. Then his son, Jonathan Ingersoll, took over, until he sold the copyright to the newly formed U. S. Hydrographic Office in 1868. Navy Hydro is now Navy Oceanographic, but Bowditch is still published as H. O. Publication No. Nine.

Bowditch is navigation. It is as valuable to the head of the Navigation Department in a modern aircraft carrier as it was to the Yankee masters of the clipper ship era. The book has changed with the times, so that there is little resemblance between the 1958 edition and the 1802. But changed as it is, through updating and expanding, Bowditch is still readable, accurate, and always within arm's reach of the ship's navigator.

The responsibilities of the ship's navigator have not changed much over the years, as the AirLant/AirPac Standard Ship Organization and Regulation Manual might suggest. His basic responsibility, under the Commanding Officer, is "for the safe navigation and piloting of the ship, the training of deck watch officers, and the upkeep of all navigational equipment."

Cdr. Edward M. Haugh, former navigator in the *Kearsarge*, describes his department:

"The Navigation Department in a CVS is small. It consists of two officers and 18 enlisted personnel. The Navigator is normally a Commander and the Assistant Navigator is a Lieutenant. A Chief Quartermaster is an assistant to the Navigator in the per-



A VA-52 Skyraider lands on the *Lexington* as she approaches Cape Horn area in 1962.

formance of navigational duties and is assistant to the N Division Officer in all administrative functions of the division.

"The rated and non-rated personnel are rotated through the various billets of the department, thereby permitting each individual to become thoroughly familiar with all aspects of the Quartermaster rate. I feel that a Quartermaster striker and the junior rated personnel aboard a CVS are in a fortunate position in that, due to the (small) size of the department, they have the opportunity to receive very personal and detailed instruction in the various aspects of their rate."

In the modern *Saratoga*, there are four officers and 27 enlisted men in the Navigation Department. At sea the department provides a qualified navigator on the bridge, a quartermaster-of-the-watch, a plotter to keep constant track of the ship's position, one qualified helmsman in each of the after-steering units, and a helmsman on the bridge—around the clock. In port, a quartermaster-of-the-watch is on the quarterdeck at all times, and an additional man stands by on the bridge if the ship is at anchor.

"One of the most important duties to fall to Navigation," says *Saratoga*, "besides the tracking of the carrier's movements, is the training and qualification of Officers-of-the-Deck for both underway and in-port watches. Because the Underway OOD carries much of the responsibility for the ship and her crew, he must have the background to be able to make quick, correct decisions. Navigation provides this background in tactics, ship handling, emergency procedures, and other fields.

"The OOD in port has only slightly less responsibility and must be capable of directing emergency measures and ship's administration, as well as such routine, but nonetheless intricate, matters as providing proper honors for military and civilian VIP's boarding and departing."

Non-rated men as well as petty officers in the *Kearsarge* are taught and encouraged to take celestial observations, Loran readings, and to plot and compute the ship's position, along with performing many other functions in the Navigation Department.

"In addition to the navigation

duties common to all ships," says Cdr. Haugh, "the CVS Navigator, in coordination with the CIC officer, must be prepared to recommend courses and speeds that will most effectively bring the many weapons systems of the force to bear on the submarine while, at the same time, keeping the CVS out of lethal range of the submarine."

To analyze properly all the data collected by the participating units in an ASW problem, the CVS must assemble the information generated during each event and reconstruct the entire problem to form an understandable mosaic which is held together by times and positions. The reference point for this reconstruction is the carrier's position, which ties the various inputs together and provides the embarked staff with an over-all picture of the problem, so the success or failure of the tactics employed can be properly assessed.

Because of the specific necessity of returning aircraft to a platform moving over wide ranges of the seascape, says *Saratoga's* Navigator, Cdr. Jack E. Davis, Navigation must be able to pinpoint the carrier's position almost instantly at any time. The department must also have fingertip knowledge of ranges and distances to emergency airfields in case an aircraft runs into trouble while in flight.

The carriers maintain their position check through conventional methods of navigation, celestial fixes and dead reckoning. Dead reckoning, according to Bowditch, is the determination of position by advancing a known position for courses and distances. A position so determined is called a dead reckoning position. It is generally accepted that the course steered and speed through the water should be used. The expression is also used to refer to the determination of position by use of the course and speed expected to be made good over the ground, thus making an estimated allowance for disturbing elements, such as current and wind. Celestial navigation is navigation with the aid of celestial bodies.

To back up these checks, *Saratoga* now is equipped with both Loran "C" radio receivers and a

Ship's Inertial Navigation System (SINS). *Sara's* SINS equipment is similar to that presently being used aboard *Polaris* submarines.

SINS is operated by a specially trained officer and enlisted man from the Navigation Department. During her 1960-61 Mediterranean cruise, *Sara* played a major part in testing the original SINS aircraft alignment concept by testing an early, trailer-mounted prototype aircraft platform.

The *Intrepid's* Navigation Department is staffed by two officers—Navigator and assistant—and a crew of 21 Quartermasters and strikers. The load of paper work carried by the N Division is indicated by the number of books, logs and records that must be maintained. These include the Navigator's Workbook, Sight Log, Fathometer Log, Magnetic Compass Record, Loran Log, chart records, and the Azimuth Log. They are retained on board for three years.

Before entering restricted water where piloting is required, all available navigational information concerning the area is gathered and a thorough evaluation of the proposed transit is made. Recommended tracks are drawn up and presented by the Navigator to the Commanding Officer for final approval. Once it is approved, the Assistant Navigator then briefs the personnel of the department. During this briefing, the procedures to be used in the transit are given, with emphasis on landmarks that



NAVIGATOR'S work in the *Kitty Hawk* is checked by C.O., as a white hat looks on.

will be used for lines of bearing.

When the transit starts, visual fixes are obtained every two minutes, using a minimum of three lines of bearing. These bearings are plotted and compared with an advanced dead reckoning position to determine set and drift (variations due to current and wind).

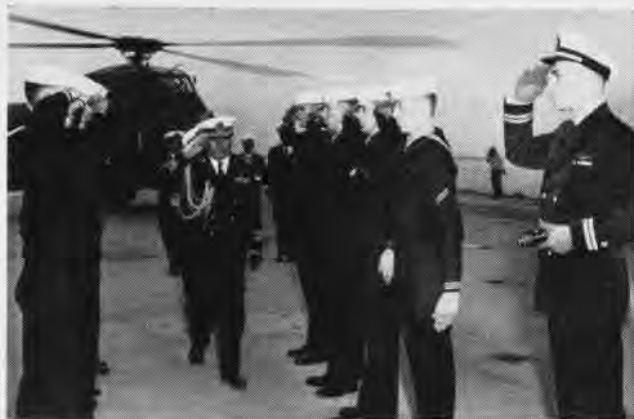
Charts and publications carried on board are determined by an allowance list published by the Oceanographic Office for the particular type ship which will use them. In all, for a CVS there are about 700 charts and 400 publications. A team of four men is assigned the duty of maintaining all chart portfolios and associated pubs in a correct, up-to-date status.

Tactical evolutions, refueling, anchoring, sea detail, and general drills require certain stations to be manned by Navigation Department personnel. The first three of these evolutions present individual navigation problems requiring precise teamwork by all personnel in the department.

