

NAVAL AVIATION

NEWS



40th Year of Publication

NOVEMBER 1958





A3J

NEW ATTACK weapon system, the North American A3J Vigilante, is shown after launching on its initial flight at Columbus, Ohio. The supersonic, two-place jet aircraft designed for carrier-based operations is powered by two G.E. J-79's totalling 30,000 pounds thrust. Unique feature of the A3J is its method of bomb delivery. Bombs are ejected out of the tail from a linear bomb bay. Low speed flight characteristics are enhanced by boundary layer control.



NAVAL AVIATION NEWS

OUR FORTIETH YEAR OF CONTINUOUS PUBLICATION NOVEMBER, 1958

Drone Reaches New High Navy XKDB-1 Flies to 43,500 Feet

The Navy's XKDB-1 target aircraft, developed by Beech Aircraft Corp., has flown to 43,500 feet, thereby establishing a new unofficial high altitude record for remote-controlled targets in the KD-300 class.

The new mark exceeds the XKDB-1's guaranteed ceiling by 3500 feet and tops the previous KD-300 record—also set by an XKDB-1 last June—by 1500 feet. Powered by a 120 hp McCulloch engine, the recoverable target is undergoing Navy technical evaluation to test its operational suitability.

Beech missile engineering division field test personnel at NAMTC POINT MUGU reported that the record flight, made from ground-launch, occurred during a company product improvement program. It came as the result of new refinements to the powerplant, the report said.

Designed to provide a realistic mark for surface-to-air and air-to-air weapon systems evaluation and training, including missile firing missions, the 600-pound XKDB-1 is one of the most advanced propeller-driven target vehicles yet developed. It has a speed of 300 knots at operational altitudes.

Navy pilots, planes and missiles will be pitted against the XKDB-1 target under simulated combat conditions at sea. Capable of an endurance in excess of one hour, the XKDB-1 has been controlled to ranges out to 91,400 yds. at altitudes of more than 20,000 feet.

Fluorine Fuel Developed Improved Rocket Thrust Claimed

A chemical so flammable it will ignite asbestos, leather, and even water on contact has been harnessed for space flight rocket propulsion by engineers of Bell Aircraft Corporation, accord-



THRUST TEST OF LIQUID FLUORINE FUEL

ing to a release the company put out.

The chemical is elemental liquid fluorine, the most powerful of all known oxidizing agents, which is recognized as the pinnacle in liquid rocket oxidizers.

Bell Aircraft said its Rockets Division had accomplished the first large-scale rocket thrust chamber firings using liquid fluorine.

Significance of the fluorine application to rocket propulsion is that payload increases up to 70 per cent can be achieved with existing ballistic missiles and space vehicles on the drawing board, according to Bell Aircraft.

VS-36 Ends ASW Cruise New Techniques, Equipment Tested

Air Antisubmarine Squadron 36 has completed a three-month operational



S2F TRACKERS ABOARD USS VALLEY FORGE

tour with Task Group Alfa, helping to test new methods of finding and destroying submarines. This problem was conducted with the two submarines assigned to Task Group Alfa, the *Sea Leopard* and the *Cubera*.

VS-36 also experimented with some new types of photographic equipment, an advanced electronic navigation system, and new Magnetic Airborne Detection (MAD) tracking tactics.

Climax of the deployment came when a four-day, around-the-clock problem was tackled in an effort to develop a new sub-hunting technique. During the one problem, squadron S2F Trackers chalked up a score of 379 hours of flight time.

In the three months, VA-36 flew 3388 hours, made 980 carrier landings and flew 823 sorties.

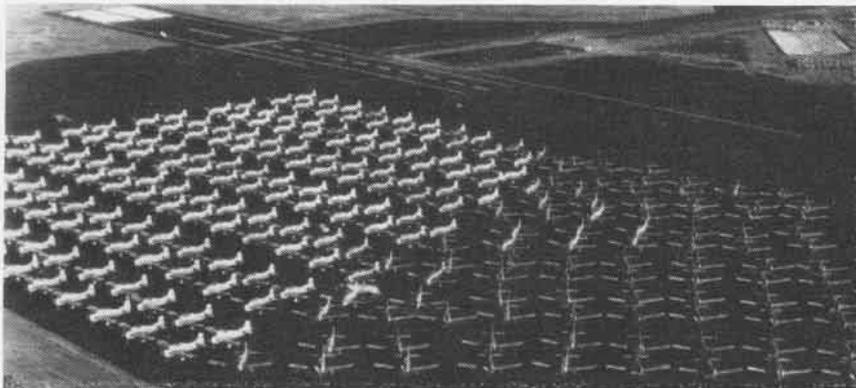
While the *Valley Forge*, Task Group Alfa flagship, goes through its yard period, VS-36 will be in Norfolk.

