

NAVAL AVIATION

NEWS



2nd Year of Publication

MARCH 1961

SHARE
THIS
COPY



FLEXIBLE 'FIFTY' IN THE FAR EAST

A P5M-2 Marlin of VP-50, mustering some 4000 pounds of thrust with the help of four JATC bottles, runs into the wind at the start of another of its varied missions in the Far East. Skippered by Cdr. F.G. Koenig, VP-50 is the only WestPac squadron operating the newest Marlin whose advanced hull design and versatile equipment permits operation in unusually heavy seas and increases capability in performance of SAR, patrol and other vital flight assignments

FORTY-SECOND YEAR OF PUBLICATION, MARCH 1961

■ IN THIS ISSUE

- | | | |
|--------------------------------|-----------|---|
| Pacific Missile Range | 7 | <i>High spots of the Pacific Missile Range's progress in 1960 is reviewed by Naval Aviation News.</i> |
| Bombing Derby | 10 | <i>Sanford's annual classic, the midwinter bombing derby, is won by VAH-11.</i> |
| Navy's Biplane Fighters | 14 | <i>BuWeps' Hal Andrews continues the Naval Aircraft story with a review of early biplane fighters.</i> |
| Hancock Photo Essay | 20 | <i>USS Hancock proves the big ship is a photogenic as well as proficient carrier.</i> |
| Structural X-rays | 22 | <i>X-ray has many novel uses, but none more practical in aviation than that of revealing hidden structural defects.</i> |
| Phantom II | 24 | <i>The McDonnell story takes us along the assembly line from which comes the Navy's latest record breaker.</i> |
| Tactical Air Group Two | 30 | <i>At Camp Pickett and Pinecastle, TACRON's 21 and 22 provide realistic close air support training.</i> |

■ THE STAFF

- | | |
|--|--|
| Cdr. George F. Rodgers | Head, Aviation Periodicals Office |
| Cdr. Walter E. Aymond | Editor |
| Izetta Winter Robb | Managing Editor |
| LCdr. R. J. Massey,
Joseph E. Oglesby, JOCS | Associate Editors |
| Cdr. Oliver Ortman, Harold Andrews | Contributing Editors |
| Dorothy L. Bennefeld | Assistant Editor |
| James M. Springer | Art Director |

■ COVERS

A scene from the 50th state is appropriate for the Fiftieth Anniversary of Naval Aviation. The picture was taken by cameras of VCP-63. Back cover is a contrasting scene, taken by Eugene B. Barfield, PH2, of VX-6, on the ice landing strip at McMurdo Sound, during "summer" down at the South Pole.

Use of funds for printing this publication has been approved by the director of the Bureau of the Budget, 10 Feb. 1959.

Published monthly by Chief of Naval Operations and Bureau of Naval Weapons to disseminate safety, training, maintenance, and technical data. Send mail to Naval Aviation News, Op 05A5, Navy Department, Washington 25, D. C. Office is located at 2306 Munitions Bldg. Telephone: Oxford 62252 or 62259. Annual subscription rate is \$2.50 check or money order (\$1.00 additional for foreign mailing) made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C. Single copy, \$.25.



NAVAL AVIATION NEWS

GE Trophy to F4H Pilots Awarded for World Speed Records

Two Naval Aviators who flew the F4H-1 to unofficial world records in September have been awarded the General Electric Trophy for contributions to progress in military aviation.

Sharing the trophy are Marine LCol. Thomas H. Miller, who flew in *Phantom II* to a speed of 1216 mph around a 500-kilometer closed course, and Cdr. John F. Davis who flew the same type plane around a 100-kilometer closed course at 1390 mph.

Both had received Distinguished Flying Crosses earlier.

The F4H-1 is powered by two General Electric J79 turbojet engines and is the Navy's fastest fighter.

LCdr. Craven Wins Award Praised for Work Aboard Randolph

LCdr. Philip R. Craven of VF-174 has been awarded the CNO Leadership Award for 1960. He was nominated for the award while he served aboard USS *Randolph* as aircraft handling officer, with collateral duty as Air Department training officer.

Adm. Robert L. Dennison, CINCLANTFLT, presented the award for Adm. Arleigh A. Burke, CNO.

LCdr. Craven reported aboard the *Randolph* 18 July 1958. His nomination for the award said he won the respect of officers and crew during the trying period when the ship was converted to handle anti-submarine warfare operations.

He was credited with molding the *Randolph's* aircraft handling group into a close knit, highly efficient professional group. The CNO Leadership Award is presented annually to the officers and men who, in the opinion



SCROLL IS PRESENTED BY CINCLANTFLT

of the Chief of Naval Operations, have demonstrated leadership markedly superior to their contemporaries.

VF(AW)-3 Pilots Recognized Norad Designates 11 'Experts'

Eleven pilots of All Weather Fighter Squadron Three, based at NAS NORTH ISLAND, have been given "expert" status by the North American Air Defense Command (NORAD). Led by Capt. Russell F. Trudeau, C.O. of the *Blue Nemesis* squadron, the 11 Air Defense Alert Pilots underwent a series of rigid tests on the ground and in the air to receive this highest alert rating.

Qualifying for "expert" were Capt. Trudeau; LCdrs. Bill Armstrong, Joe Schneiders, Ray Gurley, Don "Meet" McGraw; USAF Capt. Ed Whinery; Navy Lts. Jim Pankratz, Dan White, Walt Wood, Ron Durckel and Ltjg. Dan Pedersen. Capt. Whinery is a USAF exchange pilot.

To qualify for the upgrading from "skilled" alert pilot to "expert," pilots must meet the following requirements: have 1000 pilot hours, 700 of which

must be jet time; two years flying A Defense Command type aircraft; 5 hours actual instrument weather flying and successfully completed footage of five profile missions recorded on film. A profile mission includes preflight and postflight briefings, scramble procedures, successful intercept and Ground Control Intercept site and proper instrument recovery and turn around procedures.

The squadron flies the Douglas F4 Skyray, equipped with *Sidewinder* missiles and *Mighty Mouse* rockets.

VF(AW)-3 pilots were winners in Operation *Top Gun*. The squadron also holds the CNO Safety Award for 1960 and has twice won AF Western Air Defense Achievement Award.

Mugu Employs Data System Cockpit of Phantom II Put to Use

A simulated F4H *Phantom* cockpit has been installed at Point Mugu as part of an airborne tactical data system laboratory. The overall laboratory facility will test and evaluate the concept of using airborne digital data processors as part of the Navy's airborne early warning complex.

HSS-2 Helo in Production Sikorsky Gets \$34.2 Million Pe

A \$34.2-million contract has been awarded to Sikorsky Aircraft for production of HSS-2 ASW helicopters.

The HSS-2 is the Navy's first all-weather, around-the-clock helicopter. It can detect, identify, track and destroy enemy submarines.

Its design mission calls for a four-hour ASW patrol while carrying both search equipment and attack weapons. The boat-hulled HSS-2 can alight on and take off from the sea.



FIRST AND LATEST Naval Aviators to rate Gray Eagle Trophy possession were honored recently at Naval Aviation 50th Anniversary Ball in Washington. At left, as Adm. Arleigh Burke, CNO, looks on, VAdm. R. B. Pirie presents trophy replica to Mrs. T. G. Ellyson, whose



husband was Naval Aviator #1. At right, current "Gray Eagle," Adm. C. R. Brown accepts permanent trophy from Adm. J. S. Russell, VCNO. The award, donated by Chance Vought Corporation, recognizes the active duty Navy Aviator who has held this designation longest.

Adm. C. R. Brown Honored Receives First Gray Eagle Trophy

Adm. C. R. "Cat" Brown, Commander-in-Chief, Allied Forces, Southern Europe, was awarded the Gray Eagle Trophy recently in ceremonies highlighting the Naval Aviation 50th Anniversary Ball held in Washington, D.C. The trophy was presented by Adm. James S. Russell, Vice Chief of Naval Operations.

Donated to the Navy by the Chance Vought Corporation, the Gray Eagle Trophy recognizes the Naval Aviator on active duty who has held his aviation designation longer than any other individual. Adm. Brown, the current holder of this distinction, was designated a Naval Aviator on 15 August 1924 and has served in billets in all phases of aviation since that time.

Besides presentation of the permanent trophy to the incumbent Gray Eagle, smaller replicas were bestowed on nine other Naval Aviators or their representative who had held the distinction during the past 50 years. In order these were: Cdr. T. G. Ellyson, Adm. J.H. Towers, Adm. D.C. Ramsey, Capt. H.T. Stanley, Capt. W.W. Townsley, Capt. A.O. Preil, RAdm. I.Q. McQuiston, VAdm. A.M. Pride and VAdm. T.S. Combs.

The Gray Eagle replicas were presented by VAdm. R.B. Pirie, Deputy Chief of Naval Operations (Air).

Admiral Brown will retain possession until his retirement from active

duty. The Gray Eagle Trophy then will be passed on to the next winner.

Sherman Field Dedicated Named in Memory of Naval Leader

Dedication ceremonies were held 11 January for the naming of Navy's Auxiliary Landing Field, located on San Clemente Island, 60 miles off the coast of San Diego, Calif.

The field was named Frederick C. Sherman in honor of the late Adm. Sherman, a three-time winner of the Navy Cross in WW I and II and a brilliant leader of aircraft carrier task unit combat operations in the Pacific.

Mrs. Sherman, widow of the Admiral, accompanied by a group of naval and civic leaders, was present at San Clemente for the ceremonies.



CAPT. COLLINS AND MRS. F. C. SHERMAN

She unveiled the commemorative plaque.

The field is under the operational control of Capt. W. M. Collins, Commanding Officer, NAS NORTH ISLAND.

Last F3D Leaves VF(AW)-3 Served as 'Faker' for Interceptors

All Weather Fighter Squadron Three at North Island has retired its last F3D *Skyknight* to the graveyard at NAF LITCHFIELD PARK. Other F3D's, F3D-2 and -2Q models, are expected to remain in service—particularly in R&D missions—until 1964.

VF(AW)-3's last *Skyknight*, however, has earned its rest. In December 1955, when VF(AW)-3 was known as Fleet All-Weather Training Unit Pacific, the F3D-equipped squadron became a member of the Air Defense Command as the Navy's first and only squadron dedicated solely to an air defense mission.

Even then the F3D was not new to the squadron. While based at Barber's Point from 1953 to 1955, the F3D was used in training all-weather pilots.

When VF(AW)-3 replaced its F3D's with newer and faster F4D-1's, the F3D became a "faker" or target aircraft.

Since the F3D was capable of remaining aloft for long periods of time at high altitudes, it served as an airborne intercept training aircraft.

The F3D also has been used for logistics and support missions, and for cross country and instrument training.



GRAMPAW PETTIBONE

Hot Stuff

A young airman was ordered to change the oxygen regulator in an F2H-4 *Banshee* one raw and cold morning. He had done the job before without incident, so was allowed to work alone. Removing his heavy jacket, he climbed into the cockpit and closed the canopy. (Remember, it was cold outside.) He hadn't disconnected the battery because he had never been told to do so and never gave it a thought. He had also been informed that it was simpler to bleed the oxygen lines from inside the cockpit, although the oxygen supply could be shut off from outside the aircraft.

He therefore bled the oxygen line, the oxygen escaping-into the closed cockpit, and was in the process of changing the oxygen regulator when he dropped it! The regulator fell against a circuit breaker, causing sparks which ignited the oxygen. The whole cockpit erupted in flames.

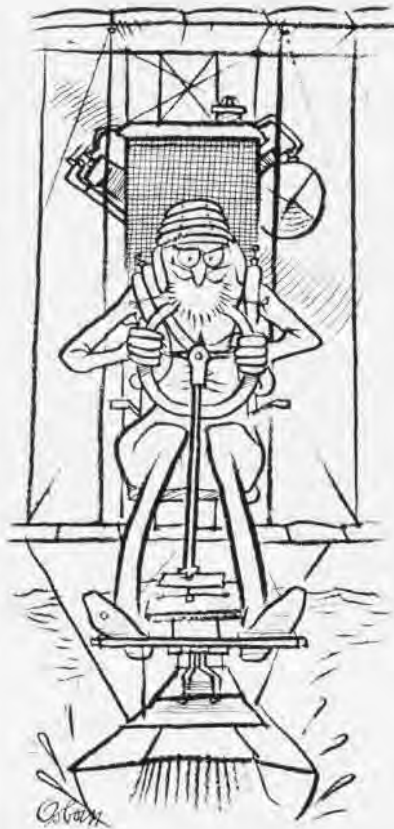
Opening the canopy, the man dove out of the flaming cockpit and rolled on the ground in a vain attempt to extinguish his flaming clothing and hair. Other men nearby smothered the fire with their jackets, and he fortunately survived, although he'll spend about three months flat on his back getting some pretty extensive second and third degree burns treated.



Grampaw Pettibone says:

Great balls of fire! This young airman had one of the sketchiest checkouts on his assigned job I've ever run across. The only reason he never started a roaring blaze before is because he was LUCKY!

Regular and liquid oxygen are just about the most dangerous substances we have around an airplane. You've got to treat that system like you were disarming a fuse. This maintenance outfit better GET WITH IT! Give the non-rated men the benefit of the supervision of a good well-qualified petty officer. You may not be able to teach that old hand many new tricks, but remember the new hand has 'em ALL to learn!



All Up and Locked

A young student pilot was walking across a taxiway using the designated walkway en route to his T-28 when he was run down by a taxiing SNB!

His attention at the time was directed to the control tower "to ascertain the duty runway." He NEVER DID see the Beech, even after he'd been clobbered!

Neither the SNB pilot, his co-pilot, or the clobbered student knew what had happened. Another SNB taxiing along the same taxiway saw the dazed student pilot picking himself up off the ground, but thought he had stumbled or tripped.

The accident was not discovered until the SNB (hit and run type, isn't he?) was informed his radio antenna was broken. He returned to the line, and there a bent pitot tube was found

as well as the smashed antenna. A quick phone call revealed that the sick bay had a dazed student there who had been hit by an unknown object.

He had apparently been hit by the nose of the Beech, knocked down by the pitot tube, raked by the radio antenna, and somehow NOT been run over by the tail wheel! How the prop missed him no one will ever know



Grampaw Pettibone says:

Bloody my nose and black my eyes Ol' Swivel Head, as he is known to the rest of the gang in his flight class, is now as skittery as a hen partridge in the spring when the big lads are drummin' all over the area.

Those Beech pilots musta been workin' on their flight plans as the taxied out. Its pretty hard to see over the nose of an SNB, but even people with channel vision can see down the side. A little old-fashioned S-turnin is a big help too. This was a clear case of ALL HEADS UP AND LOCKED!

Out Like a Light

A young NavCad had complete several acrobatic maneuvers during regular syllabus training flight. He was flying a T2J-1 and, since he had not accumulated 37 hours in this mode felt very much at ease.

Prior to take-off, however, he had some difficulty with his oxygen mask. A sticking flapper valve made exhalation difficult, and he had to blow forcefully in the mask occasionally to correct what he thought was a minor problem. Other students had complained about similar difficulties with this mask previously, therefore he had not considered cancelling the flight.

The flight proceeded normally. The pilot did loops, barrel rolls, immelmans and half Cuban eights, covering from 12,000 to 20,000 feet in altitude. Suddenly the situation took a turn for the worse. He had a headache which progressively became worse. He also began to feel slightly dizzy and nauseated

The young man now decided to do one more maneuver and return home.

From that point on, the pilot remembered nothing, either the maneuver he was attempting nor how he ejected, for this he did do. He recalled only that his vision became blurred. He did not know whether he used the face curtain as "D" ring nor even recall the parachute descent.

His streaming parachute, automatic equipment functioning perfectly, and his apparently unconscious descent into a swampy area, where his chute finally hung up in an 80-foot tree, was observed by another aircraft and reported to S/R at a nearby field.

A flight surgeon was lowered by helo hoist into the knee deep swamp water. The pilot was still only semi-conscious, so a stretcher was improvised with small trees, straps, and shroud lines from the parachute. A local fisherman who had been first on the scene helped carry the helpless pilot to his motorboat. The lad was then taken upstream about three miles to the nearest place a helicopter could safely land.

Subsequently, after only 10 days hospitalization, the young man was returned to duty.



Grampaw Pettibone Says:

Jumpin' Jehosophat! This young man nearly had it! Subsequent investigation disclosed quite a few other Navcads who had defective masks and were only lucky that they were not STATISTICS!