Operation *Sea Orbit*, the 30,500-mile voyage around the world by Nuclear Task Force One in 1964, provided the opportunity to exercise the entire gamut of a Navigator's wares. Cdr. George L. Ayers, Navigator in the *Enterprise*, recounts some of his experiences:

"At the first light of dawn on July 30, 1964, Nuclear Task Force One (*Enterprise*, *Long Beach* (CGN-9) and *Bainbridge* (DLGN-25) moved toward a rendezvous with an underway replenishment group in the Western Mediterranean. The mission was to top off their 'beans, bullets, and aviation fuel.' This underway replenishment was to be the last for more than two months. No additional supplies would be provided, and none would be required as Task Force One set out to *Sea-Orbit* the world.

"With the Navigator's recommendations for course and speed, skipper Capt. F. H. Michaelis gently guided the huge *Enterprise* alongside the supply ship. The final step prior to our takeoff was about to begin. Ahead lay the culmination of every Navigator's dream: the chance to plan, prepare charts, study sailing directions, calculate speed of advance, lay out rhumb line and great circle routes (with allowances for variables, such as current wind and flight operations) over an extensive route."



RENDERING HONORS for VIP's is a responsibility of the Navigation Department. Commander of Iranian Navy boards *CYAN-65*.



A VIEW FROM THE BRIDGE is enjoyed by aviators receiving Officer-of-the-Deck training in Forresteral during Med operations.

Most of the navigation planning was done by *Enterprise* Navigator Cdr. Fred Gore and Carrier Division Two staff Navigator, LCdr. George Hahn. Responsibility for executing the plan fell to Cdr. Ayers, who relieved Cdr. Gore just before the long voyage commenced.

Sea Orbit began as *Enterprise* and Task Force One passed abeam of Gibraltar while conducting radar pilotage in dense fog. As if by signal, the fog dissipated and the open Atlantic Ocean was entered. Once in the clear, a quick calculation was made to determine the speed required to arrive at a predetermined position for the recovery of four COD aircraft, carrying the representatives of the King of Morocco. This would be the first of 16 underway visits to give heads of state or their representatives the opportunity to observe and further their understanding of the peace-keeping might of a task force.

"The arrival of Monsieur Faddel Cherakoui, President of the Moroccan Chamber of Counsellors, and his party of 23 aboard the *Enterprise* highlighted another of the Navigator's responsibilities," Cdr. Ayers said, "that of planning and executing the honors rendered to all visiting dignitaries. The precise timing of the gun salute, piping through the sideboys, and review of the guard of honor are a few of the many details to be supervised.

"With the visitors on board, each movement of the ship had to be carefully calculated in order to maintain a favorable position for launch and recovery of the 45-plane aerial firepower demonstration. The axis of the demonstration had to be deter-

mined with due regard for the viewing comfort of the guests. Return distance for the VIP COD flight had to be 150 miles or less. And then there was the pick-up of the visitors from the next country. Sometimes two groups visited on the same day. Variable sea, winds and sky conditions required a constant updating of ship movement requirements."

As *Enterprise* and her two nuclear-powered escorts steamed south along the Moroccan coast, they moved out of the area of coverage of Loran A and C. Not until passing Puerto Rico two months later would this "excellent navigation aid" become available. However, many other aids were available. Radar navigation provided excellent fixes as long as land was within the radar horizon of the ship. The NTDS (Naval Tactical Data System) display not only presented an accurate dead reckoning plot, but greatly assisted in associating radar blips with corresponding land mass features on the charts. At night, the ships frequently obtained fixes from lighthouses.

"As was expected," Cdr. Ayers continued, "the biggest problem in accurate navigation was encountered while at great distances from land. Celestial fixes were required, but morning and evening stars were visible for less than 50 per cent of the time. The longest period was between Wellington, New Zealand, and Cape Horn, when overcast conditions persisted for four and one-half days. *Enterprise* had to rely on dead reckoning navigation, with consideration given to the effect of strong winds and currents prevalent in the area.

"Another technique used exten-

sively on *Enterprise*, especially along the coast of India, Australia, and South America, was bottom contour navigation. By comparing and plotting water depths against charted depths, it was possible to confirm positions obtained by other means and in numerous instances contour navigation provided the only available fixes."

Many highlights stimulated the duties of the Navigator during *Sea Orbit*, according to Cdr. Ayers. The first he lists as occurring at 0600 on August 6, when the *Enterprise* passed directly through 00°NS and 00°EW and "more than 4200 men were inducted into the realm of King Neptune in one of the largest 'Shellback' initiations ever conducted on a single ship."

At sea, rendezvous with Naval units from South Africa, Pakistan, Great Britain, Australia and Brazil were effected under extremes of sea and weather conditions. Entries and sorties in the ports of Karachi, Sydney and Rio de Janeiro provided new experience to both the Captain and Navigator. "However," observed Cdr. Ayers, "precise procedures and thorough briefings made these new ports of call only slightly more difficult than familiar anchorages of the Med.

"Without doubt," he concluded, "the brightest navigational highlight for *Enterprise* came as the first line was passed from the ship to Pier 12, NOB NORFOLK, precisely on the scheduled time."

The *Enterprise* is now with the Seventh Fleet. The success of *Sea Orbit* proved in fact what Navy planners knew on paper: that nuclear power provides flexibility.

FAI Certifies AF Records Special Awards for Five Officers

Nine world speed and altitude records set by U. S. Air Force aircrews in two YF-12A prototype interceptors on May 1, 1965, have been officially certified by the Federation Aeronautique Internationale, according to the National Aeronautics Association.

The three absolute and six jet-class world records mark the first time in the history of modern aviation that one type of aircraft has set so many major records in a single day.

The five Air Force officers who participated in the flight have been presented with special awards.

Colonel Robert L. Stephens and Lieutenant Colonel Daniel Andre received the 1965 Thompson Trophy for their flight establishing the straight course speed record of 2,070.101 mph and the absolute sustained altitude record of 80,257.86 feet. The Air Foundation, Cleveland, Ohio, presented the two aircrewmembers with the 36-year-old award at a luncheon at the Mayflower Hotel, Washington, D. C., October 29.

Earlier the same day, General John P. McConnell, USAF Chief of Staff, presented each of the five Air Force participants in the historic flights with the Distinguished Fly-



AIR MARSHAL Sir Patrick Hunter Dunn, Air Officer Commanding-in-Chief of the British Royal Air Force, visited Saufley Field for a first-hand briefing on flight training. He was accompanied by Vice Admiral A. S. Heyward, CNATRA (L), and Rear Admiral J. J. Lynch, CNABaTRa (R). Standing are Commander H. Griffin, C. O. of VT-5, Captain P. Padgett, C. O. of NAAS Saufley, and Commander J. Klemawesch, C.O. of VT-1.

ing Cross during a special Pentagon ceremony.

In addition to Col. Stephens and LCol. Andre, who flew as pilot and fire control officer (radar observer) respectively, the other officers receiving DFC's were LCol. Walter F. Daniel, pilot, and Maj. Noel T. Warner and Maj. James P. Cooney, fire control officers.

LCol. Daniel and Maj. Cooney flew the titanium interceptor I-

688.889 mph for the speed record around a closed course.

The six jet-class speed records included the world speed record of 1,643.041 mph for the 500-kilometer closed course flown by LCol. Daniel and Maj. Warner.

Other records were 1,688.889 mph for the 1,000-kilometer closed course with no payload; with 1,000 kilograms payload; and with 2,000.

New Task for Point Mugu Engineering Services Provided

The Naval Missile Center at Point Mugu has assumed responsibility for engineering services to all Navy operational air-launched weapons. An In-Service Engineering Office has been established within the Center to carry out the new responsibility.

Previously, the Bureau of Naval Weapons provided in-service engineering, which insured that the weapon and its related equipment performed as advertised as well as basic design engineering, involving major changes to the equipment.