NACA Changes to NASA Field Activity Names are Changed

Personnel, facilities and research activities formerly affiliated with the National Advisory Committee for Aeronautics (NACA) have been absorbed by the National Aeronautics and Space Administration (NASA).

Resulting name changes of field activities are: the Langley Aeronautical Laboratory is now Langley Research Center; Ames Aeronautical Laboratory is Ames Research Center; and the Lewis Flight Propulsion Laboratory is the Lewis Research Center.

No change of name is pending for the High Speed Flight Station, Edwards, Calif.; Pilotless Aircraft Research Station, Wallops Island, Va., or the Plum Brook Research Reactor Facility, Sandusky, O. NASA took over NACA office facilities in Washington.



LADY NAMED 'ELLA' LOADS NAS MEMPHIS RAMP WITH PLANES FROM FLORIDA STATIONS

Memphis Felt the Tempest Saufley, Whiting, Barin, Barren

Pensacola's loss was a huge gain for Memphis during the September hurricane evacuation. Some 350 of CNABATRA's training aircraft legged it from four Florida bases to NAS MEMPHIS to escape predicted ill winds.

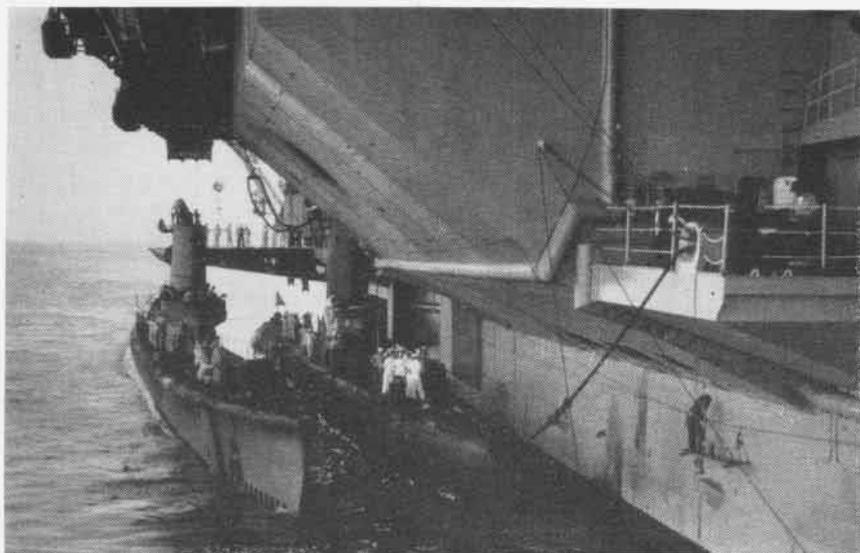
The hurricane, named "Ella," flirted with, then skirted the Pensacola complex, stirring up little more than anxiety at the training base before continuing on her erratic way.

The hurivac, coordinated by Cdr. T. Knight on the Florida scene and Cdr. F. J. Blair at Memphis, presented some highly interesting operational figures.

More than 330 aircraft, piloted by CNABATRA instructors and students from Whiting, Saufley, Barin and Forrest Sherman fields, were landed and parked in a single three-hour period. Arrivals were timed for one every 32 seconds.

Busy tower personnel at both ends of the mass movement labeled the operation an unusually smooth one and were able to direct the entire fly-away and recovery without recording a single mishap.

In addition to the Pensacola aircraft, Memphis received 30 planes from NAS KEY WEST making a total of nearly 400 transient aircraft on a training ramp.



NOW LOOK HERE, SARA! Dwarfed by the huge overhang of the mighty carrier *Saratoga*, the submarines *Pompon* and *Thornback* sidle up alongside for repairs and replenishment off *Rhodes*, Greece. Such provisioning among fleet units points up the singular mobility so necessary in modern times to insure the flexible striking power of U. S. Naval forces—above, on and below the sea throughout the world. Hospitality, of course, but hospitality with a purpose!

Record Safety Rate Set Fiscal 1958 Accident Rate: 2.83

One third of all men in Naval Aviation and three-fourths of those in the Naval Air Reserve can say, "We flew accident-free in fiscal year 1958."

This fact was revealed when VAdm. Robert B. Pirie, DCNO(Air) announced the 33 Navy and Marine aviation squadrons, four aircraft carriers and the Navy CIC school as winners of the CNO Safety Awards.