When operating at altitudes above where we normal air-breathin' critters can live and function properly, that oxygen mask is the thread that guarantees you'll remain a member of the livin', breathin' group. Take care of it and just 'cause it's free, government issue and all that, don't abuse it. Remember, an oxygen gripe is a downing gripe.

The problems the Navcads were having with their masks could hardly have escaped the attention of their instructors. Any instructor who wouldn't do something about it or instruct his student to have the mask checked just isn't "worth his salt." These lads are new at our business. With a little guidance we can keep 'em with us for a full tour. Let's not have the blind leading the blind.

AOCP Toes

An A3D pilot and his two crewmen were launched in their big bird late

one afternoon, scheduled for a competitive, high-altitude bombing exercise mission of about four and a half hours duration. After passing 5000 feet in the climb-out from the carrier, the pilot noted he had a malfunction in his heating system. The pressurization system was operating normally, but he had no cockpit heat with the control in either the automatic or normal positions.

All three crewmembers were wearing the same type of clothing—summer flight suit, cotton socks, boondockers, and light underwear. None had leather flight jackets or any other heavy clothing whatever.

The pilot briefly considered aborting the mission but decided to continue and fly the last portion at lower altitudes.

The first hour of the hop was flown at 34,000 feet. Outside air temperature was minus 30° Centigrade (-22° F.). All plexiglass was now frosted over except the windshield area immediately ahead of the pilot. The next 45 minutes were flown at 31,000 feet, the outside air temp being minus 20° Centigrade (-4° F.). There was no way of determining the cockpit temperature, but all three men were experiencing severe chills, all were shaking and shivering, and the pilot himself stated his legs were numb from the knees down. The bomber-navigator was able periodically to remove his shoes and rub his feet to stimulate circulation, but the pilot was unable

to leave the controls or exercise at all.

Although he had planned the return flight at 10,000 feet, the pilot had to remain at 20,000 for the last two hours to allow enough fuel reserve for return to the ship. Temperature here was only minus 10° Centigrade (+14° F.).

A normal night approach and mirror landing aboard was accomplished although the canopy remained frosted over and the windshield had to be continually wiped off on the inside to enable him to see the mirror.

During the remainder of the night, the pilot suffered great pain in his feet, his toes turned blue, and he was finally treated and hospitalized for 13 days for severe FROSTBIT!



Grampaw Pettibone says:

Great horned toadies! It beats me the things some people get away with! Flight jackets, all types of winter flight gear, and poopy suits are FREE and should be utilized. Heavy underwear and heavy socks, if not available for issue, are a small investment but sure bring big returns in solid comfort. In peacetime, long duration high altitude missions SHOULD BE ABORTED if a suitable cockpit environment cannot be maintained.

A half-frozen pilot is pretty likely to make a half-baked approach to the ship, endangering his own life, his crew, the ship, and two million bucks worth of jet airplane. There's just no substitute for good headwork.



The plucky Boy Scout who will freeze everyone to Death



LEE PEARSON AND A.O. VAN WYEN, NAVAL AVIATION HISTORIANS, LOOK OVER WORK

NAVAL AVIATION CHRONOLOGY PUBLISHED

THOUSANDS of facts, figures and dates of U.S. Naval Aviation History are now available in a one-volume chronology.

In appropriate recognition of the Fiftieth Anniversary of U.S. Naval Aviation, the chronology appeared on 14 February. It should prove of untold value to historian and layman alike who seek accurate data and dates in the field.

Adm. James S. Russell, Vice Chief of Naval Operations, points out that the chronology of Naval Aviation has been prepared "to show the significant events in its growth and development." This has involved the careful listing of roughly 1500 entries, grouped in eight parts, each preceded by a summary and followed by photographs of the period.

The eight parts are as follows: The Beginning, 1910-16; Test of Strength, 1917-19; The Twenties, 1920-29; The Thirties, 1930-39; World War II, 1940-45; Post-War Years, 1946-49; Korean Operations, 1950-53; and The New Navy, 1954-60.

The volume is the fruit of extended and monumental labors. Credit goes for the initiating of the project in 1956 to VAdm. T. S. Combs, DCNO

(Air), and RAdm. (now Adm.) James S. Russell, then Chief of the Bureau of Aeronautics. The entries and compilations represent tireless research into the details of events important in U.S. Naval Aviation.

Problems are always posed where a selection must be made. That this selection has been made carefully against a broad background of knowledge and experience in the history of Naval Aviation is at once evident on every page.

The chronology is published in loose-leaf form so that the addition of supplements is entirely practical, and insures a means of keeping the record current in the future.

Historians of DCNO(Air) and the Bureau of Naval Weapons, Mr. Adrian O. Van Wyen and Mr. Lee Pearson, both recognized authorities in the field of Naval Aviation history, have been the chief editors of the chronology. At every turn, the editors have anticipated the special needs of students and writers by giving them a tool that allows them to get as quickly as possible to the dates and events on which they need information.

Of the some 250 pages, 65 are devoted to the presentation of 286 pho-

tographs, many of them pictorially unique.

Additionally, the editors have brought together various compilations that should solve the problem of historians, editors, and writers who need special information. For those who need to know, or for those who are merely interested and wish to settle an argument, the appendices offer six comprehensive compilations: (1) the First Naval Aviators—#1 through #250; (2) the Holders of Aviation Commands; (3) Aviation Ships—carriers, escort carriers, and seaplane tenders together with their numbers, date of commissioning and first skippers; (4) Aircraft on Hand, 1911-1918, 1920-1956; (5) Combat Aircraft Procured—dates, orders, deliveries and number procured, manufacturer, etc.; and (6) Helicopters Procured, with the same complete data on orders, deliveries, etc.

An unusual feature is the index by

day. For example, the speech writer who wants special items for an occasion, say the Fourth of July, looks for the entries under that day of the year. He finds that in 1917, 1927 and 1941, July 4 was marked by events of importance in the history of Naval Aviation. Only a few days in the year remain without some event of note.

The chronology is also indexed by subject from "Aerology and Aerological Equipment" to the final entry under "Uniforms." The student concerned with a particular aspect of Naval History throughout the years has the trail marked out.

Mr. Van Wyen has been with DCNO(Air) as an historian since 1944, and Mr. Pearson has served in a like capacity with BUAER, now BUWEPS, since 1947. Both men have brought to the task of compiling the chronology a wealth of information and experience.

Distribution of the chronology (NAVWEPS-00-80P-1) is scheduled for a Navy-wide dissemination based on the Standard Navy Distributor List. At a cost of \$2.50, it is available through the office of the Superintendent of Documents, Government Printing Office, Washington, D. C.



PACIFIC MISSILE RANGE REPORTS

IN ITS two and one-half years of operation, the Navy-managed Pacific Missile Range expanded from a headquarters at the Naval Missile Center, Point Mugu, to a world-wide network of islands and tracking stations to support the United States missile and space programs.

The year 1960 was marked by many historic missile and space events on the Pacific Missile Range (PMR): the first recovery of a space-orbiting vehicle, *Discoverer XIII*; the first recovery of a ballistic trajectory nose cone in the Pacific, NERV; the first satellite launch from the Naval Missile Facility, Point Arguello, *Samos I*; and the first firing of *Hydra*, the Navy's method of positioning heavy boosters at sea for launch of payloads.

Also in 1960, the Pacific Missile Range became one of the two read-out stations for the National Aeronautics and Space Administration's *Tiros II* weather satellite; took over operational control of the tracking stations for the Navy's navigational satellite, *Transit*; and pushed construction for three ground stations to support NASA's *Mercury* program.



HIGH ALTITUDE sampler rocket for AEC upper air research was one of many test series.



SIGNALS FROM SPACE are monitored aboard PMR range ship, USNS Longview, as *Discoverer* capsule descends from orbit. Year 1960 saw installation of *Transit* and *Mercury* tracking gear.

As space-age achievements progressed, so did the Pacific Missile Range. Fifteen million dollars in construction was completed on the Range, 900 launch operations and 2890 support operations were conducted, and three more range ships were added, making the total seven.

Discoverer XIII, in the Air Force's polar-orbiting satellite program, was launched from Vandenberg AF Base 10 August and was ejected from orbit the following day. Part of PMR's surface recovery unit, the USNS *Haiti Victory* (now the USNS *Longview*) launched one of her two helicopters and plucked the nose cone out of the Pacific, marking the first time that an orbiting vehicle from outer space had been recovered.

NERV (Nuclear Emulsion Recovery Vehicle), launched from NMF POINT ARGUELLO on 19 September, was recovered less than three hours later by the USS *Rowan* (DD-782), part of the First Fleet. The NASA vehicle was so successful on the first shot that other planned firings were cancelled.

The launch of the USAF's *Samos* from NMF POINT ARGUELLO on 11

October marked the first time the facility was used for a satellite launch. Although unsuccessful, the *Samos* firing illustrated that Point Arguello had come of age in the missile era.

The Navy introduced a new concept for the heavy rocket booster launchings with the introduction of *Hydra*. Under the *Hydra* principle, large, solid-fueled rockets can be launched



NASA'S NERV rose to 1200 miles. Its nose cone was first to be recovered in the Pacific.



USNS LONGVIEW, PMR range ship, gained fame under its former name of USNS *Haiti Victory* when it recovered the nose cone of *Discoverer XIII*, first man-made object recovered from orbit.

from the ocean while floating upright, similar to a spar buoy. By launching from the ocean, the cost of launching pads is eliminated, and there is no danger of damaging the pad in the event of an unsuccessful launch since the sea is "self-healing." The *Hydra* concept allows mobility and the choice of launching areas.

Information from NASA's *Tiros II* was received by PMR antenna at San Nicolas Island and relayed to Range Headquarters at Point Mugu. Personnel from the Army, Air Force, Navy, and the Weather Bureau analyzed the information and forwarded it to Fleet Weather Centrals and other locations.

Operational control of the *Transit* satellite ground system came under PMR control during 1960. *Transit*,

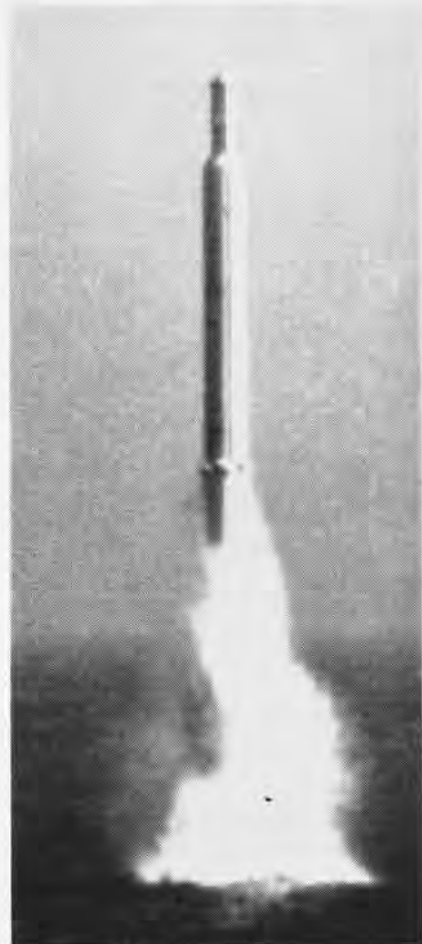
the Navy's navigational satellite system, will provide all-weather navigation accurate to about 500 yards. Locations for the portable *Transit* stations include Newfoundland, Alaska, New Mexico, Brazil, Hawaii; other sites are under study.

The Pacific Missile Range will operate three ground-tracking stations for NASA's Project *Mercury* manned satellite program at sites on Canton Island, in Hawaii and at NMF POINT ARGUELLO.

Construction amounting to more than \$15 million was completed on the Pacific Missile Range during 1960. Major projects completed were MILS (missile impact location systems) buildings at Hawaii, Eniwetok, Midway and Wake Islands. Construction



HYDRA DEMONSTRATED the Navy's safe and economical way to launch heavy space boosters from any part of the 72% of earth's surface which is water. In first view, the test vehicle is towed to launch site. Bottom (R), it floats like spar buoy, then rises—and soars away!





demands for contributions to our nation's space technology by PMR engineers and scientists.

The mission of the Pacific Missile Range, as stated by SecNav, is "to



SANFORD HOSTS ANNUAL DERBY



EIGHTH ANNUAL BOMBING DERBY, STAGED BY HEAVY ATTACK WING ONE, BROUGHT THOUSANDS TO NAVAL AIR STATION, SANFORD, FLA.



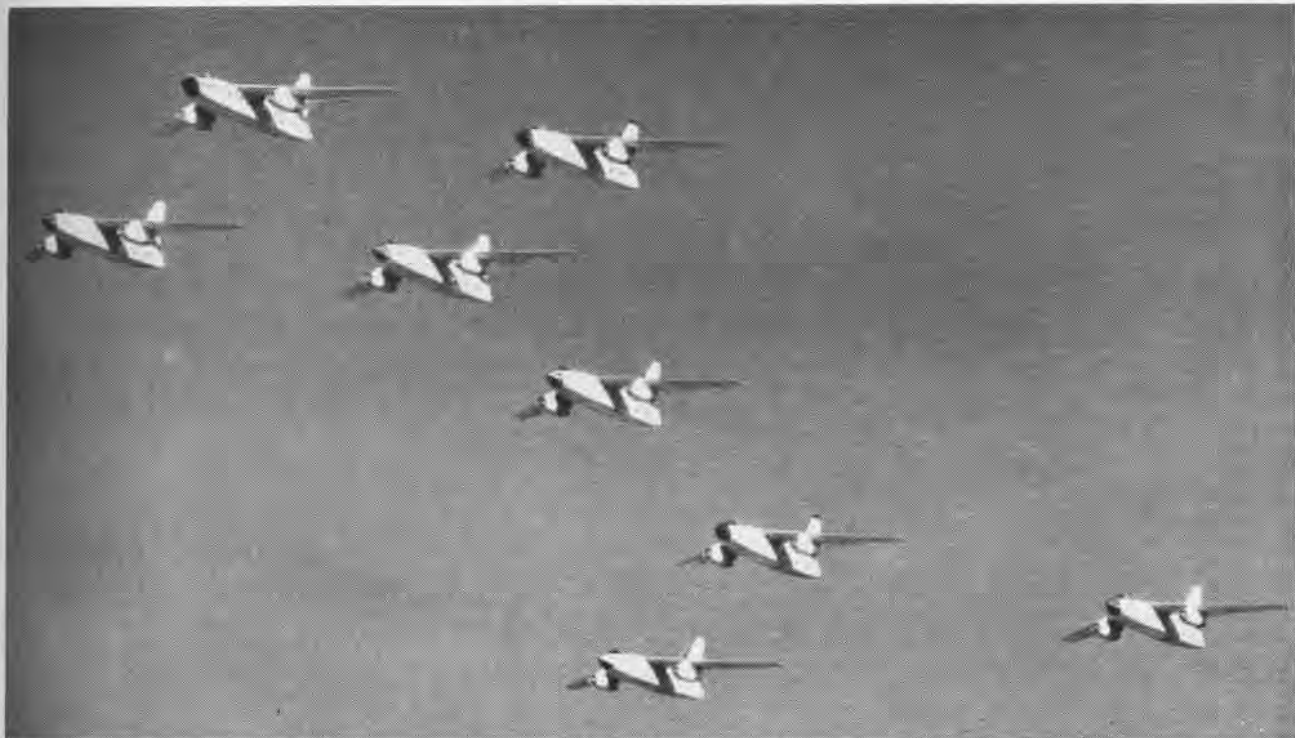
VADM. PARKER, RADM. HYLAND WERE IN THE REVIEWING PARTY



ADMIRALS CONGRATULATE THE SKIPPER OF WINNING VAH-ELEVEN



ONE HIGHLIGHT IN THE BOMBING DERBY'S THRILL-LOADED DEMONSTRATION WAS A JET-ASSISTED TAKE-OFF OF AN A3D SKYWARRIOR



WING PARADE CAPPED DEMONSTRATIONS WHICH INCLUDED LOFT BOMBING, AIR REFUELING AND A3D VERSION OF BLUE ANGELS' FINALE

LIKE THE Tournament of Roses, the Heavy Attack Wing One Bombing Derby at NAS SANFORD is something of a classic. This mid-winter work-out, which covers an entire week, is carried off with certain elements of sporting events—squadron colors, popular teams and visiting dignitaries. Representatives of the big aircraft carriers are there to spur their favorites on to victory.