Initial assignments in the agreement include the *Bullpup* missiles, the 2.75-inch Folding Fin Aircraft Rocket (FFAR), the 5-inch FFAR *Zuni* and the 5-inch High Velocity Aircraft Rocket (HVAR).



TWO SIKORSKY HH-3C helicopters of the USAF's Air Rescue Service are loaded aboard a giant C-133 transport at Bridgeport, Conn., for speedy delivery to South Vietnam. The camouflaged helicopters, fitted with armor plating, jettisonable fuel tanks, new rescue hoists and other improvements, are designed to improve the Air Force's ability to locate and pick up airmen who have been shot down in the jungle or behind enemy lines.

SHOTS FROM THE USS CORAL SEA'S ALBUM



COMMANDER Robert M. De Lorenzi (L) and his plane captain, dwarfed by one of the A-3B Skywarrior's twin jet engines, inspect one of plane's wing flaps prior to their takeoff.



THE VERY PORTRAIT of aerial power in action is this shot of a U. S. Navy A-4E Skyhawk from Attack Squadron 155 a member of Coral Sea's air group. The Skyhawk, loaded with bombs, banks and prepares to make a diving run on its Viet Cong target.



THEIR BOMBRACKS empty, two Skyhawks streak above coastline headed for Coral Sea.



STILL ANOTHER of VA-155's A-4E Skyhawks is ready to make its bombing run.



AN A-3B prepares to take on fuel from another Skywarrior returning from a mission.

SELECTED AIR RESERVE



NAVAL AIR Reservists in the Washington, D. C., area were honored when the commanding officers of six flying squadrons, based at Naval Air Reserve Training Unit, Andrews AFB, Md., were presented Naval Air Reserve Training Safety citations by Rear Adm. Richard L. Fowler.

Flying Units High in Safety

Six commanding officers of squadrons, based at NARTU ANDREWS, Md., were honored by the Chief of Naval Air Reserve Training at the annual fall inspection when Rear Admiral Richard L. Fowler presented each of them a CNAResTra Safety Citation.

In the picture above are Commander H. A. Estes, Jr., VP-662 (sixth consecutive year); Commander J. K. Williams, Fleet Tactical Support Squadron 662 (sixth consecutive year); Commander J. V. Sullivan, VP-661; Captain John B. Johnson, C.O. of the NARTU; Rear Admiral Richard L. Fowler, CNAResTra; Commander D. C. Dolan, VS-661; Commander J. H. Denny, Fleet Tactical Support Squadron 661 (sixth consecutive award) and LCdr. M. A. Katz, NARTU Aviation Safety Officer, who received the safety citation for Commander W. M. Polglase, C.O. of VF-661 (fifth consecutive award).

One of the distinguished visitors

at the annual inspection was Major General Benjamin D. Foulois, 86, U. S. Army Air Corps (Ret.), who regaled the Naval Aviators with tales of military aviation when it was in its infancy.

Rear Admiral Fowler, with the assistance of Rear Admiral Gillette, conducted the inspection.

In the picture (below), MGen.



MGEN. B. D. Foulois, 86 (C), is greeted by Capt. Johnson and RAdm. Gillette at Andrews.

Foulois (C) stands between Captain Johnson and Rear Admiral Norman C. Gillette, Jr., Director of the Aviation Plans Division, under DCNO (Air).

Vice Admiral Benedict J. Semmes, Jr., Chief of Naval Personnel, also extended a warm welcome to General Foulois, one of the U. S.'s oldest living military aviators.

A few days later, General Foulois wrote to Captain Johnson: "Sitting on the speaker's platform during the inspection, I was deeply impressed by the professional appearance of those 2,000 Reservists, immaculate in their Navy blue uniforms; precise and accurate in the performance of all inspection regulations, and an alert and outstanding group of dedicated men who, in my opinion, reflected the basic selection, training and discipline of the old time professional Navy.

"As a graduate of that ancient 'University of Hard Knocks,' the enlisted ranks of the Regular Army, I can well appreciate your pride in

the fact that this splendid group of enlisted men and commissioned officers have, for the second consecutive year, been selected as 'the most efficient Naval Air Reserve Activity in the entire United States.'"

Star in Norfolk

June Wilkinson, star of the comedy "Any Wednesday," was a special guest of NARTU NORFOLK recently when she visited the big base. In NARTU's Personnel Office, she was given a certificate making her an honorary member of the Naval Selected Air Reserve's Weekend Warriors.

Bob Evans, PNI, had the welcome duty of presenting her with a personalized set of gold "dog tags."



BOB EVANS, PNI, gives June Wilkinson, stage star, gold "dog tags" during visit.

Marine Corps Changes

Minor changes in the Marine Corps Reserve have been made by Marine Corps Headquarters, Washington, D. C.

Affected by the announced relocations and deactivations of units are 12 Reserve Aviation units. Personnel of the deactivated or relocated units are being absorbed into other air reserve training units at the same training location. The personnel of the deactivated VMF-111 in Dallas, for example, are transferred to VMF-112 of Dallas.

In an additional change which affects neither the location nor the squadron designation of units involved, four Marine Air Reserve

squadrons are added to the Fourth Marine Aircraft Wing, USMCR. The changes are as follows:

Added to 4th MAW

VMA-124, Memphis, Tenn.
VMA-543, Glenview, Ill.
HMM-764, Los Alamitos, Calif.
VMR-222, Grosse Ile, Mich.

Deactivated

VMA-221, Memphis, Tenn.
VMF-111, Dallas, Tex.
VMA-144, Jacksonville, Fla.
VMA-123, Los Alamitos, Calif.
VMF (AW)-113, Olathe, Kan.
H&MS-44, Twin Cities, Minn.
VMF-441, Willow Grove, Pa.
Sub Unit H&HS-4, Brooklyn.

Relocated

H&MS-46, from Grosse Ile, Mich., to Brooklyn, N. Y.

MABS-41, from Dallas, Tex., to Memphis, Tenn.

H&HS-47, from Los Alamitos, Calif., to Twin Cities, Minn.

MAMS-47, from Los Alamitos, Calif., to Twin Cities, Minn.

A Doctor in the House?

Reservists at NARTU NORFOLK are learning to save a human life and support the country if there were widespread devastation.

In the picture below, a manikin is being used to illustrate the care of a person whose injuries may run the gamut of burns on the legs to cranial injuries.

LCdr. H. W. Phelps, Medical Service Corps, a member of NARTU NORFOLK, gives instruction to corpsmen as part of their weekend training. Below, he is assisted by Walter R. Stickel, HM2, as they repair "Mr. Disaster's" cuts and bruises. Each corpsman takes his turn treating the wounds under the supervision of LCdr. Phelps.

Head Start for 1966

At NAS NEW YORK, the 1966 85-day Recruit School got off to a good start when 16 young men were sworn into the Navy on November 6, 1965. Officiating at the ceremony was Commander Victor Svanda, from the staff of CNARes-Tra, Naval Air Station, Glenview.



FOUR NEW NARTU Alameda Chiefs are greeted by Captain Jim B. Bock (left): R. E. Oberlin, W. W. Parks, E. J. Lakata and C. E. Burton.



AT NARTU Norfolk, Reservists are being trained in first aid. W. R. Stickel, HM2, assists LCdr. Phelps in giving a special demonstration.

ATLANTIC AIR WINGS ON PATROL



COMMANDER H. G. Rich, C. O., VP-8, presents Patrol Plane Commander Certificate to Flight Lt. Francis, Royal Canadian Air Force.