Collectively, fleet and marine aviators, regular and reserve, recorded the safest year of flight in Naval Aviation history during 1958—2.83 accidents per 10,000 hours of flight. The record compares to last year's low of 3.05. Statistically, Navy and Marine pilots logged 3530 hours of safe flight between each accident, as compared to 3280 hours last year.

Translated, this 250-hour safe flight extension means that 35 pilots are still alive, 91 accidents were avoided, 45 aircraft are still operational and \$27 million have been saved.

Of particular significance, the new safety record was set while six new high performance aircraft were being introduced into fleet squadrons; the F4D, A4D, A3D, F8U, F3H, and F11F.

Award winners for Fiscal 1958 were: HS-6, VP-16, FASRON-8, BTG-3S, VX-1, U. S. Naval CIC School, VA-85, VF-725, VF-71, VMF-141, ATU-402, JTTU, HS-891, VR-692, VMA-216, VP-713, VF-193, VA-196, VS-661, VS-23, VAW-11, VR-24, VMF(AW)-114, USS *Phillippine Sea*, USS *Tarawa*, USS *Hornet*, USS *Forrestal*, VAH-8, VA-741, VAH-5, VA-34, VAHM-10, VMA-311, HMR(L)-261, VMF(AW)-542, HS-7, VR-21, and ATU-206.

Antarctic Book Published Author was Operations Officer

"Antarctic Assault," the story of America's participation in Operation Deep Freeze, as seen through the eyes of Cdr. Paul Frazier, Task Force Operations Officer, has been published by Dodd, Mead.

The role of Navy and Air Force aircraft, ships, tractors, Seabee crews and scientists who worked against nature to carry out the South Polar International Geophysical Year program is told in dramatic detail by Cdr. Frazier, a former destroyer officer.

New Rocket Ejection Seat China Lake Develops a Catapult

A new rocket catapult to propel an ejection seat out of aircraft in emergency situations is being developed by the Navy at the Naval Ordnance Test Station, China Lake, California.

It will be used first with Douglas seats when it is installed early next year in all A-4D's.

Upon ejection at "zero" altitude the sustained thrust of the rocket catapult will provide sufficient height to allow full parachute deployment and at high speed will give tail clearance that is adequate for safe escape. These conditions cannot be met with the conventional gun type catapult without making the cartridge so powerful it accelerates a pilot beyond human tolerance.

Studies are also being conducted on the operation of this rocket catapult under water so that the escape system will provide safe underwater abandonment if a plane crashes and sinks.

In rocket ejection systems the problems of proper seat guidance and stability are paramount. The "g" or gravity force acting together with centrifugal force on a pilot tumbling at ejection speeds through the air would, at times, be sufficient to cause injury. However, rocket catapult design, fin-like stabilizers and drogue parachutes on the new seat assemblies have overcome this particular problem.

Raytheon Builds Facility To Speed Electronic Development

A \$1.7 million super-modern flight test facility is being built at Bedford, Mass. It will enable Raytheon Manufacturing Company to speed development of needed electronic devices. The contract for the new facility was awarded by the Bureau of Aeronautics.

Believed to be the first military flight facility of its kind in the United States, the new structure will permit the company to reduce the time now needed to run modification and electronic tests on missiles, aircraft equipment, and associated units.

The new facility, a 70,000 square foot structure, is scheduled for completion by early 1959. It will be located at the north end of Hanscom Air Force Base in Bedford, near Raytheon's research and development laboratory.

Raytheon is prime contractor for Navy's *Sparrow III* air-to-air missile.

REGULUS II FIRED AT SEA



WITH DEADLY accuracy, the first *Regulus II* to be fired from a submarine at sea, heads toward its target 200 miles inland at Edwards AFB. When the booster rocket drops off shortly after launching, the missile's own turbojet engine thrusts it through

the air at speeds in excess of Mach 2. Fired in the Pacific from USS *Grayback* (SSG-574), the first submarine with a built-in missile capability, the Chance Vought *Regulus II* was accompanied by an F8U-1 *Crusader* on September's history-making flight.



GRAMPAW PETTIBONE

Nerve and Guts

Returning to base after a routine training mission, a *Fury* pilot was making a simulated flameout approach. While at 7500 feet and at an airspeed of 200 knots in his turn, he attempted to lower the gear. Two wheels came down, but the starboard gear failed to extend.

He took it around, and another Tiger in a *Fury* joined up to look him over. He reported that the aft hinge of the starboard wheel was sheared and the twisted door had jammed the wheel in its well.