VAH-3, the training squadron, represented the fictitious USS *Sanford*; VAH-5, USS *Forrestal*; VAH-7, USS *Enterprise*; and VAH-11, USS *F. D. Roosevelt*. Missing at the starting gate were VAH-1 of the *Independence* and VAH-9 of the *Saratoga*, both in the Mediterranean with the Sixth Fleet.

In the flying and bombing phases of the Derby, each competing crew flew attack missions that varied from tree-top level, low-altitude attacks, ranging through the southeastern states, to flying on the top of thunderstorms at nearly 40,000 feet and out over the Atlantic more than 1000 miles at sea. Points were awarded in pop-up bombing, high altitude radar bombing, loft bombing, high and low altitude navigation, weapons-loading competition and carrier airmanship.

VAH-7 took an early lead by win-

By LCdr. J. D. Langford

ning the weapons loading competition with 592 out of a possible 600 points. From then on, VAH-11 took over and stayed in the lead to the wire where it was the equivalent of a photo-finish for the over-all Derby honors between VAH-11 *Checkertails* and VAH-5 *Savage Sons*. A re-run on the Jacksonville Radar Bomb Scoring Site by one crew of each squadron settled the issue, and VAH-11 emerged the winner.

Derby military observers included VAdm. E. N. Parker, Deputy Director of the newly founded Strategic Target Planning Staff, and 26 other Army, Navy and Air Force Officers from the staff who sat in on briefings and criti-



VAH-3'S CDR. MATTUS (C) BRIEFS CREW

ques. They watched the second Mighty vs. Mite loft-bombing contest. This was a one-bomb, sudden-death play-off between an A3D and an A4D. This year it was won by Cdr. Art Barker, Jr., C. O. of VA-172, who piloted the *Skyhawk*.

Air demonstrations included a rocket-assisted take-off of an A3D, loft bombing demonstrations, a Wing parade of diamond after diamond formation of A3D's, air refueling, a carrier airmanship competition, and a Heavy Attack Wing One salute, the A3D equivalent of the *Blue Angels'* bursting bomb maneuver. Another crowd pleaser was the antics of the Navy Tidewater Sky Divers as they plummeted toward the earth from 10,000 feet trailing smoke from their boots for nearly a minute before opening their parachutes.

An A3J *Vigilante*, the new attack jet which has already undergone tests aboard the *Saratoga* and the *Forrestal*, closed the show. The big jet engines were still whining as they ran down when the officers and men of HATWing One fell in for the presentation of the Derby Awards. Then everyone, Sanford-based and visitors alike, proceeded to the shores of Lake Monroe for a civic-sponsored barbecue.



P5M MARLIN of Patrol Squadron 46 fires a brace of two-inch SCAR rockets in training exercise over the Atlantic. In addition to rockets, which are used against surfaced submarines or ships, the P5M carries a full range of airborne ASW weapons, as well as detection equipment. Although most VP squadrons will soon shift to P2V aircraft, VP-46, according to report, will continue to fly the venerable Martin Marlin.

Show Mine Drop Accuracy VP-10 Pilots are Right on Targets

VP-10, skippered by Cdr. Robert A. Kimener, one of six squadrons attached to Fleet Air Wing Three, NAS BRUNSWICK, scored a perfect 100% accuracy for all aircraft participating in aerial mine drops during their Operational Readiness Inspection.

Making a radar approach to the target at low altitude, the six *Neptunes* dropped their Mk 86 water-filled practice charges in perfect position. The 24 simulated mines, planted in water averaging 100 feet in depth, would have effectively sealed off the approaches to the Kennebec River, denying the use of the area to all waterborne traffic. The 100% accuracy of the drops contributed to the outstanding total score of 95.88 for Aerial Mine Warfare achieved by the squadron.

Other Patrol Plane Commanders in addition to Cdr. Kimener, contributing to the "pinpoint pickle barrel" score were Cdr. T. J. Brady, the squadron XO; Cdr. H. Y. Davidson, Operations Officer; Lt. J. F. Keehan, Lt. W. A. Kimball, Ltjg. H. W. Adams.

Scientists Transmit Signals Use Layer Between Wet, Dry Air

Navy scientists in Project *Trade Winds III* have sent radio signals over long distances by guiding the waves through "ducts" in the air formed between the dry and wet layers of air.

Representing the Naval Research Lab and Navy Electronics Lab, they transmitted signals from California which were received in Hawaii, 2600 miles away.

The same signals, if not directed by the air ducts, would have travelled only about 575 miles.

The scientists used three WV-2 *Constellation* aircraft flying between California and Hawaii to investigate elevated duct radio propagation and its correlation with such meteorological phenomena as temperature and humidity. The duct they used follows the boundary between the dry air aloft and the wet air next to the ocean. This boundary climbs from about 1000 feet over San Diego to 7000 feet above Hawaii.

Basic equipment used in the project consisted of dual frequency receiver equipment aboard one of the aircraft, VHF equipment in a second one, NEL transmitters in San Diego and Oahu Island, and the UHF moon-bounce transmitter at Oahu. The third WV-2 aircraft, a Pacific Barrier plane, gathered additional weather data.

Systems Added to Neptune Contract Awarded to Lockheed

The Navy has awarded a \$4,941,573 contract to Lockheed Aircraft Co., Burbank, Calif., to install *Julie-Jezebel* detection equipment on 69 P2V *Neptunes*.

The new equipment permits underwater detection at greater ranges. The

Julie system uses floating buoys that employ an explosive sound source for echo ranging, while the *Jezebel* buoys locate the submarine by triangulating on the noises it produces. The two systems are linked in the plane's electronic equipment. Both are being put on new planes in production.

The new contract completes a program begun in 1958 to modify some 300 *Neptunes* already in service. Total contract involved is \$36 million.

VMF-334 Gets F8U-2N's All-weather Fighter Finishes Quals

With carrier qualification tests completed, the first F8U-2N *Crusader* has been delivered to Marine Fighter Squadron 334 at El Toro.

In preparation for becoming the first Marine squadron to receive the -2N, VMF-334 last summer sent its 23 pilots and 79 ground technicians through Chance Vought's logistic support training school. The squadron was based at NAS DALEAS for the two-week training period. Pilots attended formal classes when they were not flying and enlisted men learned to maintain the all-weather fighter.

The F8U-2N is fourth in the *Crusader* series. It has an improved radar and the more powerful J-57-P20 engine which give it an all-weather capability and higher performance. It carries four *Sidewinder* missiles, twice the number carried by previous versions of the Chance Vought F8U.

He'll Be Wired for Sound Medics to Study Mercury Astronaut

Medical data obtained, sent, and received by electronic devices will give doctors a space-to-earth physical report on America's first astronaut as he orbits the globe.

The Project *Mercury* spaceman's pulse, temperature, respiration, physical reactions, and oxygen consumption will be sent to ground stations.

Heartbeats and other physical conditions will be only a part of the data known to the aeromedical experts as the astronaut travels.

Telemetry equipment furnished by Bendix-Pacific also will relay to earth information on the functioning of the capsule's life-support and its communications command systems.

Jax O&R Gets First T-58 Turbine Powers HSS-2 and HU2K

Capt. Thomas B. Haley, NAS JACKSONVILLE O&R Officer, was reunited with an old friend recently when the first T-58 gas turboshaft engine was brought in for pilot overhaul at Jacksonville O&R.

Capt. Haley was in charge of BUAE Power Plants Section during the initial stages of T-58 development.

The T-58, which develops approximately four-and-one-half horsepower per pound, powers the HSS-2 and the HU2K. Both helicopter types are scheduled for overhaul at Jacksonville.

Pilot Given Dad's Wings Son is Another Naval Aviator

When Ltjg. Daniel M. Truax received his Naval Aviator's wings in December, he received the same set of gold wings which his father has worn 14 years.

His father, Lt. Hugh G. Truax, brought the wings to NAS CORPUS CHRISTI from California and watched young Truax's wife pin them on her husband in the designation ceremony.

In addition to getting the same wings, Ltjg. Truax almost caught up in rank with his father, a 20-year Navy veteran. He recently was promoted to Lieutenant (Junior Grade), a month after his father was promoted from J.G. to Lieutenant.

Lt. Hugh Truax entered the Navy in 1940 and earned his wings in 1946 as an enlisted man. He received his commission in 1955. Now stationed at NAS ALAMEDA, Calif., with Trans-



MRS. TRUAX PINS ON HUSBAND'S WINGS

port Squadron 21, he flies the TF-1, a plane similar to the anti-submarine Grumman 52F *Tracker* which his son flew in the Advanced Training Command with Training Squadron 28.

Ltjg. Daniel Truax entered the Naval Academy in 1955, the year his father became an Ensign. He graduated from the Naval Academy in 1959 and entered flight training at Pensacola, Fla. He reported to the Naval Air Station, Corpus Christi, in June 1960 for his advanced flight training.



AS THROGS gathered at Times Square New Year's Eve to celebrate 1961's debut, they saw this banner announcement of the Fiftieth Anniversary of Naval Aviation. A TV camera (lower right) caught the crowded scene.

Marines Accept the Airtrac Air Defense System Airlift-able

Delivery of *Airtrac*, the world's first helicopter-transportable electronic air defense control system, has been made to the Marine Corps.

Airtrac was developed by Hughes Aircraft Company to coordinate the split-second firing of *Hawk* or *Terrier* guided missiles at hostile supersonic aircraft.

The equipment is installed in portable plastic and aluminum shelters called "helihuts" which can be airlifted by a helicopter to the place where it will be used.

Airtrac can be placed in operation within minutes anywhere a helicopter can land. It furnishes tactical support to Marine ground troops by coordinating the firing of guided missile batteries used in anti-aircraft.

'Circuit Rider' Plan Begun General Courts-Martial Speeded

The Navy is inaugurating a circuit rider program in which specially designated law officers are assigned to all general courts-martial. It started on a pilot basis 3 January with the opening of two Naval Judiciary Units in Washington, D. C., and Norfolk, Va.

The status of the law officer in military trials is roughly equivalent to that of a civilian judge. He is a Navy law specialist officer and normally is on the staff of the flag officer convening the court. His law officer duties are performed in addition to his regular legal duties within the command.

Under the new program, a select group of officers will devote full time to the law officer duties, and will be responsible primarily to the Judge Advocate General.

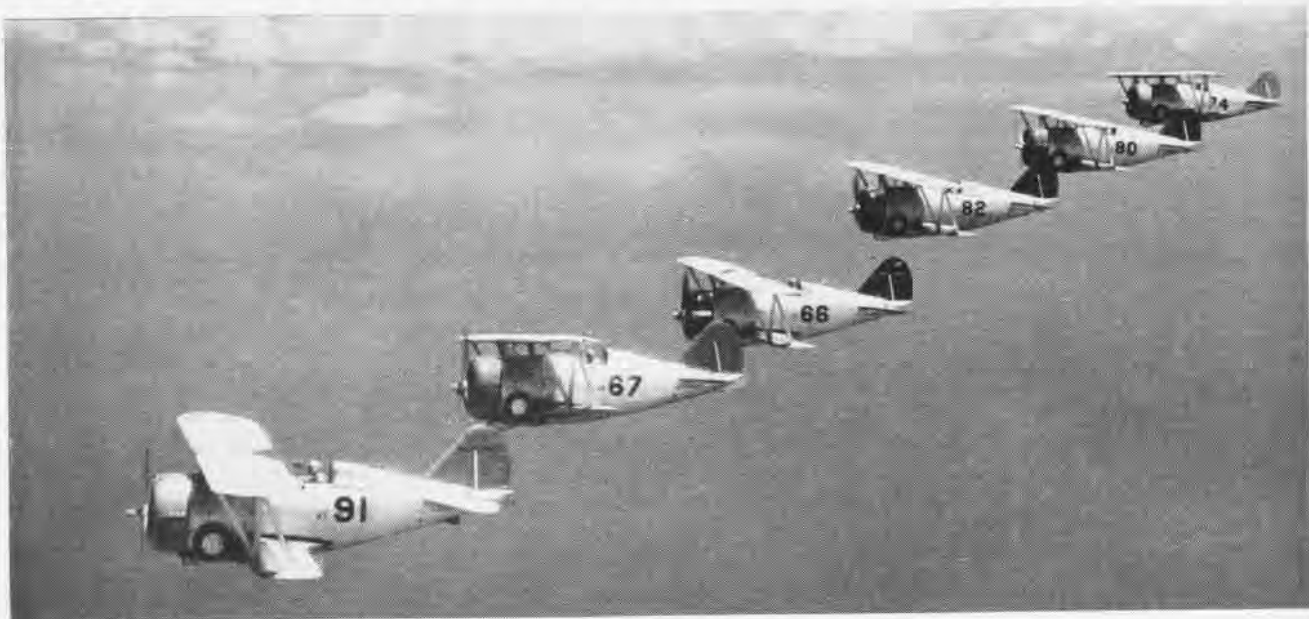
The Naval Judiciary Unit at Washington will service the Third and Fourth Naval Districts and the Potomac River Naval Command, covering an area that includes New York, Connecticut, New Jersey, Delaware, and Washington, D.C. The Norfolk unit will cover the Fifth Naval District, which includes Virginia, West Virginia, Kentucky and Maryland.

Purpose of the move is to improve the administration of military justice. Should the program be successful in reducing the number of errors in the General Courts-Martial and reversals by appellate tribunals, it will then be extended on a Navy-wide basis.



50 Years of Naval Aircraft

FIGHTERS—THE BIPLANE YEARS



BIPLANE FIGHTERS have never been more than museum pieces to most of today's Naval Aviation personnel. Actually they are not so far removed in time from the present day as they are in technical progress from current jet fighters, particularly from the Mach 2 F4H-1 now going into squadron service. Many of the Navy's present senior enlisted men and officers were a part of Naval Aviation when the highly maneuverable biplane fighters symbolized carrier-based aviation.

This period lasted until the eve of WW II, long after the monoplane had become standard for most designs.

Grumman F3F's, last of the Navy biplane fighters (above), were used for fighter operational training at Miami in early 1942. A year before, they were still the mainstay of carrier and Marine Corps fighter squadrons, with monoplane types serving almost all other combat roles. This was a reversal of the usual status which has found the fighters at the forefront of

aerodynamic progress. Emphasis on maneuvering and climb performance played a major part in the delayed transition to monoplanes.

As is the case with the F4H-1 today, one of the Navy's first two fighter development contracts resulted in an outstanding two-place fighter with performance competitive with its single-place contemporaries. This was the Curtiss 18-T *Kirkham Fighter* (later renamed *Wasp*) triplane, designed during the late WW I period.



TWO-PLACE Curtiss HA "Dunkirk Fighter," seaplane of 1918, weighed 3620 lbs. to del., did 127 mph with 380 horsepower Liberty engine.



CURTISS 18-T "Kirkham Fighter," 350-horsepower Curtiss-Kirkham engine, was 2920-lb., two-seat triplane credited with 162 mph in 1919.



THOMAS-MORSE MB-3 obtained under Army contract in 1921 for Marines, reached 154 mph with 320 hp Wright-Hisso, weighed 1818 lbs.



WW I FRENCH fighters, such as the 1625 lb, 122 mph Nieuport 28C-1 powered by a 168 hp Gnome rotary, were used back in early Twenties.



EARLY CARRIER fighter, the TS-1, was built by Curtiss and NAF in 1923, did 125 mph, weighed 1920 lbs., 200 hp Lawrence/Wright J-1.



AN ADAPTATION of the TS, the 1924 Curtiss-Hall F4C-1, with all metal internal structure, weighed 1700 lbs, did 125 mph with 200 hp.

Its unofficial maximum speed of 162 mph exceeded that of almost all the fighters to come out of WW I, European or American. Prototypes were built for both the Army and Navy.

Prior to the time of these first two fighter development programs, Naval Aviators were in combat in WW I, flying fighters built by our allies. Various fighter type "scouts" had also been procured for use as advanced trainers. The increasing pace of Naval Air op-

erations by 1918, and the presence of German seaplane fighters in the European waters where our patrol plane operations were being initiated, brought about development of the *Kirkham Fighter* and the Curtiss *HA Dunkirk Fighter*, each designed for a crew of pilot and gunner.

In contrast to the *Kirkham Fighter* landplane, with its streamlined wood veneer monocoque fuselage, the *HA* was a bulky, heavy seaplane. The *HA*

used a big Liberty 12 engine, the 18-T, a Kirkham K-12 which served as the prototype for all of the later liquid-cooled Curtiss engines.