VP-23 FLIGHT crews take a last look at charts before manning their Neptunes at the Panama Canal Zone during an exercise in Unitas VI.

DURING OCTOBER, Patrol Squadron 5 hosted VP-834 at NAS JACKSONVILLE for two weeks of active duty training. The group from NAS NEW YORK was headed by Commander Paul Baker.

In September, while all of NAS JACKSONVILLE awaited word to evacuate aircraft in the face of Hurricane *Betsy*, VP-5 departed to assume the duty at NAS KEY WEST. A few hours after relieving VP-26, the squadron had to evacuate to NAS JACKSONVILLE. They returned to Key West four days later to begin their three-month deployment.

While in Key West, the squadron's primary mission was ASW, shipping surveillance, search and rescue, and photo reconnaissance.

* * *

The close ties that exist between the U. S. Navy and Canadian ASW forces were illustrated by a brief ceremony at Patuxent River during which Flight Lieutenant F. B. Francis, a Royal Canadian Air Force exchange officer, received his PPC papers from Commander H. G. Rich, Commanding Officer of Patrol Squadron Eight. Flight Lieutenant Francis is believed to be the first non-American to achieve Patrol Plane Commander status in the P-3A *Orion*.

Sharing a joint responsibility for ASW defense of the North American Continent under NATO agree-

ments, it was inevitable that a close relationship would develop between the Canadian and American ASW forces. An extensive Officer Exchange Program is in existence and Flight Lieutenant Francis is one of many Canadians serving a tour of duty with the U. S. Navy. An unusual aspect of the exchange program is that Navy VP aviators in Canada serve with the Air Force, which in Canada has the responsibility for operating land-based ASW aircraft. Conversely, Canadian Air Force personnel serve with the U. S. Navy.

Flight Lieutenant Francis joined VP-8 with a background of ten years continuous ASW employment, bridging the gap from before *Julie*, the *Lancaster* aircraft (a converted WW II bomber) through *Neptunes* and the *Argus*, to the *Orion*.

* * *

The *Batmen* of Patrol Squadron 24 returned in mid-December to the *belly* at NAS NORFOLK following a two-and-a-half month advanced base deployment to the Hellenic Air Force Base at Soudha Bay, Crete, which rounded out their Med deployment.

The squadron is now under the command of Commander F. C. Kolda. Former commanding officer, Commander R. D. Amme, is now Operations Officer aboard

the USS *Guam* (LPH-2). The new Executive Officer is Commander A. S. Hibbs from the United Kingdom's Joint Services Staff College.

Vice Admiral C. T. Booth, Commander Naval Air Force, U. S. Atlantic Fleet, included VP-24 on his tour of AirLant units in the Mediterranean in October.

* * *

The VP-26 Line Division is utilizing a new vehicle to lighten the workload of the squadron's flight crews. The "courtesy cart" meets each returning aircraft with rags, waste cans, and extra tie-downs.

The value of the "courtesy cart" reveals itself in the decreased FOD (foreign object damage) and improved cleanliness of the planes. It also affects the morale of the crews. It has caught on so that flight crews become impatient if it is slow getting around to them.

* * *

September 24, 1965 was graduation day at the Fleet Air Wing 11 Radio School of Jacksonville. Certificates were presented to 18 enlisted men by Captain H. B. Stott, Commander Fleet Air Wing 11. For the students, this ceremony marked the successful completion of 13 weeks intensive training. The primary purpose of the school is to prepare men as radio operators in patrol aircraft.

The honor man of the class was VP-7's B. W. Eastman, ATN3, with an average mark of 92.4. A close second was J. W. Zscheile, AXAN, also of VP-7, with an average mark of 92.1.

In the school the students are taught the international Morse Code, typing, and radio operator procedures. To qualify for graduation, a minimum code receiving speed of 18 words a minute is required.

The FAW-11 radio school was established in August 1952 to alleviate a critical shortage of trained aircraft radio operators. Currently, in addition to providing trained radiomen for service in FAW-11 aircraft, the school trains radio operators for many other Navy squadrons and commands.

* * *

As the United States prepared for another winter season, the countries of South America experienced the first signs of spring and impending tropic weather. It is with this setting that Operation *Unitas VI* completed Phase Two of the combined ASW exercise that began in mid-August and ended in November.

Patrol Squadron 23, based at NAS BRUNSWICK, supplied ASW aircraft for the *Unitas VI* Air Detachment during the entire three and one-half months.

During Phase Two, joint operations were held with the countries of Peru and Chile. Both the U. S. and South American Forces that took part in the exercise were collectively called Task Force 86 and were commanded by Rear Admiral A. R. Gralla.

Exercises were held during day and night periods in all-weather situations to simulate closely combat conditions.

Under the leadership of Commander C. L. Wyman, the squadron has been selected to receive the Isbell ASW Trophy Award. The trophy was first awarded in 1959 and is named in honor of Captain Arnold Jay Isbell, who lost his life during WW II. Prior to his death, Captain Isbell was in command of an escort carrier that was part of a task unit operating in the Atlantic Ocean and was awarded the Presidential Unit Citation. The

permanent trophy is retained by the Navy Department at Washington, D. C.

The squadron further distinguished itself by being the first Naval Air Force Atlantic patrol squadron to win three consecutive Battle Efficiency Awards.

Commander T. F. Wentworth, Jr., became the new Commanding Officer of VP-23 when he assumed command from Commander C. L. Wyman during ceremonies in November at NAS BRUNSWICK. Guest speaker for the occasion was Rear Admiral Alfred R. Matter, ComFAirWings Atlantic.

* * *

An informal open house hosted by Fleet Air Wing Three, a Candlelight Night Dinner at Neptune Hall, and an All Hands Dance marked the observance of Navy Day at NAS BRUNSWICK.

Air Wing personnel took interested persons through three aircraft on display. There were demonstrations of aviation equipment and survival techniques from the Escape and Evasion School.

* * *

In November, Commander L. R. Roberts, Jr., relieved Commander K. W. Sharer as Commanding Officer of Patrol Squadron Ten. Commander K. J. Bernstein became the squadron's new X.O.

Sailors of VP-10 have discovered how to manage their money. A computer has been constructed

from percentages used by the Bureau of Labor Statistics in calculating the government's price index. It is based on monthly take home pay and dependents.

The computer takes these facts and comes up with the amount of money which should be allotted to housing, food, utilities, clothing, transportation, dental, recreation, personal care, family advancement, savings, house furnishing and miscellaneous.

The areas covered may also be tailored slightly to suit each individual family. Used in a conscientious manner, the computer will provide VP-10 personnel with invaluable financial management assistance and a guide to a purposeful and better way of life.

* * *

Patrol Squadron 45, normally based at Jacksonville, Fla., and presently deployed in Adak, Alaska, recently held a raffle, on a tape recorder, that realized more than \$400. The money was turned over to the Enlisted Wives Club for donation to the Daniels Memorial Home in Jacksonville.

Meanwhile, aboard the Fleet Tug USS *Tawakoni*, five members of Crew 12 delivered toys and clothing to the Aleut Indians living on Atka Island. Those taking part were Lt. Bruce Chappel; Ens. Peter Blades; Ballard, AT-2, Humphrey, ADJ3, and Love, AE3. The venture was a "Handclasp" activity.



DURING A MED visit, Rear Admiral B. E. Moore, ComFAirMed, and Vice Admiral C. T. Booth, ComNavAirLant, discuss operations with VP-24 C. O., Commander F. C. Kolda.



LAST PLANKOWNER aboard *USS Ranger*, James M. Cunningham, BM2, and Ranger C.O. Capt. Leo B. McCuddin, hold mahogany plank presented Cunningham before he left the ship.