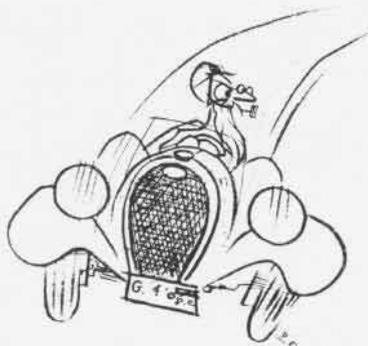
While circling the field, the first *Fury* pilot went through all the proper emergency procedures for lowering the jammed landing gear, but had strictly negative results. Drop tanks were jettisoned in preparation for an emergency landing on two wheels or possible ejection.

The two pilots conferred by radio, and upon agreement between the two, the second *Fury* pilot slid into a close formation position and attempted to dislodge the jammed wheel doors with his port wing tip! His left wing tip contacted the damaged door as planned, but at the same instant, his dorsal fin struck his buddy's starboard aileron. As the aircraft broke free of each other, the jammed wheel door tore off and the wheel came down and locked. Both aircraft entered the pattern and made a normal landing.

Grampaw Pettibone Says:

Great balls of fire! Of three possible courses of action, these lads chose the most hazardous. We coulda lost two real gung-ho boys! It would have been better to land the *Fury* with the jammed gear, rather than risk another aircraft and another life.

In the words of his C.O., pilot number two demonstrated a proper degree of confidence and intrepidity desired of fighter pilots, but displayed a disconcerting lack of judgment in applying it to this particular situation.



Light Buster

A pair of FJ-3D *Furies* were scheduled for a VFR flight from their home base on a simulated hurricane evacuation flight to Columbus, Ohio. The flight was flown as planned and the two aircraft arrived over Columbus without incident shortly after dark. During the let-down, at about 7000 feet, the flight leader ordered his wingman "Go to button 3 for tower."

The descent continued but the wingman was unable to raise either the tower or the flight leader on this frequency. They were swinging upwind for the break at 2500 feet by this time so he decided to go to *guard* channel at the first opportunity. After a normal break and on the downwind leg the wingman tried to dial in button 3 manually, turning the *lights up full* to

do so. Number 3 was still no good so he switched to *guard* and after about three tries finally raised the tower and was cleared to land. By this time he had made a very deep base leg and was about four miles out on final for a straight in.

Meanwhile a commercial airliner reported in above and behind the *Fury*, and the tower advised the airliner to take it around since he had a jet on deep final. The *Fury* pilot misunderstood the transmission, so he called and asked if he was to go around. The tower and he cut each other out on this transmission and the tower then repeated, "Jet on final, cleared to land."

Our *Fury* pilot rogered. Immediately thereafter, the fighter struck a six-foot high set of approach lights at about 130 knots 900 feet short of the threshold of the runway; continued on, cleaning out four complete sets of approach lights. Ground contact was finally made 340 feet short of the runway and the aircraft skidded to a stop about 1000 feet up and to the left of the strip he was aiming for. The *Fury* was a strike, but the pilot unscathed.

Grampaw Pettibone Says:

Sufferin' catfish! Son, you got so all-fired wrapped up in your radio gear that you clean forgot you were in a flyin' machine! Turning the lights up bright probably pretty well destroyed any night vision you



had in the first place. You flew such a deep base leg while you were dialing in button 3 manually, the tower couldn't even locate you in the pattern!

Switching to guard channel immediately is well within the intent of current communication instructions when a failure to the normal channel is apparent. You can make that switch without losin' normal interval on your leader. There comes a time when you should give up tryin' to "salvage a poor landing approach and go 'round again."

Beartrapped

An AD pilot had put in a long day. On a scheduled admin hop he had flown from his East Coast base to Atlanta, Mayport, and JAX, and was returning home on a VFR flight plan. As he approached his home field at dusk, he could see by cloud-to-cloud and cloud-to-ground lightning that he had thunderstorms east, west, and north of the field, so he requested a straight in approach. At 500 feet and two miles from the field, he had to go on instruments as he entered heavy rain and severe turbulence.

The *Skyraider* hit a down draft, 50 feet showed on the altimeter, and the pilot poured the power to it. Just then two distinct solid bumps were felt. Although the AD was hard to control thereafter, a slow climb-out on instruments was made in and out of the storms to about 800 feet. A brief glimpse of the runway was had but then a left turn had to be made to avoid a big storm to the north. As the pilot approached his southerly escape heading, he found the wing wouldn't come up and another 360° turn was made around the field. This time he made it and headed south.