With the war over, neither type went into production. Fitted with either floats or wheels, and with different sets of triplane wings, the 18-T set altitude records and was used as a racer. The *HA* became, upon redesign, a mail plane for the air mail service, then just trying its wings.



ONE OF THE FAMOUS Curtiss Hawks, the F6C-3, entered service in 1926, weighed 2960 lbs, reached 165 mph with 425-hp Curtiss D-12.



CONTEMPORARIES of the Hawks, were the Boeing FB series; FB-5 used 520 hp Packard 2A-1500, weighed 3290 pounds, reached 170 mph.



CURTISS F8C-4 Helldiver, as it is seen in TV movie of that name advanced dive bombing tactics. Weighing 3730 lbs., powered by 450-hp *Wasp*, it made top speed of 139 mph in 1929.

In the immediate post-war period, no new fighter types were developed for Navy service. Interest in operations from shipboard platforms led to the use of various allied light fighter types; among them the French Hanriot HD-1 (built by the Naval Aircraft Factory) and Nieuport 28, and the British Sopwith *Camel*. Other WW I fighter types, such as the German Fokker D-7 and the all-metal Dornier D-1, were also evaluated, and the D-7 was used in service. A number of the U.S. Army Air Service's standard post-war fighter type, the Thomas-Morse MB-3, was used and Vought VE-7 advanced trainers were modified into single place "fighters."

The first post-war effort to produce a fighter tailored to the Navy's needs resulted in the Navy-designed TS-1, built both by Curtiss and by the Naval Aircraft Factory. One of a series of designs by the then new Bureau of Aeronautics to meet specific Navy requirements, it was a convertible (landplane or seaplane) light fighter which could be operated from the carrier *Langley*. Powered by the 200 hp Lawrence radial engine, later the Wright *Whirlwind*, TS's served with the Navy's first carrier fighter squadrons.

In the early Twenties, wood and fabric construction predominated for service aircraft even though the Germans had operated all-metal aircraft during WW I. As part of BUAF's interest in changing to metal construction, two fighter prototype projects followed the TS. Neither became a service type, but both the Curtiss-Hall F4C-1 and the Wright-Dornier WP-1 were evaluated and pointed the way toward further developments.

The F4C-1 was basically an adaptation of the TS, using metal structure throughout under its fabric covering. The WP-1 was an all-metal, cantilever-wing, parasol monoplane based on the German Dornier company's metal aircraft experience dating back to WW I.

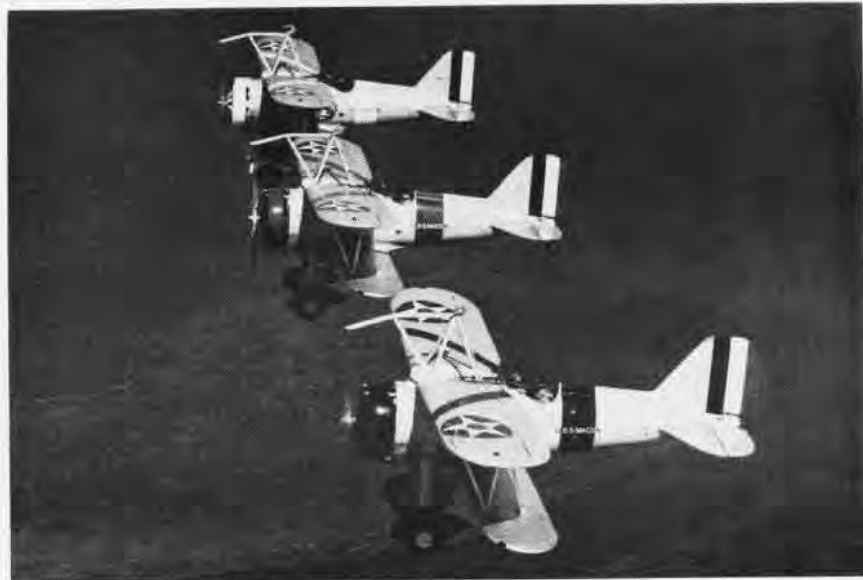
While investigating these new structural designs, the Navy turned to more conventional construction—steel tube fuselage and wooden wing and tail with fabric covering—for the next two fighters procured. Both originally designed for and purchased by the Army, the Curtiss F6C-1 *Hawk* and the Boeing FB-1 represented all the post-war experience of both the Armed Services, and the industry that could be translated into a serviceable operational fighter. The Curtiss D-12 en-

gine, which had evolved through the racing plane programs, was used in both types. Several models of both designs, incorporating new developments in carrier arresting equipment, landing gears and engines, were purchased in the mid-Twenties. The two basic designs, the first really advanced Navy fighters since WW I, served with Navy and Marine fighter and light bombing squadrons for several years.

The appearance of higher-powered, air-cooled, radial engines in 1926 and the increased pace of carrier operations with the coming of the *Lexington* and *Saratoga* brought about the next round of Navy fighters.

Using mixed wood and metal structure, fabric-covered for the most part, they all were powered by the Pratt & Whitney *Wasp* engine. Those that were originally designed for other powerplants were redesigned to incorporate this outstanding engine. As the Boeing F2B-1 and F3B-1 and the Curtiss F7C-1 became service types, their maneuverability and climb performance with the *Wasp* engine became symbolic of Navy fighter aircraft.

Among others that did not go into service, such as the Eberhardt FG-1 *Commanche*, the Wright F3W-1 *Apache* achieved considerable fame, setting several World's altitude records for both landplanes and seaplanes. These *Wasp*-powered types, and the Vought FU-1, an interim fighter de-



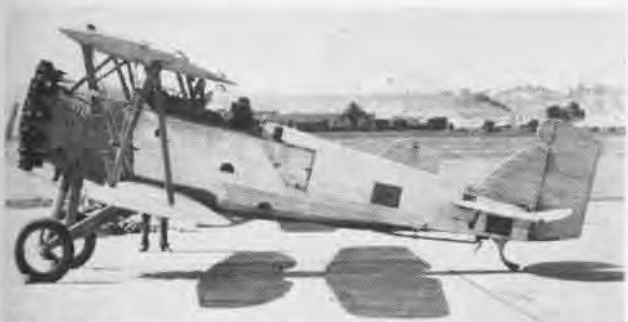
CURTISS F9C-2 Sparrowhawks, operating from the rigid airships, the *Akron* and *Macon*, in early Thirties was powered by 420-hp *Whirlwind* engines. Their top speed was 177 miles per hour.



WRIGHT F3W-1 *Apache* of 1926 became famous for altitude record flights, reached 162 mph with early 375-hp Wasp, weighed 2130 pounds.



INTERIM FIGHTER was 1926 Vought FU-1, using 220-hp Whirlwind. It was designed from Vought VO series and had top speed of 124 mph.



1927 BOEING F2B-1, one of first service carrier fighters designed for P-W Wasp, weighed 2830 lbs., and reached 158 miles per hour.



SHOWN IN LATER development use, Curtiss F7C-1 was service contemporary of F2B-1, weighed 2800 lbs. Its top speed was 151 mph.



FEATURING a streamlined cowling around its Wasp engine, the two-place XF2U-1 of 1928 weighed 3890 lbs. and had a speed of 146 mph.



HALL-ALUMINUM XFH-1 was an experimental type in 1929. It weighed 2520 pounds, reached 153 mph with its 450 hp Wasp powerplant.



ENTERING SERVICE in 1928, the 2950-pound Boeing F3B-1 with 450 horsepower Wasp reached a maximum speed of 156 miles per hour.



SHOWN ON RANGER outrigger, F4B-4 with 500-hp Wasp entered Navy and Marine service in 1932; weight was 3090 lbs., speed 184 mph.



FIRST GRUMMAN airplane as it originally appeared in 1931, the XF-1, weighed 4470 lbs., later reached 208 mph with 600-hp Cyclone.



B/J XF2J-1 was 4320-lb., two-place prototype of 1932. With two-row 623-hp Wright, it made a top speed of 196 miles per hour.



CURTISS XF11C-2 was 1932 prototype of F11C-2, redesignated BFC-2. With 600-hp Cyclone, this 4080-lb. Hawk had 192 mph top speed.



WITH RETRACTABLE gear, 645-hp Cyclone, XF11C-3 served as 1933 prototype for BF2C-1's, last of the Navy Hawk types: speed 216 mph.



FIRST DOUGLAS fighter, 1933, was the XFD-1. Powered by a 700 hp Twin Wasp Jr., this two-place fighter made speed of 204 miles per hour.



BASED ON same BuAer design as XFD-1 was Vought XF3U-1. With same engine, it weighed 4620 lbs., reached speed of 214 miles per hour.

rived from the VO observation series using the Wright *Whirlwind*, were the last convertible (wheels or floats) fighter designs to be flown. Operation of fighters catapulted from battleships or cruisers was dropped.

The *Wasp* engine was also the powerplant selected for a new two-place defensive fighter design. This program resulted in the Curtiss *F3C Helldiver* series aircraft which were widely identified with the then-new dive-bombing tactics. The competing Vought XF2U-1 design, though it did not see service, was significant in that it was the first Navy fighter designed with a streamlined engine cowling, which was to become universal for aircraft with radial engines. Curtiss

Falcon attack/observation airplanes were also procured for Marine Corps use under the *F3C* designation. All of the *F3C* types were subsequently redesignated as VO class aircraft, the "fighter" performance of the *Helldivers* not being adequate to match contemporary single-place types.

New single-place fighters using the *Wasp* were also initiated as the first group went into service. Of these the Hall-Aluminum XF1H-1 and B/J (Berliner-Joyce) XF1J-1 used all metal fuselages and internal wing and tail structure. The former incorporated internal flotation compartments in place of the standard inflatable bags and a droppable landing gear for ditching. Neither of these became service types,

but the contemporary Boeing F4B-1's, which evolved from a company-sponsored project to take maximum advantage of the *Wasp* engine in a fighter design, were the first of the F4B series, the standard carrier and Marine Corps fighters and fighter-bombers for several years. This design also served the Army Air Corps as the P-12 series.

Another foreign fighter type, the British Bristol *Bulldog*, was purchased for evaluation and testing in 1929. Of particular interest was its all-metal internal structure.

New light fighters were designed around two advanced, smaller radial engines, the P&W *Wasp, Jr.* and the larger version of the Wright *Whirlwind*. Both the Curtiss XF9C-1 and

the Fokker XFA-1 followed a BUAER shipboard fighter design in having all-metal fuselage construction and having the upper wing shoulder mounted at the top of the fuselage. This feature, pioneered on the XFJ-1, allowed the pilot to see forward between the upper wing halves, with minimum interference to his field of vision from the upper wing. The XF9C-1 design was modified into the very intriguing F9C-2 *Sparrowhawks* which operated from the rigid airships, the *Akron* and *Macon*. Since neither the performance nor the armament of these light fighters was up to the standard of the F4B's, they were not adopted as service fighters.

The first monoplane designed for Navy use as a carrier-based fighter was the result of another Boeing project for Army or Navy service. An all-metal monoplane using a ring cowling around the *Wasp* engine, the XF5B-1's performance did not represent any improvement over contemporary biplanes and it was not purchased for squadron use. However, the all-metal fuselage was incorporated in later models of the F4B series.

New fighter projects in the early Thirties incorporated the Navy sponsored bigger single and twin-row radial engines. Foremost among these

airplanes was the XFF-1, the first Grumman airplane, a two-place fighter using the single-row Wright *Cyclone*. In production the FF-1 was the first service fighter with enclosed cockpit canopy and retractable landing gear. Other types appearing at the same time used fixed gear. Included were two advanced Curtiss *Hawk* prototypes, the XF11C-1 and -2 with twin-row and single-row Wright engines respectively; the Boeing XF6B-1, a revised F4B with P&W *Twin Wasp Jr.* and the B/J XF2J-1, a two place type with twin-row Wright.

With the F11C-2 selected for production, further advancements were evident in the next fighters. The XF2F-1, prototype of the stubby Grumman single place fighters, and the XF11C-3, an F11C-2 with retractable gear, became service types. Among competitive single place types the Curtiss XF13C monoplane or biplane project was of greatest interest. The XF13C-1 high wing monoplane was superior to the -2 biplane; however its cabin arrangement was not entirely satisfactory for a combat aircraft.

None of the two-place fighters became production types as such; even the advances in powerplants, propellers, and structures did not result in adequate performance as fighters. How-

ever the Vought XF3U-1, one of two prototypes based on a BUAER design was redesigned into the successful SBU series of scout bombers. Curtiss' two-place fighter, the folding wing XF12C-1 parasol monoplane was similarly revised to become the XSBC-1 before being replaced by a biplane design.

Performance of the F11C series was not much better than the later F4B's and the F11C-2's were redesignated as BFC-2's while the retractable gear versions were delivered as BF2C-1's, both serving with light bomber squadrons while the F4B-4's and the F2F-1's served the fighter squadrons.

With the low-wing monoplane becoming more familiar in commercial guise, two projects were initiated to provide a carrier fighter with this configuration, the Boeing XF7B-1 and Northrop (now Douglas El Segundo) XF7-1. Using flaps to reduce landing speed, both showed the concept was feasible. But the F3F-1 version of the Grumman biplane showed considerably better climb and maneuvering performance and the F3F series, -1, -2, and -3, equipped all of the Navy and Marine Corps squadrons until improvements in level flight performance out-classed the biplane in spite of the latter's advantages in combat maneuverability inherent in its larger wing area.



LAST B/J fighter prototype was "butterfly winged" XF3J-1 of 1933. With 625 hp twin-row Wright, its speed was 209 mph, weight, 4000 lbs.



SERVICE F2F-1'S were delivered in 1935. These Grumman's weighed 3800 lbs., were powered with 650-hp *Twin Wasp, Jr.*; made 231 mph.



ONE OF FIRST Navy low-wing fighter prototypes was 1934 Boeing XF7B-1. Speed of 231 mph was reached with a 550-hp *Wasp* engine.



SHOWN WITH 1940 "Neutrality Star," F3F-1's were first delivered in 1936; weighed 4150 lbs., had same engine, speed as F2F-1.



'COD' BRINGS IN MAIL AND VITAL CARGO



POWERFUL SKYWARRIOR EXECUTES A MIRROR APPROACH FOR LANDING ABOARD USS

HANCOCK: ONE FOR TV; FOUR AT SEA

During Philippine Aviation Week, USS Hancock (CVA-19) was televised, catapulting an AD-7 Skyraider while she lay at anchor in Manila Bay (left), then demonstrated more of her amazing versatility at sea in routine Seventh Fleet operations. She is commanded by Capt. E. C. Kelley.



THE A3D IS DESIGNED FOR HIGH SPEED ATTACK, MINE LAYING AND PHOTO RECONNAISSANCE. THIS SKYWARRIOR BELONGS TO VAH-4



USS HANCOCK, FLANKED BY HER DESTROYERS, USS ULHMAN (R) AND USS BROWN (L), IS HEART OF THE FAST CARRIER STRIKE GROUP

MARCH 1961

X-RAY SPOTS DEFECTS, SAVES TIME, MONEY

By John P. Lang
Bureau of Naval Weapons

X-RAY, such as used by dentists to spot unseen trouble beneath a tooth's gleaming enamel, now reveals defects deep in an aircraft's structure.

The Navy pioneered in industrial radiography. Heavy, installed type x-ray equipment has been standard in shipyards and O&R departments for many years. The limitation of the installed equipment was the necessity for removing a part from the aircraft, while with the newly developed portable gear, the x-ray inspection can be done without taking the plane apart first, an advantage as great as it is obvious.

Early in 1959, BUAE, now BUWEP, set up a test project at O&R Jacksonville to look into using the new portable x-ray equipment for aircraft inspection.

Before the evaluation was well underway, the advantages of the new equipment became so apparent that additional sets were obtained for every O&R and for selected test and development activities.

A short time after receiving their first portable sets, the O&R's were called upon to put them to good use. A helicopter rotor blade was found during pre-flight inspection to have a crack almost three-quarters through the spar. The crack had started with an internal defect.

Teams of radiographers were deployed from the O&R's to make an inspection of all blades of this type. As a result of this mass x-ray effort, 11% of the rotor blades were returned to the manufacturer for further inspection. Some pictures from that inspection appear at the right.