RANGER LOSES PLANKOWNER

EIGHT must be James M. Cunningham's lucky number.

Eight years, eight months, and eight days after he reported aboard *USS Ranger*, the second class boatswain's mate was bound for a well-earned tour of shore duty when he left the attack carrier for the last time. His recent departure, though, cost *Ranger* a bit of tradition; Cunningham was the ship's last plankowner.

The boatswain's mate's tour in *Ranger* began seven months before the CVA was commissioned August 10, 1957, in Norfolk. He was to serve aboard for a half-million miles of underway operations that included a change of coasts when *Ranger* was assigned to the Pacific Fleet.

In a ceremony attended by his wife and three daughters, Cunningham was presented a 4-by-21-inch mahogany plank with an engraved brass plate that commemorated his time aboard. During the ceremony, held just before he was "piped off" the forward brow, he told *Ranger* C.O. Captain Leo B. McCuddin he was leaving the ship "with mixed feelings," but, he added, "it has been a long tour."

If the plank he received was designed to remind Cunningham of

his time spent in *Ranger*, another memento was intended to remind him of the men with whom he'd served. That was a silver boatswain's call with gold inlaid engravings presented him by Weapons Officer Commander Edward I. McQuiston, on behalf of *Ranger's* deck group personnel.

Drone Plans Announced Mach 1.5 by Remote Control

Ryan Aeronautical Company has begun design and production of a new supersonic *Firebee* under a \$5 million contract from the Bu-

reau of Naval Weapons. Designated the XBQM-34E, the new target drone will fly in excess of 1,000 miles an hour at altitudes over 60,000 feet.

Over 2,500 *Firebees* have been used by the Armed Forces in anti-air warfare training and weapons systems evaluation. The present model is limited to 600 mph.



COMMANDER J. E. Sanders, VT-28 C.O., (R), congratulates Lt. W. P. Culhane upon completion of 2,000 accident-free hours in a TS-2A. Lt. Culhane completes his three-year tour at Corpus Christi this month.

New Chief at Corpus Christi RAdm. Macpherson Takes Over

On November 29, Rear Admiral Robert A. Macpherson assumed command of the Naval Air Advanced Training Command in ceremonies at Corpus Christi. He formerly commanded ASW Group 5.

He relieved Rear Admiral F. A. Brandley who has held the post since June 1962. RAdm. Brandley is the new commandant of the Eleventh Naval District, with headquarters at San Diego, California.



THE ROYAL NAVY'S *Buccaneer II* has completed two and one half months of flight tests in hot and humid weather conditions at NAS Pensacola. Trials were held to determine the aircraft's performance under low-level flight conditions. The majority of the flights were made at sub-sonic speeds at an altitude of 200 feet. The *Buccaneer*, which has a nuclear and a conventional capability, is comparable in weight to the U. S. Navy's A-6 *Intruder*.

NEW NAMES ON THE ANTARCTIC MAP

TWENTY RECENTLY discovered features in Antarctica now honor members of Air Development Squadron Six, according to the latest list of approved names released by the U. S. Board on Geographic Names. The complete list will appear in a coming issue of "Bulletin of the U. S. Antarctic Projects Office."

The list also carries four Naval Aviation-oriented names and "re-locates," and changes the name of the Patuxent Mountains. NAS PATUXENT was the original home of the VX-6 squadron. The name was changed to Patuxent Range which, the Board feels, is more descriptive of the geographic feature.

The name Aeronaut Glacier was submitted by New Zealand to commemorate air support "generously given by VX-6" to New Zealanders in Antarctica. That country also submitted Aviator Glacier, "as a tribute to the hazardous work of pilots and other airmen in Antarctic exploratory and scientific operations." Jato Nunatak was also submitted by the Kiwis "for JATO bottles used by American aircraft to assist them in taking off with heavy loads at high altitudes." And finally, Touchdown Glacier, marking the landing site used by VX-6 C-47 aircraft supporting a New Zealand field party.

Three Navy enlisted men were honored by the Board in the latest listing. They are James B. H. Farnell, PR-2, cited for exceptional work in supplying field parties at McMurdo Station in 1960; Herman D. Harris, HMC, who single-handedly built the sick bay at Pole Station; and Junior L. Moody, AB1 (now ABC), for the vigorous work he accomplished during loading and unloading operations on McMurdo's ice landing strip during *Deep Freeze 60*.

Four Army personnel, assigned to the squadron for telemetry work, are cited by the Board: Capt. Neal E. Early, SP5 Paul Harvey, Pfc. Gary D. Olson, and Pfc. B. F. Seay.

Three veterans of *Deep Freeze I* (1955-56) appear on the list: LCdr.

Joseph W. Entrikan, LCdr. Henry P. Jorda, and LCol. H. (Hal) R. Kolp, USMC, the squadron's first Executive Officer. All three are pilots of record-making long-distance exploratory flights over Antarctica that season.

Two former Commanding Officers are carried on the new list, Commander Vernon J. Coley and Commander George R. Kelly.

Other VX-6 pilots honored include: Maj. Leslie L. Darbyshire, USMC; Commander Edward W. Donnally; Lt. John A. M. Hickey; LCdr. Michael Jarina; Commander Robert Marvel; Lt. Ronald H. Miller; LCdr. Darold L. Reckling; and Lt. Paul Tidd. Ranks given are ranks held at time of nomination to the Board.

The features and their coordinates are listed as follows:

Aeronaut Glacier	73° 15'S,	163° 30'E
Aviator Glacier	75 55 S,	165 15 E
Coley, Mount	81 15 S,	158 13 E
Darbyshire, Mount	78 28 S,	158 05 E
Donnally Glacier	81 37 S,	159 18 E
Early, Mount	87 04 S,	153 00W
Entrikan Glacier	80 49 S,	160 00 E
Farnell Valley	77 53 S,	160 39 E
Harris Peak	81 35 S,	161 30 E
Harvey Peak	79 13 S,	157 01 E
Hickey, Cape	76 05 S,	162 38 E
Jarina Nunatak	76 23 S,	160 10 E
Jato Nunatak	72 21 S,	165 54 E
Jorda Glacier	81 18 S,	159 49 E
Kelly Plateau	81 24 S,	159 30 E
Kolp, Mount	81 39 S,	161 42 E
Marvel, Mount	78 45 S,	159 22 E
Miller Valley	83 39 S,	55 04W
Moody Peak	78 22 S,	158 34 E
Olson Peak	79 16 S,	160 05 E
Patuxent Range	84 45 S,	64 00W
Reckling Peak	76 16 S,	159 15 E
Seay Peak	79 05 S,	157 30 E
Tidd, Mount	81 17 S,	85 13W
Touchdown Glacier	79 48 S,	158 10 E

Other lists of geographic features in Antarctica appeared in the following issues of *NANEWS*: September 1961, June 1962, March 1963 and May 1965.

Adm. R. E. Byrd Memorial McMurdo Monument Dedicated

On the anniversary of his birthday, a memorial to the late Admiral Richard E. Byrd, USN, was dedicated at ceremonies October 25. Rear Admiral F. E. Bakutis, Commander, Antarctic Support Force, was the principal speaker. Over 450 Navy men and U. S. and New Zealand scientific personnel, stationed at McMurdo and Scott Base, attended the rites.

The bronze bust of Admiral Byrd

rests on top of a polished Norwegian block marble pedestal. On the sides are inscribed the significant achievements of Admiral Byrd and the dates of his five Antarctic expeditions.

Inscribed on the base of the monument are Admiral Byrd's own words: "I am hopeful that Antarctica, in its symbolic robe of white, will shine forth as a continent of peace, as nations working together there, in the cause of science, set an example of international cooperation."

Sculptor of the monument is Felix de Weldon, noted for his famous Iwo Jima war memorial in Arlington, Va. The McMurdo statue is a replica of the head of the Admiral Byrd memorial which stands on the "Avenue of Heroes" in Washington, D. C. Both monuments were donated by the National Geographic Society.



NGUYEN DIEN PHONG receives citation from Lt. J. S. Franklin at Saufley Field, Pensacola, for highest grades in first 10 weeks of training. He was in competition with 521 U. S. and 28 other Vietnamese students.

Sikorsky à la Italia Italian Navy Adopts the SH-3D

Sikorsky's S-61 (SH-3D), an advanced version of the U. S. Navy's SH-3A, has been selected by the Italian Navy for fleet use and other long range missions. Licensed production has been given to Gruppo Fratelli Agusta of Milan. The helicopters will be produced in Italy.



BIM INDICATES THIS BLADE IS SUSTAINING PRESSURE WHEN PRESSURE IS LOST, BLACK STRIPES SHOW ON BIM

'BIM' FOR HELICOPTER ROTOR BLADES

By *Elretta Sudsbury*
O&R, North Island

DURING PRE-FLIGHT of an SH-3A *Sea King* helicopter, the pilot checks a small indicator gauge mounted on the root end of each main rotor blade.

If the indicator (which normally shows a color indication of white through its transparent cover) shows black zebra stripes, an unsafe blade condition is assumed. The aircraft is not permitted to fly until the blade is replaced.

The indicator is part of the over-all blade modification to ensure structural integrity of the main rotor blade by providing a visual means of blade inspection. This system, identified by Sikorsky Aircraft as BIM, Blade Inspection Method (Airframe Change No. 88), is currently being installed in the main rotor blades of the SH-3A helicopters at NAS NORTH ISLAND. About 1,200 rotor blades will be modified by the end of FY 1966.

The SH-3A main rotor blade has a hollow, aluminum alloy, main spar to carry all the flight loads. Pockets bonded to the trailing edge complete the airfoil section. Once the blade is in the field, further inspection of the inside of the main spar is impossible.

The BIM modification consists mainly of installing a positive seal or dam at both ends of the blade to enable the inside of the spar to be pressurized to approximately 10 psi with nitrogen, an inert gas,

To show that pressure exists, the pressure indicator, described in the NAVWEPS 01-230 HLB-2-5 Maintenance Manual, is installed in the back wall of the spar at the root end. The pressure indicator has a transparent cover, through which a color indication can be observed to determine the blade serviceability. The indicator shows all-white when pressure is normal. If a crack occurs, pressure loss is flagged by black stripes on the gauge. The system is sufficiently sensitive to detect a cracked main spar before total failure occurs.

BIM was triggered by the catastrophic failure of a main rotor blade on a commercial H-34 helicopter in 1962. Intensive investigation of manufacturing, inspection, and maintenance procedures, in which the Bureau of Naval Weapons actively participated, led to recognition of a need for a system of rapid detection of an incipient failure of main rotor blades brought about by extraordinary operating circumstances.

The Bureau of Naval Weapons sponsored the development by Sikorsky Aircraft of the crack detection method now known as BIM. The BuWEPS BIM Project Engineer was J. J. Durante of Structures Branch, Airframe Design

Division. The Sikorsky engineers were Thomas P. Dixon and Robert Kee, of Rotor Blade Section, Design and Development Branch. BIM was initially installed in the Navy H-34 helicopters. To date over 3,400 H-34 blades have been modified, and the SH-3A project is well underway. After the Navy acceptance of the BIM, FAA approved its use in commercial helicopters.

The value of the crack detection system has been dramatically demonstrated recently by preventing the almost certain catastrophic accident of a Navy H-34 helicopter. BIM revealed pressure loss from a partial failure that was not detected by routine inspection. Careful X-ray inspection of the blade revealed a crack through the aft portion of the spar which is covered by the blade trailing edge pocket. The crack is believed to have originated from an area attacked by corrosion.

North Island was designated as the center for incorporating BIM because early feasibility studies had been made there. The station's experience with the incorporation of the H-34 BIM also made it the logical choice for the SH-3A.

Once the BIM is inserted in the blades, they go to an operating activity to replace non-BIM blades. Thus, one after another, SH-3A's will be equipped with the new and valuable safety device.

THE LATEST THING IN TARGET DRONES

By T. W. S. Sink, Jr., JO3

UNTIL EARLY 1965, Atlantic Fleet pilots were limited to stationary targets for practice bombing.

Then someone decided that maneuverable, remote-controlled land and water surface targets were needed in a hurry to improve combat readiness. The decision was made that Fleet Composite Squadron Six (VC-6), based at NAS NORFOLK, would build and operate them.

The difference between the deciding and the doing meant a new kind of job for VC-6. The squadron had been providing aerial target drones, nicknamed "Skeets for the Fleet," since it was commissioned in 1952; the new assignment, however, was something else again.

It was to include developing, building, and operating ground mobile targets, practically from scratch, and it was termed a "tremendous challenge to the resourcefulness and ingenuity of assigned personnel." They took a week to surmount it. The first operational ground model was procured, overhauled, modified, and ready for use in that time.

This initial VC-6 creation was a surplus M-57 armored personnel carrier. Conceived at what was termed a remarkably low cost, it operated on surveyed and salvaged gear. The remote control unit was a combination of a salvaged MQM-36A Aerial Drone electronic gear, a linear power actuator from a C-130 Hercules aircraft, pulleys and cables of various sizes, and extraneous pieces of scrap iron.

The finished product was a traveling target that combined a maximum of speed and maneuverability and a minimum of maintenance problems.

A single successful target was not enough, though, so squadron personnel procured two surveyed 1958 sedans and modified them, using essentially the same techniques they employed with the M-57.

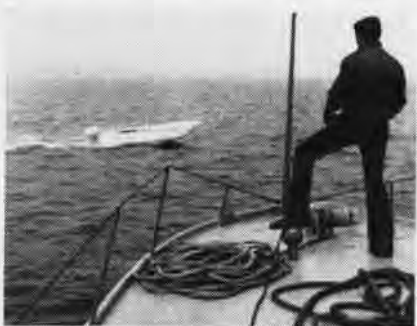
The development and "usability" of the remote-controlled vehicles as targets was more than good enough to rate the establishment of a permanent detachment, VC-6 Det. I, at Warren Grove, N. J., to carry on



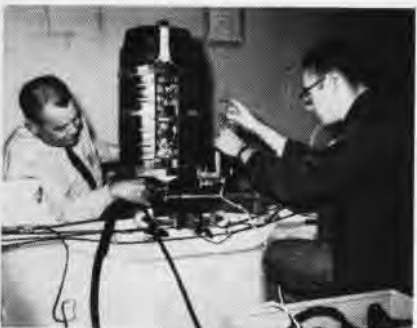
M-57 DRONES are loaded aboard LST for a journey to bombing range in Puerto Rico.



PERSONNEL assigned to VC-6 Det. I ready a worked-over 1958 sedan for target run.



D. L. DANA, ADR3, checks out a new Boston whaler designed for use as water target.



MOTOR of water target is adjusted by VC-6's A. J. Lewis, ADRC, and M. E. Daley, ATN2.

with the mobile drone project.

Since it was organized, the detachment's facilities have grown to include a fenced vehicle compound, a repair unit, three control towers, and a barracks. With its feet on the ground, the detachment was ready to provide targets for operational use in the Fleet.