Now that the test project is completed, the decision has been made to equip every air station maintenance department, and eventually every carrier, with portable x-ray equipment. But don't expect it tomorrow. First, people have to be trained to use it safely and effectively.

A training program for senior Aviation Structural Mechanics (AM's) and civilian O&R technicians will be established.

The seven-to-ten-week course will take people with no previous radiographic experience and train them in everything from camera loading to interpreting the final film. Particular emphasis will be placed on safety precautions.

Arrangements for the school are not yet complete, but it is hoped to have it in full swing this summer. Money has been earmarked for the additional equipment, and delivery will be phased to the completion of training of the operators.

The portable x-ray equipment consists of a control unit, high voltage generator and the x-ray tube. The high voltage generator and the x-ray tube are contained in the x-ray head, or camera. Film comes in various sizes up to 14 by 17 inches.

During the inspection, the x-ray head is positioned on one side of the structure to be examined while the film in its light proof container is placed on the opposite side.



ROTOR BLADE spars on HSS/HUS helicopters were x-rayed after the spar defect was found in one of the type. Film is placed atop rotor blade.



FILM IS MOUNTED for x-ray of belo tail pylon. When energized, camera on stand will project the x-rays through tail structure to film.



X-RAY HEAD is positioned for a view of F4D leading edge slot track. With radiography, defects can be spotted without taking plane apart.

When all is ready, the operator withdraws a safe distance and applies the power which causes radiation to go from the head, through the structure, to the film.

Depending upon the density of the structure which must be penetrated, the operator varies the power. The 140 kilovolts peak (KVP) of the portable units provide enough power to see through two inches of solid aluminum.

The illustrations on the right show typical results of x-ray inspection. Thanks to artful processing by the Naval Photographic Center, the defects are somewhat more apparent in these prints than they would appear to the untrained eye in the original x-ray films.

Radiography has many advantages over other methods of inspection, which usually involve disassembly before inspection. For instance, x-ray provides one of the few methods of non-destructive testing of sealed units.

Most spectacular advantage of radiographic inspection is aircraft availability. For routine inspection, the aircraft need be out of service only long enough to shoot the pictures. Usually it can fly its normal missions while the pictures are being processed and evaluated.

As might be expected, radiographic inspection is very popular with the commercial air lines, where it is estimated to cost \$1500 an hour to keep a large jet airliner on the ground.

In addition to its other advantages, x-ray inspection is usually a "best buy" on the basis of relative cost of inspection. Here are a few examples:

Inspection of the helicopter tail pylon shown in the picture on the left took only two man-hours, including all processing and interpretation, as against 20½ hours had it been disassembled, inspected, and reassembled.

Inspection of the internal structure of rudders on a transport model took 270 man-hours and cost \$3000 by x-ray compared to 1440 man-hours and \$15,000 by conventional methods.

In another instance, severe fatigue failure was being experienced in the internal structure of an A30 horizontal stabilizer. Visual inspection would have required almost complete disassembly, but x-ray inspection required less than three man-hours and only negligible disruption of scheduled operations.

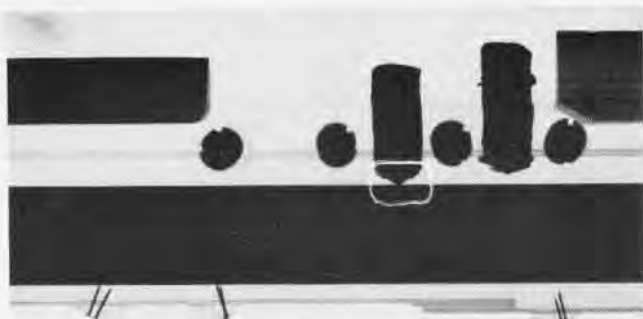
Even though portable x-ray inspection has many advantages, it also has certain limitations. To compensate for those limitations, use of other equipment, such as gamma radiation, is being investigated.

The advantages of gamma ray equipment, which employs a small pellet of radioactive material as a source of radiation, is the small size of the portable camera and its ability to penetrate thick, dense material. Isotopes are available with varying ray energy characteristics. For instance, iridium 192 gives rays which will penetrate up to six inches of aluminum, and isotopes are available which would go through two feet of steel.

The camera for the gamma method measures only one and a half by six inches and thus can be placed inside an aircraft's structure in places which are too confined for the standard x-ray head.

With the radiating head in place, the operator actuates a mechanism which sends the isotope pellet from its lead "castle" up a long tube to the camera.

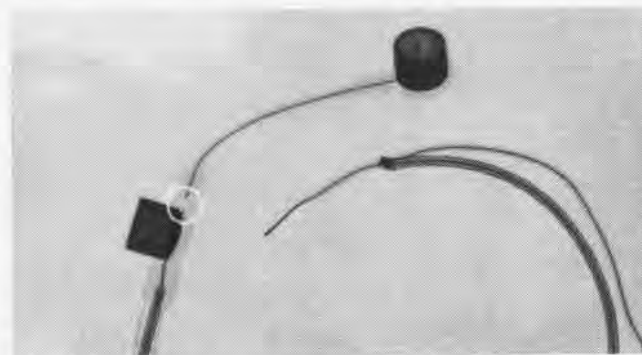
Although no firm decision to procure gamma equipment has yet been made, operators will be trained in its use as a part of the new course in aircraft radiography.



WAS SPAR nicked when holes for lead counterweights were drilled in the rotor edge? The left plug will be removed for visual inspection.



ROTOR BLADE failure can begin with defects, such as this bit of wire imbedded in the spar interior which causes stress concentration.



SEALED COMPONENT was inspected without removal from preservative package. Use of x-ray permits non-destructive testing of sealed units.

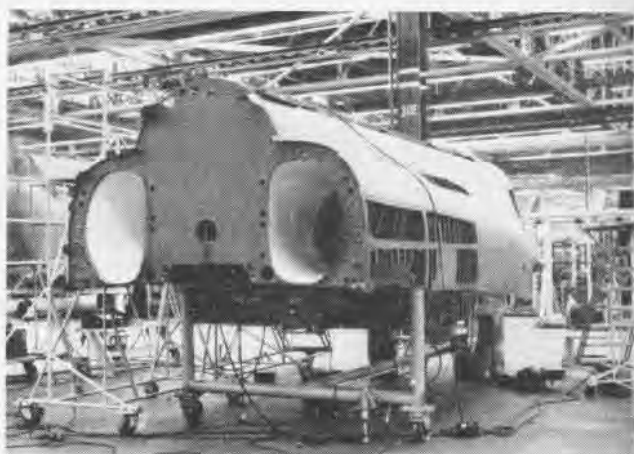


CORROSION INSIDE the tubular steel frame of HTL helicopter, while clearly revealed by x-ray, would be difficult to detect visually.

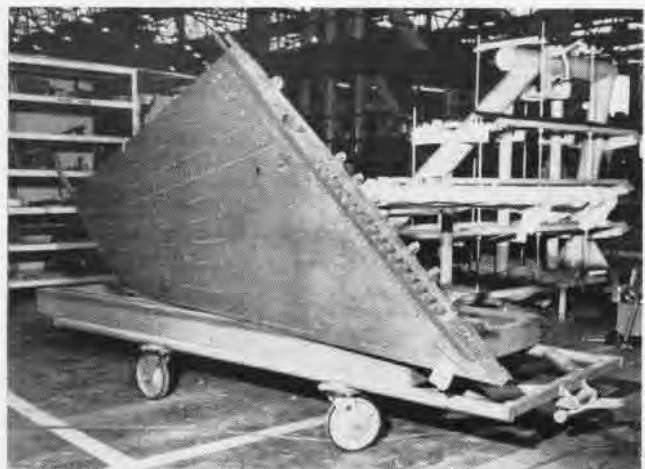
TO FABRICATE A PHANTOM



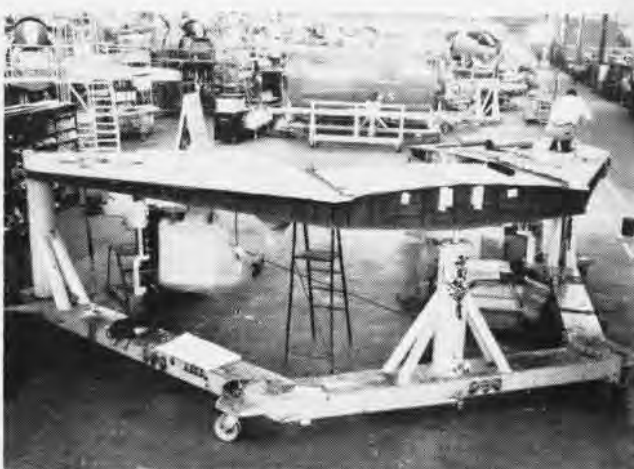
AFT SECTIONS are completed and ready for splicing. Fabrication begins with production of components, joined to form a subassembly.



CORE OF any aircraft is the fuselage. Here center fuselage of F4H is ready to be hoisted atop the center of the wing and bolted.



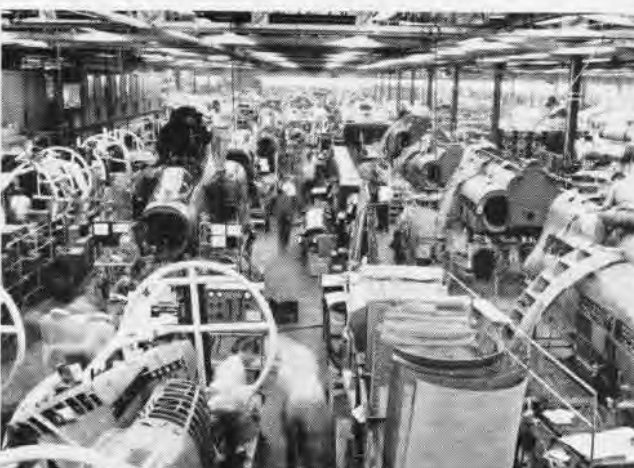
LARGE WING skins are machined from massive billets of aluminum alloy some 2½" thick. This is the right hand outer wing structure.



ANOTHER STEP toward complete assembly is taken when the inner wing, ready for center fuselage, is mounted atop assembly line dolly.



NEXT STEP is the splicing of the aft fuselage. Here three major assembly parts are shown in something that begins resembling an F4H.



IN THE HUGE assembly room, forward fuselage assemblies on the left and center assemblies on right form production channel of F4H.

IN DECEMBER 1960, VF-121 accepted delivery of *Phantom II*, Navy's newest fighter plane. With its two-man crew, powerful radar system, and formidable array of missile armament, the F-4H demonstrated its outstanding performance even during its preliminary evaluation in 1958.

LCdr. Paul Spencer said in 1960 of *Phantom II's* performance in initial carrier tests: "Former single engine pilots will find the responsiveness of the two J-79 engines somewhat close to sensational." Sensational has been *Phantom II's* performance. By the time the F-4H had reached the Fleet, it had set an unofficial world altitude and two speed records.

A look at the McDonnell production line furnishes an interesting example of aircraft construction. Step by step, the *Phantom II* is assembled to become the finished, gleaming product that is some 20 tons of potent weapon.

For ease of manufacture and accessibility during fabrication, the F-4H is made up of essentially four major assemblies: the wings, the forward, the center, and the aft fuselages. The forward fuselage is fabricated in left and right halves ("half-shell" construction), and the cockpit areas are almost completely wired and finished before the halves are spliced together.

The wing of the F-4H is unusual from the standpoint of construction. Wing skins, top and bottom, are machined from massive billets of aluminum 2½ inches thick. Most of the skin stiffeners are machined in this process.

Although aerodynamic theory dictates a long, slim fuselage with a needle-nose, the fuselage of the F-4H-1 is actually three feet shorter than the single-engine *Demon*, an advantage in terms of improved deck handling. Just underneath the nose, which houses the radar gear, a small blunt bulge contains the infra-red or heat-seeking equipment.

Wings are set low on the fuselage in order to keep landing gear reasonably short while allowing enough clearance to carry fuselage and wing-mounted tanks and armament.

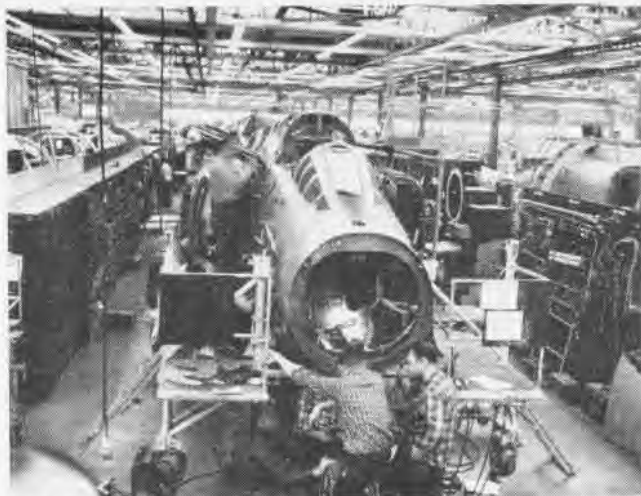
One of the striking features which differentiates the F-4H from other modern fighters is its "horizontal" tail. This thin, swept, highly tapered, all-movable surface has approximately 23 degrees of negative dihedral. Although its span was kept short for proper hangar clearance, directional stability at high speeds is adequate because of the large area and sharp sweep.

Armament of the F-4H—there are no guns—consists of four air-to-air missiles nestled snugly in recesses in the lower surface of the fuselage. Launched downward by explosive charges, they then take off on their own power.

Weighing more at landing than most of Navy's fighters weigh at take-off, the F-4H still has comparable approach speeds.

New and unique features are incorporated in the design. The "wet" wing utilizes the space inside the built-up box spar for fuel storage. Huge inlet ducts vary their area in flight, monitored by an air data computer which also eliminates position error on airspeed and altimeter readings. Ailerons go down, but don't go up; spoilers go up instead.

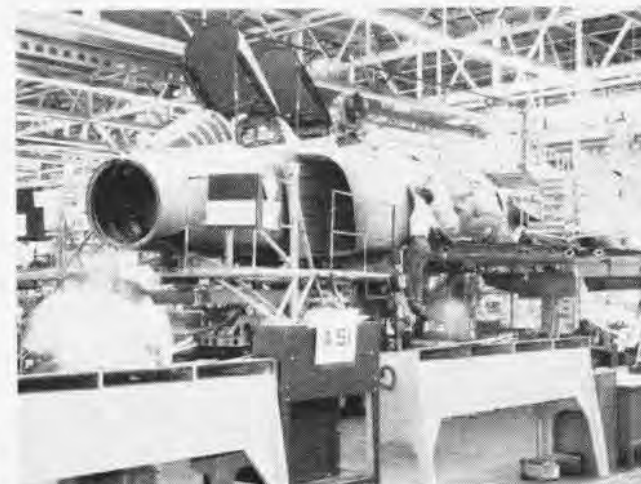
One word about material: ribs and stringers of the stabilator are of steel, skin of titanium, and the trailing edge is made of steel honeycomb. Keel and aft sections of the fuselage also make extensive use of steel and titanium. In both instances, high temperatures in these areas are critical, and it is imperative these heat-resistant materials be used.



THIS FORWARD fuselage assembly is essentially complete. Cockpit areas are almost completely wired and finished before splicing.



SHOWN HERE are left engine compartment details. Forward fuselage assembly is accomplished by fabrication of left and right halves.



WHEN SPLICING of the forward fuselage, last of the four major assemblies, is completed the airplane is structurally complete.



ON THE FINISHING line, the striking features of design that distinguish the F4H from other modern fighters become easily recognizable.



IN THE PAINT room, brand new Phantom II is ready for the finishing touches every fighter needs: Navy colors and identifying marks.



MCDONNELL'S FLIGHT Test Department conducts a thorough "shaking down" of the aircraft's systems. Check-out of electronic equipment

in particular is an extensive operation. When check-out is completed, plane is ready for check flights by McDonnell's pilots and the Navy's.



VF-121 PERSONNEL gather around F4H prior to acceptance flight. Squadron is first in the Fleet to receive Navy's fastest fighter.



CDR. EUGENE R. HANKS, C. O. of VF-121, explains features of F4H to RADM. H. L. Miller, Chief of Staff for Naval Air Forces, PacFlt.



X000th LANDINGS

Aboard USS *Antietam*, No. 87,000, by Cdr. William T. Colvin, X.O. of VT-5, in a T-28C.