Personnel talents were tested when two M-57's were used for bombing practice at the Pinecastle Impact Area south of NAS JACKSONVILLE. VC-6 men flew to Jacksonville, outfitted the vehicles, and had them ready for operation in 72 hours. The engine in one of the vehicles burned up in use, but a replacement was obtained, modified, and made ready for use overnight.

Later, two more M-57's were fitted for remote control by VC-6 men at NAS NORFOLK for use at the bombing range at Vieques, Puerto Rico. The vehicles were transported there in an LST. They were so useful that Rear Admiral D. C. Richardson, ComFAir Norfolk, commended the squadron for "resourcefulness and ingenuity" in the design and operation of the targets, and for quick response to urgent requests.

Not content to rest on the laurels of a single job well done, VC-6 men took their talents into another area: moving water surface targets. Selecting as a site the Coast Guard Station at Elizabeth City, N. C., and the nearby waters of Albemarle Sound, they went to work on three obsolete 63-foot AVR crash boats.

The AVR's were put into operation as control craft, and five smaller craft were outfitted with VC-6 drone equipment, using slightly different applications of the same techniques used on land vehicles.

Target fleet units, called *Evaders*, included two 21-foot trimaran craft, two 17-foot Boston whalers, and an ARB air boat. A 14-foot *Firefish*, designed by Ryan Aeronautical Corp., completed the fleet.

The AVR command boats, themselves capable of being operated remotely, control the target craft on a parallel course during practice.

Their improved "skeet" continues to win praise for men of VC-6.

X-ray Boom is Developed Built by Cherry Point Chief

MSgt. James L. Adams of H&MS-24, MCAS CHERRY POINT, has constructed what he believes to be the only X-ray boom in the Marine Corps.

The boom is used to position the Sperry 140-KV aircraft X-ray unit to discover cracks, water accumulation and other discrepancies in aircraft fuselages. It consists of a boat trailer winch, "C" clamp, cable, positioning frame of old pipe and a metal platform mounted on an old bomb dolly. It can be quickly dismantled by removing three bolts and is easily stored.

MSgt. Adams, the squadron maintenance chief, conceived the idea of a boom while attending radiographers' school in 1963. There workstands, boxes, and even chairs, were used to position the machine parallel to the surface of the object to be X-rayed.

Upon his return to Cherry Point, Adams collected scrap material and went to work. In some 50 man-hours on his own time, he completed the boom and has been using it ever since.

According to Adams, the boom can position the X-ray unit at virtually any angle from ground level to a height of 15 feet, and save hours of operating time.



ADAMS X-RAYS TAIL FIN OF AN F-4

Chevalier Field is Closed Named for Naval Aviator No. 7

Chevalier Field at NAS PENSACOLA was officially closed for all flight operations November 1, when Captain H. Cordie Weart, C. O. of

the station, made the final landing in a T-28 training plane.

In 1955, Forrest Sherman Field, the present landing field at Pensacola, was commissioned to replace Chevalier, whose runways were too short for flight operations of the new and larger planes.

Constructed in 1922, Chevalier Field was named for LCdr. Godfrey de Couralles Chevalier, Naval Aviator Number 7.

'Ships and Aircraft' Ready Fahey's 'Eighth Edition' Published

The "bible" of those concerned

with data on Navy ships and aircraft is out in its eighth edition.

Ever since James C. Fahey, compiler and editor, brought out the first edition of *Ships and Aircraft of the United States Fleet*, it has been the ready reference of the thousands who require authoritative and precise data on Navy planes and ships. The U. S. Coast Guard is also covered.

Mr. Fahey himself published and distributed the first seven editions, but these tasks are now the responsibility of the U. S. Naval Institute, Annapolis, Md. The price is \$3.50.

ARCTIC FLT OPS



AIRCRAFT ICING IN THE ARCTIC IS NOT CONSIDERED A SERIOUS OPERATIONAL PROBLEM BECAUSE OF THE SMALL MOISTURE CONTENT. SIMPLY, THE CLOUDS HAVE A LOW LIQUID CONTENT.



IN WINTER, TEMPERATURES ARE OFTEN SO COLD THAT CLOUDS CANNOT EXIST IN A LIQUID FORM



RECORDS OF WEATHER RECON FLIGHTS ACROSS THE NORTH POLE AT 10,000 FEET INDICATE ICING ONLY 2% OF THE TIME OVER THE ARCTIC SEAS



BECAUSE OF THIS SMALL PERCENTAGE, IT SHOULD NOT BE ASSUMED THAT ICING IS NEVER A HAZARD IN POLAR REGIONS. HEAVY CLEAR AND MOD. TO SEVERE RIME ICING HAVE OCCURRED ON OCCASIONS.

WHEN COLD AIR PASSES OVER OPEN WATER, LOW CLOUDS WITH LARGE CONCENTRATIONS OF SUPERCOOLED DROPLETS MAY OCCUR IN THIS TYPE OF CLOUD. FORTUNATELY, THE TOPS OF THESE CLOUDS ARE SELDOM ABOVE 4000 FT.

O. Somers



THE ICING FORECAST DEPENDS ON THE CLOUD AND TEMPERATURE FCST. WHERE CLOUDINESS IS PREDICTED WITHIN THE TEMP. RANGE TO 22°F. TO 32°F, THE POSSIBILITY OF ICING MUST BE CONSIDERED,

Editor's Corner

Open Letter

At sea
25 December 1965

Dear Wife: A VERY MERRY CHRISTMAS AND A HAPPY NEW YEAR! I am sorry that I was not able to spend Christmas with you—physically—as I have in the past, but you may be sure I was there every single minute—in spirit.

I was there Christmas morning to see the splendor of our Christmas tree with its beautiful ornaments and multi-colored lights (oops, that lower string just went out again), the shimmering tinsel, and, of course, adorning the very top, our slightly shopworn but still very beautiful and significant star.

I saw the twinkling little eyes, the broad happy smiles that became broad beyond belief as the moments wore on . . . and then each pair of little hands desperately searched the mountain of presents for a present for MOM (their OWN present to you, naturally). As always, your opening of the first present was the signal for the uncontrolled, unrestricted opening of all packages . . . strings popped and snapped, colored paper and tags filled the air . . . there were sighs, oohs, aahs . . . shouts of joy, gleeful laughter, genuine happiness!

I was there when the doorbell rang . . . this would be the little boy next door . . . come out and see my new bicycle (you can almost set your watch by his arrival on Christmas morning). The second serious note is also yours: who wants some breakfast? . . . (no one is paying any attention to you, dear) WHO WANTS SOME BREAKFAST? I have to put the turkey in the oven and get dinner started.

We have our usually hurried breakfast . . . now, for the turkey (what a big one, will he fit in the oven?) let's see, mashed potatoes and sweet potatoes, dressing . . .

WILL EVERYONE PLEASE GET OUT OF THE KITCHEN (temper, temper, dear) . . . Grandma and Grandpa will be here . . . the table is like a picture-book . . . mmmm, smell that turkey . . . the whoops and hollers tell us the children have seen Grandma and Grandpa drive in the driveway . . . there's laughing, hugging, kissing . . . MERRY CHRISTMAS . . . there's a flurry of people getting seated . . . a pause of silence, the little one says the blessing . . . and please, dear God, let Daddy have a Merry Christmas wherever he is . . . another flurry of activity . . . a short period of mmmm's and the clatter of silverware . . . I'll have my pumpkin pie later, thank you . . . coffee anyone . . . Grandpa retires to the living room . . . (he'll be sound asleep in ten minutes, I'll bet!) . . . too soon there are good-byes, thank you's, call us, as Grandma and Grandpa depart . . . the children are in bed . . . you feel awfully alone . . . and a feeling of depression sweeps over you (I share this feeling even though I am with you) . . . you wonder why it has to be me out there . . . why not any one of a million others . . . why on Christmas?