Aboard USS *Bennington*, No. 62,000, by Lt. James D. Ehret of VAW-11, detachment Quebec, in an AD-5W.

Aboard USS *Coral Sea*, No. 90,000, by Marine 1st Lt. H.F. Anderson, Jr., of VMA-324, in an A4D-2 *Skyhawk*. He got handshakes from 1st Lt. J.R. Thompson and 1st Lt. L.H. Hill, Jr., squadron mates, who scored Nos. 89,000 and 88,000 respectively.

Aboard USS *Des Moines* (that's right, CA-134), No. 3000 helicopter landing by Ltjg. W. R. Lang of HU-2.

Aboard USS *Forrestal*, No. 48,000, by Cdr. George H. Winslow, operations officer of VCP-62, in an F4U-1P *Crusader*. Earlier he made the 25,000th landing aboard USS *Leyte* in an F4U-5P *Corsair*.

Aboard USS *Independence*, No. 19,000, by LCdr. John C. Mape, X.O. of VA-75, in an AD-6 *Skyraider*; No. 20,000 (in 20 months of operations), by Ltjg. M. E. Feltham of VA-72, in an A4D *Skyhawk*.

Aboard USS *Kearsarge*, No. 75,000, by Lt. Clifford M. Sims of VS-29, in an S2F *Tracker*.

Aboard USS *Shangri-La*, No. 30,000, by LCdr. Walter W. Vaughn, Jr., of VRC-40, in a TF *Trader*.

Aboard USS *Ticonderoga*, No. 31,000 by Lt. Sherman W. Turner of VF-53, in an F3H *Demon*.



C.O. CONGRATULATES 3 VMA-324 PILOTS

BRING THAT BISON BACK, BOYS!

A FULL-SCALE replica of a Canadian Buffalo and a super-gauge shotgun grace the lobby of the headquarters building at the Pacific Missile Range—temporarily, at least.

RAdm. Jack Monroe, Range Commander, and his staff fully intend to keep the big mementoes, but there is a definite possibility of theft. And some staffers, who daily must circumvent the six-foot-high bison, hope a burglar will take place.

He is not exactly a cheerful replica, they opine. In fact he is dour. And he takes up a lot of space.

Adm. Monroe acquired the buffalo and gun as the latest in a series of pranks started by PMR men during a Canadian-U.S. joint cold weather missile test operation at Cold Lake, Alberta, last year.

Visiting Yanks were based at Camp Wainwright during the operation. They cast covetous eyes at a mounted buffalo head in the Canadian Army officers club there.

On the eve of their departure, they smuggled the hairy head aboard their plane, covered it carefully, and went to bed secure in the knowledge of successful chicanery.

Two hours after their plane was airborne the next morning the crew discovered Canadians, too, can play it sneaky. Old Pete was not aboard. He had been unloaded during the night.

Weeks later, upon return to Camp Wainwright for another visit, the frustrated Point Mugu crew was ushered by smug Canadian officers to the main hangar. There, securely bolted to a bulkhead and wired with a burglar alarm, was Old Pete.

This was a challenge to any Navy man. It was accepted. Stealth won over bolts and burglar alarms, and the following week Old Pete showed up at PMR headquarters, displayed proudly at the entrance.

Later the head was returned to Cold Lake. Capt. W.E. Sweeney, deputy Range Commander, presented a plaque to the Canadians commemorating Old Pete's safe return.

Adm. Monroe's latest acquisition was a return courtesy. A big *Argus* maritime patrol plane of the RCAF arrived at Pt. Mugu and the buffalo and gun were unloaded. In a tongue-



SPECK, RADM. MONROE, WITH TROPHIES

in-cheek official ceremony, Squadron Leader Wilfred A. Speck made the presentation. He came to Mugu with 26 other RCAF men in connection with evaluation of the *Bullpup* missile for Canadian use.

He warned, however, that the buffalo and oversize shotgun also are on his mind. They just might, he hints, show up unexpectedly at Cold Lake.

Recruits, Recruiter Reunited All Now Fly on Atlantic Barrier

LCdr. J.D. Gibbs and three officers he encouraged to enlist as Naval Aviation Cadets have been reunited in Airborne Early Warning Squadron 11.

LCdr. Gibbs was a recruiter at NAS MINNEAPOLIS two years ago when he encouraged three young men to become NavCads. Little did they know they would be reunited two years later as fellow officers in VW-11.

The Lieutenant Commander and the former NavCads, now Ltjg. D.W. Friele, Ens. J.M. Jurgens, and Ltjg. V.W. Kleinsteuber, talked over old times in Minneapolis.

The four officers fly wv-2 *Super Constellations* which fly the North Atlantic Barrier from Argentina, Nfld.



GIBBS, FORMER RECRUITS AT MINNEAPOLIS

EAR TESTER GOES MOBILE

EXPERIMENTS in human hearing, and equipment designed as a result of those experiments, may provide a boon to Navy men who are exposed to extremely loud noises.

Medical men have known for a long time that two healthy men with normal hearing can have greatly different reactions to noise. While one may be offended by the crack of a child's bubblegum across the room, the other can stand in relative comfort with his head near the blast of a shotgun.

They know also that as different persons' sensitivity to sound varies, so do their reactions to noise.

Both the Army and the Navy have long sought an answer to the problem of temporary deafness that results from a sudden loud noise.

So, armed with up-to-date knowledge of the human ear and its reaction to sound, the Air Crew Equipment Laboratory (NAMC PHILADELPHIA) has designed a mobile laboratory for studying a special type of human reaction to dangerously loud sounds. The laboratory can be driven to a point of need and put into use.

To understand how the simulator works, it is necessary to know what goes on inside the human ear. In normal healthy ears, a very loud sound



CORPSMAN G.P. ORLESKIE TAKES EAR TEST

delivered to either ear causes the middle ear muscles to contract on both sides. The contractions restrain the bones which transmit sound vibrations from the outer to the inner ear through the middle ear.

Individual noise tolerance probably depends upon personal differences in the acoustic conditions which result in middle ear muscle contractions, upon differences in the contractions themselves under standard conditions, or upon both. The middle ear muscles are among the very tiniest in the human body.

Tests in a permanent laboratory at ACEL, followed by other studies by BUMED, proved that individual differences in the involuntary reactions to

loud sounds could be measured in different people.

So a portable sound simulator and laboratory was designed. It can be taken to a station, plugged in on 110-volt current, and used in tests.

A subject being tested has one ear exposed to the noise while the other ear is connected to a pressure measuring device. When the man's reactions are learned, he is categorized according to his responses to noise.

Thus the mobile laboratory simulator might be used for personnel selection at such places as training centers to screen out those men who would make good or bad candidates for working around jet engines, rocketry, or shipboard ordnance.

There is another possible advantage to the program which is of particular interest to ordnance personnel. The middle ear muscles can be triggered into contraction just before gunfire detonations by using the proper sound stimulus. Such contractions can reduce the amount of temporary hearing loss caused by the gunfire.

Army experiments at Fort Knox have shown this is true, and also have demonstrated great individual variability in the effectiveness of such protection when only a single type of sound stimulus was used.

ACEL's mobile field laboratory can help to establish what particular sound should be used for any particular subject as an ear-protective stimulus that precedes gunfire noise.

ZW-1 Redesignated ZP-1 Was Only Blimp Squadron in AEW

Former Airship Airborne Early Warning Squadron One (ZW-1) has been redesignated as Airship Patrol Squadron One (ZP-1).

Increased capabilities and modernized equipment of the North American Air Defense Command lessened the need for an airship Airborne Early Warning vehicle.

At the same time, other operational requirements have resulted in a change of primary mission as well as designation for the squadron.

ZW-1 was commissioned in January 1956. It was the first, and only, airship squadron designated as an Airborne Early Warning Unit. The squadron scored high in safety, winning the 1959 Naval Aviation Safety award for accident-free operations.



TOURANE BAY, South Viet Nam, is not the most convenient place in the world to be forced down by an engine failure. When it happened to this VP-40 P5M, commanded by Lt. N. W. Kavanaugh, the story had a happy ending, thanks to the fast efficient service by USS Pine Island (AVP-12), flagship of RAdm. John W. Gannon, Commander U.S. Taiwan Patrol Force. Pine Island, commanded by Capt. J. A. Ferguson, from Buckner Bay, Okinawa, made the rescue.

IN FOREIGN SKIES

International Visit

Twenty-five officers and enlisted men from the CIC school at NAS Glynco, Brunswick, Ga., were guests in mid-winter of their Royal Navy counterparts at HMS *Dryad*, Portsmouth, England. The party was headed by Capt. W.W. Bush, Jr., USN.

Purpose of the visit was the exchange of training ideas and methods common to both NATO navies. Discussions included planning in anti-air warfare, the automation of CIC, and common problems in programming student courses.

CIC staff members were able to view the new British Air and Surface Trainer. This trainer, recently put into operation, embodies the semi-automatic display system now used in the HMS *Victorious* and *Hermes*.

The party also toured the British Anti-Submarine Warfare School located at HMS *Vernon*, Portsmouth.

The flight crew of the wv-2 *Super Constellation*, in which the trip was made, flew two demonstration flights over the English Channel to show the capabilities of the aircraft. Guests on these flights included officers from the HMS *Dryad* and ranking RAF officers of the Fighter Command and the RAF Air Navigation School.

Penn State to Run ASW Center

Pennsylvania State University has been named to manage the ASW research center at La Spezia, Italy, through SIRIMAR. SIRIMAR is an Italian contraction of International Society for Marine Research.

The laboratory was organized in 1959 with nine NATO nations contributing scientists and technical data to help solve basic problems in the anti-submarine warfare field.

NATO countries participating are Canada, Denmark, France, West Germany, Italy, the Netherlands, Norway, the United Kingdom, and the United States. The Italian government has provided laboratory buildings and other facilities.

Two major operating facilities have been acquired since the laboratory was formally commissioned: a 290-foot

merchant ship (SS *Aragonese*), equipped as a seagoing research laboratory, and a large-scale digital computer. The center's personnel on 1 December consisted of 25 scientists, 31 military representatives, and a supporting staff of 99.

Administrative responsibility for the laboratory was transferred to Pennsylvania State 31 December from the Raytheon Company which first managed the center for the Supreme Allied Command, Atlantic.

India AF to Use S-62 Copter

The India Air Force has accepted delivery of a turbine-powered Sikorsky S-62B helicopter, built especially for high-altitude work in the Himalayan Mountains. Equipped with four rotor blades, the S-62B is expected to lift a normal one-ton payload to elevations of 18,000 to 20,000 feet.

Early in 1960 the India Air Force purchased a three-bladed S-62A which carries a one-ton payload to 14,000 feet. The S-62B is the first four-bladed machine of this model sold by Sikorsky. The fourth blade provides additional lifting surface necessary to achieve the higher altitude.

The single turbine S-62A was built with the mechanical components and rotor blades of the S-55. To accommodate the additional blade, the S-62B uses the rotor head from the larger Sikorsky S-58 and S-58 rotor blades but made 13 inches shorter than standard.



SENIOR ALLIED Officers, now in U.S., toured the USS *Forrestal* (CVA-59) and other ships in the Norfolk area as part of their Naval Warfare Orientation Course. Their visit was sponsored by Commander of the Second Fleet.

SEATO, NATO, CENTO and VS-34

Since its commissioning 2 May 1960, Air Anti-Submarine Squadron 34 has associated with all three of the Free World Treaty Organizations.

In May, the squadron was visited by Adm. Martidinata, Commander in Chief of Thailand Royal Navy, and his staff, when the admiral visited NAS QUONSET POINT, Rhode Island. Thailand is a member of the Southeast Asia Treaty Organization.

In September, the squadron participated in the extensive North Atlantic Treaty Organization exercises in the North Atlantic and Bay of Biscay. In late October and early November, the squadron moved from the chilling North Atlantic to the balmy Indian Ocean, and engaged in exercise *Midlink III* with the Central Treaty Organization.

During *Midlink III*, the anti-submarine warfare capability of the CENTO forces was increased through in-port and at-sea training, culminating in a five-day, around-the-clock problem involving ships and aircraft of Pakistan, Iran, Great Britain and the United States.

VS-34 is a member of Carrier Anti-Submarine Air Group 60 aboard *Essex*.



ARGENTINA SECNAV G. C. Clement (C) inspects a *Link* jet trainer at NAS Pensacola. Cdr. R. E. Herrick, Jr. (L), VT-4 skipper, describes trainer operation as RAdm. C. H. Duerfeldt, CNABATRA, (right) looks on.

Thai NCO's Tour Super Connie

Six top NCO's from Thailand toured a VX-6 *Super Constellation* parked at Harewood International Air-drome, Christchurch, New Zealand.

The Thais, two each from the Army, Navy and Air Force, were escorted by a U.S. Navy CPO, a Marine navigator and a USAF sergeant.

Navy's Air Development Squadron Six provides air support for civilian scientific studies in the Antarctic during Operation *Deep Freeze*.



TACGRU-2 REPORT: SUPPORT ... WHEN AND WHERE IT'S NEEDED



ATTACK SQUADRON-81'S A4D JETS RENDEZVOUS OVER VIRGINIA BEACH BEFORE PROCEEDING TO THE CAMP PICKETT IMPACT AREA

THE SKY is broken to overcast at Camp Pickett, Va., with a large, clear hole existing over the impact area. A communications jeep from Tactical Air Control Squadron 21 (TACRon-21) is positioned on a hill commanding a view of the area; communication nets are manned, and control personnel await arrival of the first aircraft.

Word is received via single-side-band radio that the first A4D has checked in with the Tactical Air Control Center (TACC) located in USS *Pocono* operating in the ships' training areas off the Virginia Capes. Minutes later the Tactical Air Direction Net operator at Camp Pickett receives a call: "Truckstop, this is Jetstream 500. Estimated position three minutes east

of you, angels ten point five, event one. Have received pre-briefed mission one, over."

With this transmission, communications are established, and the aircraft is under positive control of the TACRon-21 forward air controller. Close air support training exercises have begun at the Camp Pickett Impact Area.

The time and place were new for TACRon-21 and the Air Group 8 squadrons. On 9 November 1960, the Camp Pickett Impact Area was reopened to the Navy for close air support training for the first time since 1948. Until the area had been properly cleared of brush, however, no live ordnance was dropped. It will be the only impact area available for live-

load close air support training on the Atlantic Coast north of Florida.

During the course of the day at Camp Pickett, VA-81 and VA-85 pilots were given workouts in locating and making mock attacks upon in-



CAPT. BALL (R) GETS WORD ON EXERCISE

creasingly difficult targets assigned by the TACRon-21 forward air control unit. With their A4D's and AD's, they attacked pillboxes, tanks, troops maneuvering in the field, road junctions and bridges.

The exercise at Camp Pickett went off smoothly. One by one the attack aircraft checked in with the TACC. As soon as they were in the vicinity of the impact area and under the positive control of the TACRon air controller, a message to that effect was sent back to their home base. After receiving clearance from the ground, they ran their pre-briefed missions, and then, in accordance with the pilot's experience, were given additional targets to search out and attack. Army tanks engaged in actual field maneuvers were assigned as targets for the more experienced pilots. Upon expiration of the allotted "on-station" time, the aircraft were cleared to return to their home base at NAS OCEANA. Training continued as additional aircraft reported on station.

While TACRon-21 was conducting close air support training for CVG-8 at Camp Pickett, a detachment of TACRon-22 was conducting similar training for Carrier Air Groups One and Ten and VA-44 at the Pinecastle Impact Area near Jacksonville, Fla. In a nine day period, 348 close air support sorties were flown at Pinecastle involving live loads consisting



AIR DIRECTION CENTER IN USS POCONO

of 100, 250, and 500-lb. GP bombs, rockets, miniature bombs and 20mm ammunition.

Such training of carrier air group squadrons in close air support of tactical ground units and the planning and execution of the air portion of the amphibious assault are the primary missions of the Amphibious Command's TACRons. They insure that the man on the beach receives



FORWARD AIR CONTROLLER IN THE FIELD DIRECTS ATTACK AIRCRAFT TO ITS TARGET

adequate air support when needed.

PHIBLANT's two TACRons, 21 and 22, are immediately under Commander Tactical Air Control Group Two and have an allowance of 18 officers, including Army and Marine liaison officers, and 35 enlisted men. To insure effective coordination between the man in the air and the man on the ground the majority of the TACRon officers are Naval Aviators. TACRon enlisted men are highly trained also in tactical air control and ground-to-air communications.

In the planning stages preceding an amphibious assault, the TACRons conduct extensive liaison between ground and amphibious commanders and participating air units, to insure the maximum effectiveness of close air support. They then prepare the air annex of the amphibious operation order. But their job doesn't end here, for they are also responsible for the execution of the order from the Tactical Air

Control Center located on the amphibious flagship.

The TACRon job requires a multi-skilled officer, one with a knowledge of the aircraft and their ordnance, one with a comprehension of the ground scheme of maneuver, and one with an understanding of the entire amphibious operation. The Tactical Air Commander must be able to make the aircraft under his control serve the landing troops effectively, ready to meet any emergency.

TACRon-21, which has been concerned with the inauguration of training operations at Camp Pickett, is under the command of Cdr. J.D. Anderson while her sister unit, TACRon-22, is headed by Cdr. G.R. Rian. TACRon 22 has been assigned primary cognizance over TACRon operations at the Pinecastle Impact Area. Both squadron commanders work under Capt. T.J. Ball, Commander Tactical Air Control Group Two which is assigned to Commander Amphibious Force, U.S. Atlantic Fleet.

The reopening of the Camp Pickett and Pinecastle Impact Areas to close air support training provides Atlantic Fleet attack squadrons with the opportunity to flex their muscles in the pin-point delivery of conventional weapons so necessary for the support of ground forces. The TACRon attack squadron team has become the Navy and Marines' best bet for providing fire power support . . . when and where it's needed. ★★



ATTACK RESULTS SIGHTED THROUGH SCOPE

Weekend Warrior NEWS



NAS OAKLAND. Two firsts for Oakland Weekend Warrior, Ltjg. Jim Norton, VF-871, illustrates changes at West Coast Naval Air Station. Norton, shown here getting jump on squadron mates with A4D check-out, is also first to operate jet from future home of Air Reservists, Alameda.



NAS SOUTH WEYMOUTH. Completing 37 years in Reserves, Capt. L. R. Devoe (L.) receives retirement orders from Capt. R. L. White.

Pioneer Retires

Capt. Lewis R. Devoe, USNR, whose entrance into Naval Aviation occurred at the beginning of the Naval Air Reserve Program at Squantum, Mass., recently became one of the first Weekend Warriors from the New England area to achieve retirement status under the provisions of P. L. 810.

A veteran of 37 years in Naval Aviation and one of the few Naval Aviators of his time to bypass Pensacola, Capt. Devoe looks back on a career which saw him command four squadrons and checkout in 50 types of Naval aircraft. His training for Navy wings, begun at Squantum, was completed at NAS HAMPTON ROADS some

four years after he enlisted. In 1923, he was one of 20 students selected from a quota of 130 enlisted men nominated for aviation training.

Completing 120 hours in the air, he took the examination for Ensign (AVG) and received his commission in April 1927, nearly four years after he began training at Fort Hamilton.



NAS WILLOW GROVE. Greeting 50 candidates for Naval Aviation programs who were airlifted from Pittsburg following "Operation Navigator" are Capt. T. H. Bookout, NAS C. O., and Cdr. M. E. Wortman.



NAS OLATHE. Thirty years of perfect drill attendance in the Naval Air Reserve are represented by these members of Patrol Squadron 883: (from left) LCdr. O. F. G. Hahn, LCdr. R. D. Dick, O. R. Bronen, SN.



AT LOS ALAMITOS AND OLATHE, pretty ladies bore a hand in Naval Air Reserve activities. At left, Debbie Reynolds accepts scroll of appreciation for recruiting assist from Capt. R. B. Buchan. Center, Olympic



diving champ, Pat McCormick, gives Los Al's Bushek some words of water wisdom. Right, you're right—everything's up to date in K. C. as Olathe's W. R. Sears models space suit at annual auto show.



Commenting on the length of time it took to earn his wings, Capt. Devoe said, "I'm one of the few aviators who never went to Pensacola. I guess it took a little longer that way. Commissions were hard to get the way I got mine."

Selected as "Mr. Naval Air Reserve" of the overall Air Reserve Program in 1953, Capt. Devoe's last tour of duty was with Air Wing Staff 91 at NAS SOUTH WEYMOUTH.

Willow Grove Recipe

Despite some of the worst weather on record, the Pennsylvania NavCad/AOC/NAO information specialists logged an unusually healthy count in the Greater Pittsburgh area in a recent recruitment effort. Some 90 candi-

dates responded; 50 of whom were flown to NAS WILLOW GROVE for



NAS OAKLAND. VP-875's Louis Nunes, ADJC (L) gets word from C. O. he has won the Navy League "Reservist of the Year" award.

mental and physical examinations.

Preceding the big drive which took place over a three-day period, fraternities received letters, newspapers (home town and college), press releases, while TV and radio stations assisted in saturation coverage of the area announcing "Operation Naviator." The U.S. Navy Recruiting Station, Pittsburg, made available time, telephones, men and space to insure the success of the all-out effort.

Of the 50 students tested, 34 qualified mentally for AOC or NavCad programs, 15 qualified mentally for the NAO program and only one student failed the mental exam. The group was the largest of applicants for Naviator programs ever to visit the naval air station for qualifying examinations all at the same time.



NAS OAKLAND. Bay Area Air Explorers watch radar antenna installation during regular meeting at NAS. At left, rear, is troop leader, Don Fountain, who accompanied Byrd on first flight over South Pole.



NAS OLATHE. Cdr. A. R. May, VR-883 C. O. (left), and Capt. R. C. Dailey, NAS C. O., make final check of supplies destined for Agadir. Kansas Weekenders airlifted medical goods during two-week cruise.



THE O'BEIRNE BROTHERS, one of the few brother teams to reach flag rank, have shared similar careers. Hailing from Elgin, Illinois, both were graduated from the U. S. Naval Academy, both became Naval Aviators and hold Master's degrees in aeronautical engineering. During WWII, both had tours in dive bombers and patrol aircraft, and later each skippered a first line aircraft carrier. Today, VAdm. Frank O'Beirne commands Naval Air Force Atlantic, and his younger brother, RAdm. Emmet O'Beirne, serves on the NATO staff. Both have the same boss.

New Orientation Course Space and Astronautics Covered

Navy's first Space and Astronautics Orientation Course (SAOC) began 28 February at the U.S. Naval Missile and Astronautics Center, Point Mugu, California.

The Top Secret course, designed for senior officers and key civilians of the Naval Establishment, provided a four-day orientation in astronautic concepts and today's space program.

Three days of classroom presentation were devoted to showing how operation in the new dimension of space will support and enhance the Navy's ability to carry out its assigned mission. A one-day trip to the nearby Naval Missile Facility, Point Arguello, and adjacent Vandenberg AF Base integrated on-site observations with classroom briefing.

The orientation course in the new fields of space and astronautics is patterned after the highly successful Special Weapons Orientation Course.

The course is controlled through a quota system by the Commander of the U.S. Naval Missile and Astronautics Center, Capt. William E. Sweeney. Quota requests should be forwarded to the Center (Code 5170) no later than two weeks prior to the class convening dates which are as follows: 28 March,

18 April, 16 May, 13 June, 11 July, 1 and 15 August, 12 September, 3 and 31 October, 14 November, 28 November, and the 12th of December.

Called 'Mr. Deep Freeze' Goodell is VX-6's Last Plankowner

Aviation Storekeeper Richard Goodell of VX-6 appears a hands-down choice for the title "Mister Deep Freeze." He has participated in each of the Antarctic operations since they began in 1955 and is the only man left in VX-6's original complement.

A year ago there were five "plank owners" left in the squadron. Then yeoman Jerry Porter went to the Exam Center at Great Lakes, photographer Walter Long went to NAS BRUNSWICK, Maine, Aviation Bos'n Jerry D. Cole transferred to the Seabees and reported to Port Lyautey, and Chief Aviation Ordnanceman Michael Baronick left VX-6 for a new duty assignment.

Hits Record Book Twice 12,000th Cat Shot, 100th Landing

Cdr. Norm Wilde, VS-32 skipper, came in for double distinctions aboard USS *Lake Champlain*. His catapult shot in an S2F Tracker was the *Champ's* 12,000th and his landing was the 100th he has made on her decks.

A member of the *Clean Sweeper* squadron for two and a half years, Cdr. Wilde became C.O. last July.



NAVY INVADES hotel kitchens to learn the latest techniques in food preparation. Here crewmembers of the USS *Kitty Hawk* (CVA-63), nearing completion in the N.Y. Shipbuilding Corp. shipyard in Camden, N.J., and soon to be commissioned, "share the secrets" of Michael De Francesco (C), the Bellevue-Stratford's expert on arranging tasty varieties of fish. Left to right are Emilio Chidan, SD1; Nathaniel Jacks, SD3; Raymond Mounts, CSI; Hughey E. Logan, SD1; and S. Helton, CSI. Food on the *Kitty Hawk* is bound to have the "Philadelphia flavor."



SQUADRON PHANTOM II, piloted by *Cdr. Ralph Hanks*, Commanding Officer of Fighter Squadron 121, makes a mirror landing pass at NAS Miramar. *Cdr. Hanks* made the flight following plane-side acceptance ceremonies 30 December 1960. At right, he sums up his impression of his first flight in his squadron's latest, VF-121, the first squadron

in either Fleet to take delivery on a Phantom II, trains fleet replacement flight and maintenance personnel for the Pacific Fleet F3H and F4H squadrons. First class of eight Intercept Officers, the F4H "back-seat men," completed the ground phase of their training on 15 December when ceremonies were held at NAS North Island, San Diego, Calif.



Supply Records Now Taped Federal Catalog Data Automated

The Armed Forces Supply Support Center (AFSSC) uses its new computer equipment to keep up-to-the-minute records of the Federal Government's three and a half million supply items.

Hub of the new system is an IBM 705 III computer which processes 16 million characters of item information a day for Navy, Army, Air Force and other government buyers, as well as for NATO and other allied nations tied into the DOD logistics complex. A total of 90 U.S. activities are served by the AFSSC and its magnetic tape records.

Main job of the the Center is keeping track of more than 3,500,000 items in the Federal Supply Catalog. The entire catalog is contained on 60 reels of magnetic tape. AFSSC also maintains approximately 160 reels of other information, including manufacturers' part numbers. All material is cross-referenced and kept completely current.

As an example of how the system works, assume the Navy is planning to buy 30,000 parts required for a new missile. Before any parts are ordered the list is sent to the AFSSC, checked against the manufacturer's part number catalog to find how many of the parts have already been assigned federal stock numbers. Usually about 30% of what were thought to be new items are already in the supply system.

The list of parts already assigned



STACK OF TAPES CATALOGS U.S. SUPPLIES

federal stock numbers is then checked against the master catalog on the 60 reels. This, and other operations will show for each item the present inventory manager, the amount and location of any excess stocks, and other useful supply information.

Before the information was "automated" at the AFSSC, it is estimated it cost inventory managers from \$15 to \$30 just to find if a part was already in the Federal Stock Catalog.

'Building Block' Concept Will Give Rockets Greater Thrust

NASA has announced the successful firing of a solid propellant rocket motor made by a new "building

block" method. The motor was manufactured in three separate pieces, each weighing about one half ton. These "building blocks" were transported separately to the test site, assembled into the complete motor, and fired.

Such rockets would have sufficient thrust to launch space vehicles in the multi-million pound weight range.

Since a motor for such a purpose may be as large as ten feet in diameter and 80 feet long, it would be difficult to transport as one unit. The building block concept removes this difficulty and, in addition, permits much of the necessary proof-testing of propellant, nozzles and internal insulation to be done with relatively small segments.

NASA contractor investigating the building block concept is the United Technology Corp., Sunnyvale, Calif.

CNABATRA Lauds VT-5 12,796 Safe CV Landings in Year

RAdm. Clifford H. Duerfeldt, Chief of Naval Air Basic Training, presented Training Squadron Five, NAAS SAUFLEY FIELD, an award for 12,796 accident-free carrier landings in a one year period ending 29 September 1960.

VT-5 received a similar award on 9 July 1959 for a two-year period beginning 17 June 1957 with 14,926 accident-free carrier landings. The earlier award was for an average record of 597 safe landings per month compared with 1066 for the latter period.

Adm. Duerfeldt commended VT-5 personnel, saying that this record represented thorough, outstanding leadership while training inexperienced student Naval Aviators in carquals.



FLYING BOAT MODEL ATTACHED TO TOWING CARRIAGE IS TESTED IN SALT WATER TANK

NAVY BOOSTS ITS RESEARCH EFFORT

A HIGH-SPEED Phenomena Division has been created in the Hydro-mechanics Laboratory of the David Taylor Model Basin to carry out several research programs formerly done by the National Aeronautics and Space Administration at Langley Field.

Among projects to be studied are research and development programs in the field of high-speed craft and bodies, such as hydrofoils, air cushion vehicles, hydro-skis, planing catamaran (using a model of a ship having two hulls, with the back half in the water and the front half raised), short take-off and landing seaplanes, torpedoes, and underwater rocketry.

Programs will be carried out for BUSSHIPS and BUWEPs, and services will be provided NASA and private aircraft concerns.

Studies to be made for BUSSHIPS include the effects of impact, lift, drag and supercavitation on hydrofoils; spray control, motion in waves up to 50 knots, ditching resistance, and self-propulsion of ground effect machines. For BUWEPs, the development of 100-knot torpedoes and tests of underwater rocketry will be studied.

These tests will be conducted primarily in a 2960-foot indoor salt water tank which is equipped with a wave-maker and a carriage capable of attaining a speed of 50 knots.

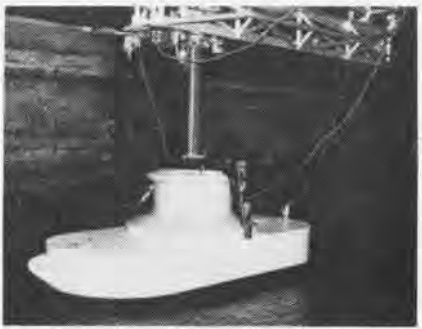
The Navy also will share with

NASA a 2180-foot outdoor fresh water high-speed facility which is equipped with a carriage that can reach speeds of 150 knots. NASA uses this facility to test landing gear.

Until December 1959, NASA conducted hydrodynamic research programs in:

Fluid mechanics, such as cavity flows in the presence of the water surface; underwater elements and vehicles such as supercavitating hydrofoils; surface vehicles and water-based aircraft, such as hydrofoil boat supporting systems; ditching of aircraft, such as jet transports and helicopters; and water landings of space vehicles.

Since investigations in ditching and water landing of space vehicles are directly related to current NASA roles and missions, they will continue to be done at the Langley Research Center.



AIR CUSHION VEHICLE (GEM) IS TESTED

HS-8 Logs 10,000 Safely Achieves Record on USS Bennington

Helicopter Anti-Submarine Squadron Eight, based aboard USS *Bennington*, has logged its 10,000 accident-free hour. Cdr. W. C. Butler, squadron C.O., piloted the helo which rounded off the 10,000 hours. Ltjg. L. C. Lax was copilot and P. W. Peterson, ADR2, was the crewman.

Exchange Pilot is Honored HMR-361 Lauds British Officer

When called "front and center" at a formation held by Marine Helicopter Squadron 361 at MCAF SANTA ANA Calif., the face of British LCdr. Alan A. Hensher expressed complete surprise. His surprise was heightened when his wife joined him in front of the squadron commander.

Before he could find an answer to the question he asked himself—"What is this all about?"—the squadron adjutant read aloud a citation. Prepared by the unit in a humorous vein, it cited the commander for his action during simulated combat conditions employed during maneuvers and exercises he had flown with the squadron. The squadron presented a plaque to the commander and his wife. Adorned with a Marine Corps emblem, a pair of Naval Aviator's Wings, and inscribed from the officers and men of HMR-361, it represented the high esteem held by every member of the command for the British pilot.

The citation reflected the diversified types of helicopter flying he has done with the unit, which included every type of mission from fighting forest fires to hauling troops and cargo in vertical assault maneuvers and day and night carrier missions and rescue missions. In his 12 months with the *Pace Setters*, Cdr. Hensher has averaged better than one major or large-scale maneuver or exercise per month.

Cdr. Hensher, an exchange pilot from the Royal Navy, was leaving the *Pace Setters* and transferring to Marine Helicopter Squadron 462, another unit of the 3rd Marine Aircraft Wing. He had served one year with the HUS squadron and was moving across the field to work with the giant twin-engine HR25-1 helicopters.