Believe me, dear, there IS a reason. I know you're not particularly interested in the "big picture" and the fight for freedom may seem very far away, but it's next Christmas—and the one after that, and our grandchildren's Christmas that we are insuring by our presence here now!

Perhaps a closer, more vivid example of our need is the incident that happened last week. It was night, our fighters were returning from a strike when suddenly the radio shrieked MAYDAY, MAYDAY (a pilot's distress call), pilot ejecting. We launch in the helicopter—the thought races through my mind—a week before Christmas . . . we've GOT to find him! At night,

the ocean blends with the sky to form an endless black mass . . . we must look sharply, thoroughly—and pray . . . the crewman reports a faint glimmer of light . . . it disappears . . . reappears . . . IT'S HIM!! Quickly, methodically, we make our approach and come into a hover over him . . . in no time we have him safely aboard. As the copilot radios the ship, "Survivor aboard, returning to ship," the pilot, still dripping cold salt water, leans into the cockpit between the copilot and me. He gives my shoulder a firm squeeze and, grinning, gives me a "thumbs up" with his soggy, yellow-gloved hand. This is the Navy way of saying, "Thanks, everything is O.K." I am aware of a sudden lump in my throat. I suppose it is partially due to the pride in my crew and the success of the mission, but I return to my earlier thought, a week before Christmas. Now this pilot will be able to spend Christmas with his family . . . just as I am.

It HAS been wonderful spending Christmas with you . . .

All my love,
A Pacific Fleet Angel



MARINE (R) STANDS OOD WATCH

The Captain is OOD. Capt. Russell Hanthorn, USMC, has invaded a Navy domain seldom stormed by any Marine. During the recent WestPac tour of the USS Independence, Capt. Hanthorn qualified as Officer of the Deck Underway. During bridge watches, the Marine officer handles the ship and is responsible to the ship's captain for the safety of the crew and carrier. A "volunteer" for OOD training, Capt. Hanthorn is Commanding Officer of the CVA's Marine detachment.

LETTERS

Let's Look at The Record

SIR: As an advocate of Vertical Replenishment (VertRep) and with an interest in its history, I would like to set the record straight concerning the article *Vertical UNREP: New Way for the Navy* on page 11 of your November 1965 issue.

USS *Altair*, an AF, USS *Wasp* and eight destroyers completed an all-vertical replenishment of AKS and AF stores to the nine receiving ships in the fall of 1964 with one H-34 helicopter. *Altair* can provide more complete details. But the point (as far as it is known) is that the latter was the first all vertical underway replenishment of all AF and AKS stores to a carrier task force.

Sylvania and the H-46 helicopter represent the last word for extending the capabilities for underway replenishment. It is reassuring to see them seeking new records.

For the information of *Sylvania*, there are two firsts in underway VertRep which might be established: (a) The transfer of all dry stores to a task force at night (night VertRep has already been done, *Altair* to *Enterprise* also in the fall of 1964), and (b) the transfer of all stores (including POL) by VertRep.

W. B. MORTON, CAPTAIN, USN

Commanding Officer
USS *Randolph* (CVS-15)

About Time!

SIR: I uttered an "It's about time!" when I read in the current *Naval Aviation News* that Congress had approved flight deck hazardous duty pay for enlisted men and officers who work on the Navy's aircraft carriers.

Having taken pictures on the decks of more than 20 Navy carriers over a 23-year period, I know first hand what those men go through. They deserve a whole lot more extra pay than they won. The flight deck is the place only for the experts at self-preservation. I have the most profound respect for the men in the colored shirts. The Navy's carrier aviation is only as good as its flight deck crews.

ARTHUR L. SCHOENI
Ling-Temco-Vought

P.S. Are there any more U.S. Naval Aircraft Designation sheets available?

† Yes, there are, and we'll send some to you. If anyone else would like to have additional copies, originally enclosed in the October 1965 issue, he should send in his request to Naval Aviation News, Room 4703, Munitions Building, Washington, D. C. 20360. We will try to get them at once.

Ask the Man who Flew One

SIR: Your September 1965 issue, with its interesting story of VF-14, has this caption on page 19 under the top center picture: "These F4B's are not to be confused with the present F-4B's. F-4B's flew in 1932-35."

May I be permitted a nit-pick? I realize that the caption was intended to apply to the years in which old VF-1 was flying F4B's. Nevertheless, I think it's a bit misleading for the history buffs.

I enclose a copy of a pen and ink drawing I made from this picture in 1930. The picture, I believe, was of planes of VB-1 (later VF-5) which had the F4B's in 1929 and 1930. If my hazy memory serves me rightly (and it sometimes doesn't) I was the pilot of the middle plane.

Congratulations to you on the continuing high quality of *Naval Aviation News*. It is a fine magazine and does a wonderful job.

FITZHUGH LEE
VICE ADMIRAL
COMMANDANT

The National War College
Washington, D. C.



† Admiral Lee's nitpick in the interests of aviation history is welcomed. In the deadline rush, several of the illustrations used in the September 1965 Top Hatters possessive article show insignias other than the high hat. Following are photos, for the history buffs, of the fighters as actually used by the Top Hatters.



A VF-1 Boeing FB-5 with race number for the 1927 National Air Races, Spokane, Wash.



TOP HATTERS flew the later model Boeing F4B's, F4B-3's, for a while back in 1932-1933.



MARKINGS of VF-14's first jet, F3D-2's, included High Hat and Air Group tail letter.

Watch It!

SIR: I have a small "boner" to point out. In the November 1965 issue, there is a picture on Page 7 of V-3 blue shirts jumping over the edge of a moving aircraft elevator. If a man slips, he loses his foot—or leg—or life. Note that the elevator operator is not watching the action and therefore couldn't possibly stop in time. FTG at Gitmo must have changed the watch, for they should have caught and rectified this procedure at ORI.

R. E. POST, LCDR., USN

Naval Aviation Safety Center
NAS Norfolk

From Sentences to Sonar Personnelman Takes to the Air

If the pilots of HS-9 don't submit the neatest yellow sheets in the Navy, they should. Their newest aircrewman, D. M. Johnson, PN1, has relinquished the keys of his typewriter to the workings of the SH-3A and its AQS-10 sonar.

After 11 years as a personnelman, Johnson decided it was time to make the change. He recently completed nine months of study in the squadron's training program covering the theory, operation and maintenance of the AQS-10 sonar, utility and rescue procedures, and NATOPS procedures. He plans to take the February examination for Aviation Antisubmarine Warfare Technician First Class, AX1.



SQUADRON INSIGNIA

Fleet Tactical Support Squadron One, based at Patuxent River, is commanded by Captain R. A. Haase. In the past five years, VR-1 has flown 93,000 accident-free hours and 13 million miles in the C-118, C-130 Hercules and C-131.



SQUADRON ONE





GET IN THE DRIVER'S SEAT

NAVAL AVIATION

NEWS

A rent-a-car agency the Navy is NOT. But it does lend the world's finest aircraft to alert college men who qualify for Naval Flight Officer or Aviator training. There, right ahead of you, is the magic carpet that may whisk you within a cat shot of where the action is. Just tell your Navy Recruiter, 'I want to FLY NAVY.'