Appointed to exchange duty with the U.S. Marines in October 1959, he is the only Royal Navy pilot on such duty with the U. S. Marine Corps

Lexington First and Last Begins, Ends Sea Career on Lexes

Chief Aviation Structural Mechanic Robert S. Hand began, and ended, his sea service aboard *USS Lexington*. The era spanned 22 years.

He enlisted in 1938 and reported to the first *Lexington* (CV-2). He was a member of her group of crewmen who raided the "geedunk" locker for ice cream as she sank as a result of damage incurred during the Battle of the Coral Sea.

He completed 22 years of Naval service aboard the current *Lexington* en route to the States and retirement.

VT-26 Fires Sidewinders 'Top Tiger' Launches a Live Bird

A *Sidewinder* missile has been fired successfully against a rocket target for the first time in Training Squadron 26 at NAAS CHASE FIELD.

Ens. John G. Green inaugurated the newest phase of anti-air weapon delivery when he fired the missile in November. The squadron had recently incorporated missile firing into its weapon syllabus.

The student pilot rated "Top Tiger" for the month is allowed to fire a live *Sidewinder* in a demonstration.



AMERICAN FLAG is purchased by Cdr. M. F. Barfield, Executive Officer of Whiting Field. The Navy Exchange sold the flags at cost to promote the field's "Project Patriotism." Cdr. T.W. Ray is an interested observer.

VR-24 Accepts Four R4Q's Will Help Deliver Goods in Med

Four R4Q *Flying Boxcar* transports have been added to the stable of VR-24, the "World's Biggest Little Airline" at Port Lyauety. They will work with the squadron's six R5D *Skymasters* in providing air logistic support for Naval forces in the European and Mediterranean area.

The Fairchild R4Q carries a 16,000-pound payload at an airspeed of 175.



USS SALISBURY SOUND has inaugurated a new "fill 'em up" and maintenance service station which it describes as the "only trailer hitch afloat." The fueling dock allows the 15,000-ton seaplane tender to speed up greatly the refueling and servicing of her P5M Marlin seaplanes. The 42-foot dock can be placed in operating condition in from 30 to 45 minutes. AV-13 commanded by Capt. J. D. Ramage, serves as the flagship of Commander, Taiwan Patrol Force.

5500th Helo Pilot Named LCdr. Witkowski Reports to HS-9

LCdr. Eugene F. Witkowski became the 5500th helicopter pilot to be trained by the Navy since the program began some ten years ago.

Trained by HT-8 at NAS PENSACOLA as a member of class 8-61, LCdr. Witkowski marked the occasion in a ceremony with Cdr. William G. Stearns, Jr., squadron executive officer, who is helicopter pilot number 243.

LCdr. Witkowski reported to Ellyson Field from Guam. He has been ordered to duty with HS-9 at Quonset Point where he will be an ASW pilot.

Dredging at North Island New Berths to be Ready by Fall

New carrier berthing facilities are being dredged at NAS NORTH ISLAND under a \$2,297,440 contract to Franks Dredging Co. of Long Beach. Work began early this year, and the job is expected to be completed by 27 Sept.



COMPETING with 100 instructors from VT-3 at NAAS Whiting Field, Marine Capt. Walter Limbach broke records when he won title of Instructor of the Month for third consecutive month and for a total of four times.

Switch Over to Land Planes Two Squadrons Make Conversion

Two Norfolk-based patrol squadrons are giving up their seaplanes for land-based aircraft. The conversion program will cut the Atlantic Fleet seaplane strength in half by the middle of 1961.

VP-44 and VP-56 will relinquish their P5M Martin-built seaplanes for Lockheed P2V *Neptunes*. Only two squadrons in the Atlantic, VP-45 and VP-49, will be equipped with seaplanes.



HIGH-LOW OLEOS permit packing "Buckeyes" solidly in Forrest Sherman Field hangar during Hurricane Donna. Chief Mayo, Training Squadron Four's Aircraft Maintenance Chief is credited with the "cockeyed" suggestion.

The Re-Fueling-est Carrier? Lake Champlain Tops Off 241 DD's

Fleet-wide tallies were not available at deadline time, but *USS Lake Champlain* extended a challenge to other carriers to top her record of refueling 241 destroyers in 1960.

Nine million, two hundred thirty-nine thousand, three hundred gallons were pumped in the year cut short by a month in the Boston Yard.

Can your carrier top this mark?



W. L. SPILLMAN, O&R Materials Engineering, demonstrates the kinds of packaging designed for bearings against backdrop of various types.



CLOSED CIRCUIT TV is used to give conference clear picture of shop operations. TV camera is focussed here on a special torque tester.

BEARING CONFERENCE HELD AT NORTH ISLAND

AT NAS NORTH ISLAND, a conference to evaluate equipment for bearing processing—cleaning, gaging, testing, lubrication and preservation—was held at Overhaul and Repair. Location of the conference at North Island was logical because the O&R there has a special assignment in the bearing field.

The project involves determining the equipment required to establish modern bearing processing shops in the eight O&R's of the Navy. Shops are to be technically capable of supporting the precise bearings now used in supersonic aircraft and space vehicles. This takes some tooling!

Processing a bearing with an outside diameter of only $\frac{7}{64}$ " is not easy. In fact, it's hard even to see such a bearing, much less clean, gage, test, lubricate and package it. But North Island has regularly processed such miniature bearings, plus bigger ones, ranging up to as much as 12 inches in diameter.

In recent years, O&R NORTH ISLAND has recovered a high percentage of the bearings removed from equipment undergoing rework. Bearings are high-cost items and certain ones are in short supply. Those processed at North Island range in price from 50 cents to \$300 each.

For example, a bearing, a little larger than the head of a straight pin and containing eight balls, each the size of a typewritten period, costs about two dollars. Such bearings must be so precise in measurement that without modern gaging and testing, they would have to be discarded when removed from an instrument. But North Island, at a cost of 25 cents each, recovers over one third million of these each year.

Capt. P. W. Gill, O&R Office NAS NORTH ISLAND, opened the Bearing Evaluation Conference. Available commercial equipment was demonstrated, and several testing units were found to have Navy application.

In order that the conference might study closely the operations within the bearing shops and see the various machines demonstrated, closed circuit tele-

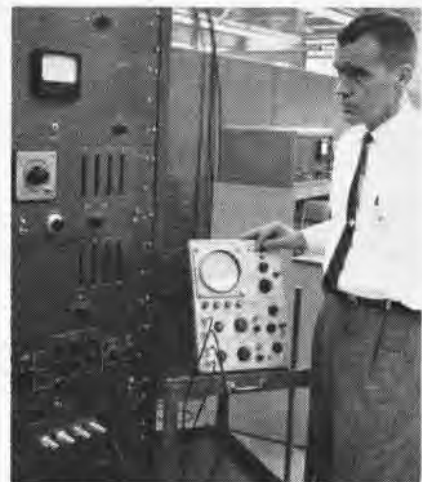
vision, donated by Hoffman Electronics of Hollywood, was used throughout the meet. Representatives of Navy and industry presented papers and directed demonstrations of the various aspects of the bearing program for the benefit of the participants.

Final phrase of the project is now underway to determine the list of bearing processing equipment which should be standard in all O&R's. Specifications for the equipment are being prepared.

Long range plans have been made for continued improvement of the bearing program with special stress on efficient utilization of equipment.



IN INSTRUMENT bearing shop, everything is small-scale to accommodate miniature bearings.



W. C. EBELL demonstrates an instrument which detects bearing defects and their location.



TEST OPERATIONS PROVE BASKET'S WORTH

Rescue Basket is Tried Out Developed by SAR Unit at El Toro

Pilots from MCAS El Toro forced to ditch in local waters will find themselves being scooped out of the drink by El Toro's Search Air Rescue Unit in a basket.

Developed by El Toro's SAR and manufactured by the MCAS Operation and Engineering Squadron, the rescue basket is made of stainless steel and aluminum tubing and weighs approximately 26 pounds. Two kapok-filled floats give it buoyancy. The sturdily constructed basket is large enough to accommodate two men. It can easily scoop an injured or incapacitated man out of the water.

It was tried out in tests at Newport Harbor where SAR worked with Chief Bob Reed of the Beach Life Guard. Capt. B. R. E. Pautsch, OinC of El Toro's Rescue Unit, declared that the trials had been "highly successful."

Air-sea rescue facilities are continually improving techniques. HS-2 at Lakehurst is working on a scheme involving a scoop-up clamshell basket.



SAFETY OFFICER JACOBS TRIES DEVICE

Marine Pilot 'Bombs' Boxer Air Delivery of Capsule on Target

A Cherry Point pilot etched his name in Second Marine Aircraft Wing's history in December when he successfully "bombed" a U.S. Navy vessel off the coast of North Carolina.

Capt. T.D. Brooks, Marine Attack Squadron 553, became a "jet-postman" when he delivered a special bomb-capsule to the watery doorstep of the amphibious assault ship, USS *Boxer*.

The flying Leatherneck added high speed air delivery to the Wing's bag of aerial tricks when he released his bomb-load from a *Skyhawk* aircraft travelling more than 400 miles per hour.

The parachute-rigged 500-lb. bomb, which contained aerial photographs requested by the *Boxer's* captain, landed on target about 1000 feet abeam of the vessel. A few minutes later, a helicopter, operating from the *Boxer's* deck, recovered the "bomb."

Cherry Point officials are investigating the possibility that he is the first operational Marine pilot to release his bomb-capsule load over water.

The 62-inch metal capsule used by Capt. Brooks is not designed to float. A simple modification made the water drop possible.

Marines attached to the Air Delivery Platoon of Camp Lejeune's Second Division got together with Wing Leathernecks to place several watertight parachute cans inside the capsule. The empty containers held enough air to make the bomb floatable.

The bomb-capsule, designated M4A High Speed Air Delivery Capsule by the Marine Corps, was designed to fit the ordnance racks of most of the Corps' modern jets. Planes can carry from one to four of the containers, depending on their normal bomb capabilities—and a pilot can accomplish delivery simply by hitting his release switch.

Each metal container is designed to carry 500 pounds of food, ammunition, radio gear, and other equipment needed to support front line operations.

The capsule contains an expendable nose cone, which absorbs the contact shock when the bomb hits the ground, and a tail cone in which a ring-slot or ribbon parachute is mounted.

Wing aviators will continue to test and evaluate these fast air express carriers during the coming months.



VAP-62 SKIPPER, Cdr. J.E. Cousins, presents 11 aircrewmen with their official Aircrewman designation. They were recommended by the Squadron Qualification Board, consisting of three officers and a well qualified airman.

HS-9 Hits 10,000 Safely Hours Logged from 3 ASW Carriers

Helicopter Antisubmarine Squadron Nine logged its 10,000th flight hour without an accident when LCDR. P.T. Bankston, executive officer, flew an HSS-1 from the *Essex* in the Mediterranean.

HS-9 compiled its safety record during the past year and a half while based at NAS QUONSET and deployed aboard the carriers *Randolph*, *Tarawa* and *Essex*.

The squadron's deployment aboard the *Essex* included flights above the Arctic Circle in the North Atlantic, sustained ASW screening operations in the Indian Ocean, and exercises in the Mediterranean. They claim to be the first helicopter squadron to conduct night flying in the Red Sea area.



HONOR DIVISION at Rota, Spain, the photo lab and aerology division of the Operations Department, is inspected by Capt. Thomas H. Robinson. Competition was based on individual smartness, self-improvement, and athletics.

LETTERS

SIRS:

The Beach Crew of VP-40 has set what is believed to be a new speed record for ramping a P5M Martin Marlin seaplane. On 16 December 1960, at USNS Sangley Point, Republic of the Philippines, the home port of VP-40, a P5M was brought out of the water to the top of the ramp, brakes were set, and chocks placed in exactly 4.0 minutes after the plane had made the traveling buoy.

L. R. Dyer, ABH1, Petty Officer in Charge, has issued a challenge to any P5M outfit to beat the four-minute record under similar conditions. The beaching crew at the time the record was set consisted of seven men.

The record retrieve was witnessed by LCdr. R. J. Underwood, VP-40 Command Duty Officer, and Ltjg. B. H. Handler, Squadron Duty Officer.

In addition to speed and skill demonstrated by the four-minute record, the Beach Crew has had a perfect safety record during the 15 months that VP-40 has been in the Philippines.

E. W. MYERS, CDR
C.O., VP-40

SIRS:

Your January cover was an exceptionally fine piece of work and should serve admirably as the 50th Anniversary emblem. Whoever had a hand in its preparation certainly deserves special mention.

C. R. MURPHY
Chicago, Ill.

We credited Jim Springer, NaNews' gifted Art Director with final cover display. We would like to tip our hats also to Lt. Dick Genders, USNR, well known Navy combat artist, and Wayne Piatt of General Outdoor Advertising whose outstanding designs inspired the final result.



POSTMAN J. G. Parker, Pensacola, Fla., receives one batch of the 78,000 invitations to Naval Aviators from Fiesta of Five Flags secretaries, Mildred Dunn (C) and Frances Anderson. The reunion days are June 6-11.

SIRS:

With reference to Cdr. Haworth's letter in the December 1960 issue, he well knows the first story teller does not have much chance. *Saratoga* with Air Group Three on the Sixth Fleet deployment in 1958 (February through September) ran up a total of 21,989 hours and 10,743 landings—fewer hours but more landings than the CVG-8 achievement.

Until the next mail call, perhaps the honors for "mostest of things" on a "peacetime deployment" need be shared.

CDR. J. A. LOVINGTON
Ex-Air Officer, *Saratoga*



LOCKHEED presents scroll of appreciation to NavAirPac Supply officers for support given in Constellation overhaul program. From left, Carl Noack, John Keller of Lockheed, Paul Clay, Capt. H.I.P. Foley, Capt. R. Dexter.

Navy Aids Army's Advent Seagoing Test Station Planned

Navy will participate in Project *Advent*, communications satellite project under Army management, according to VAdm. John T. Hayward, DCNO (Development).

Advent has several innovations differing from the *Courier* satellite system. It will orbit the earth at an altitude of 22,000 statute miles over the equator. Its period will be 24 hours, just sufficient to keep it hovering over a fixed point on the earth. At this height, the single satellite will be in a direct line of sight of all points on earth enclosed in a circle of 11,300 statute miles in diameter, centered just beneath the satellite. For this reason there will be no need to store messages received on tape for later repetition, as is done in *Courier*. Messages received by *Advent* will be transmitted immediately and with extensive channel capacity. High speed

radio teletype and voice broadcasts will be transmitted simultaneously.

Navy's Bureau of Ships will design and develop equipment for a shipboard satellite communications terminal capable of communicating with two Army shore stations through the *Advent* satellite.

The Navy's mobile terminal will serve as a unique test of the system capabilities. The ship will operate in many parts of the world testing communications capabilities, providing data on fringe area reception, propagation characteristics and system security, and developing military operational satellite communications design criteria and concepts.

Six Brothers Serve Navy Three Aboard Coral Sea, 4th Asks

San Diego recruit Daniel R. Young has requested assignment to USS *Coral Sea* to serve with his three brothers, Edward, Michael and Joseph. Two other brothers on active duty in the Navy are Patrick, at NAS NORTH ISLAND, and Jerry, aboard USS *Washburn*.

All six brothers are one year apart, with Daniel at 17 the youngest, and Edward at 22 the oldest.

Should Daniel persuade his two other brothers, and the Navy, that all should serve aboard the *Coral Sea* simultaneously, a six-man football team might be in the offing. For basketball, there would even be a substitute.

All six brothers were re-united with their parents just before *Coral Sea* left for another tour in the Far East.



SGT. MAJ. C. J. Devine III inventories the 22 awards claimed by Marine Aircraft Group 33, the most highly decorated group in the Corps. Citations include PUC, Army Distinguished Service Emblem, Victory, area awards.



SQUADRON



INSIGNIA



The sub-killers of Patrol Squadron Nineteen and the sub-hunters of Helicopter Antisubmarine Squadron Two are part of the Navy's answer to the threat of modern submarines. HS-2 deploys on USS Hornet and is commanded by Cdr. F. F. Johnson, while Cdr. P. S. Cooper leads the Alameda-based Patrol Squadron 19.



NAVAL AVIATION

NEWS



THE GOLDEN YEAR OF THE GOLDEN WINGS