Glancing out to check the damage as the rain diminished, he saw that two or three feet of his starboard wing was gone! Breaking out in the clear, he climbed slowly to 8000 feet and

checked for slow flight at 150 knots, with everything down, and found the AD controllable. A successful, although difficult, landing was made at an alternate field with a long runway.



Grampaw Pettibone Says:

Well, by gum, son! You had me worried, but I guess you're a true believer now. Thunderstorms are mighty peculiar phenomena. They look like they're just hangin' there in the air off the edge of the field hardly moving, but very few people, even in jets, seem to be able to beat one down to the runway. Those three storms really beartrapped you, with a clear look at the runway as bait. Nuff said! I'm sure you've got the message.

right and left, on the climb out to four or five thousand feet, a split S and return passes with repeats on the rolls and split S's.

On his last course reversal at 1037Q he was seen pulling vapor trails as he attempted a pull out from the split S. The *Fury* struck the water at about a 30° angle, and disintegrated. The pilot's helmet, a punctured parafat, and a piece of the ejection seat were recovered.



Grampaw Pettibone Says:

Jumpin' Jehosaphat!! How a man can deliberately flat-hat in this manner, imperiling over 1000 men on a ship, when he KNOWS they



Someone will have to write his folks....

Show-off

An FJ-3 *Fury* pilot was scheduled for a live missile firing hop from a Caribbean base. The flight leader had decided to cancel out the firing because of adverse weather and to return his flight to base with the unexpended missiles. On the return flight, the wing man requested a look at the USS *Boston*, known to be in the area. The flight leader led him in an orbit well clear of the ship, pointed it out, and continued on in to base for landing.

Break and landing were normal until the flight leader blew a tire on the runway and the wing man took a wave off. He reported 2000 pounds of fuel and was instructed to go up and burn down to 1500 pounds prior to landing. At 1025Q he acknowledged and was last seen heading northeast accelerating to a high rate of speed.

At 1030Q the USS *Boston* reported a *Fury* making a low pass below bridge level, at 30 to 50 feet off the water, crossing the bow, and doing rolls both

have his buno and side number and that he is undoubtedly tossing his hard-earned wings in the ash can, is beyond me. I'll bet that so many people were on the air putting him on report that it sounded like a truck-load of startled turkeys were loose in the control tower at his home base.

It's a direct responsibility of every pilot in a squadron, both from a military and moral point of view, to report to his C.O., any man who exhibits such tendencies. It's better to get a man hauled on the carpet *right now*, than to have to attend his funeral later. Statistics show that most flat-hatters are never punished—they're dead.



When you feel those horns pokin' right up through your hard hat, shove 'em back again and GO HOME!



Safety on the Home Front Wives are Lectured on Nutrition

At NAAS KINGSVILLE, Texas, ATU-212's Safety Department has taken as its motto, "Let's get the whole team working!" They have carried the fight for improved nutrition to the home front.

At a meeting of the Wives' Club, Lt. T. G. Higgins, Safety Department, presented the facts and figures to show the importance of nutrition. Both aviators and white hats need full support on the home front, he said. The hazards of the coffee and doughnut breakfast were described.

Capt. J. A. Niforopulos, Senior Medical Officer aboard the air station, gave the Flight Surgeon's view of the situation. He stressed the fact that many of the aircraft accidents, the causes of which were undetermined, might possibly be attributed to fatigue.

Maj. R. C. Lawson, USMC, ATU-212's Safety Officer, then invited the wives to a low-calorie luncheon.

HSS-2 Under Development Has Jets, All-Weather Capability

A new anti-submarine helicopter, designated HSS-2, is being developed for the Navy by Sikorsky. It has twin gas turbine engines, a flying boat hull for emergency water landings, and all-weather flight capability.

A universal landing gear is formed by a seaplane hull bottom, two pontoons which serve as fairings for the dual landing wheels, which are retractable, and a fixed tail wheel.



HSS-2 IS SCHEDULED FOR FLIGHT IN 1959

Two GE T-58-6 gas turbine engines will be mounted side by side above the fuselage. This is expected to minimize dust and water intake and couple the engine as closely as possible to the transmission. Large, hinged, access platforms which are formed by opening the engine cowling will make maintenance easier.

A cargo version of the HSS-2 could be used as a troop carrier. A 6000-pound capacity sling is among the special equipment which may be installed for transport, rescue or excavation work.

Cockpit visibility in the HSS-2 will be good. Transfer of the engine from the previous nose location removes an obstruction to the pilot's forward and downward visibility.

All-metal rotor blades will be fully interchangeable, both within the rotor and between similar helicopters.

RCAF Argus at Norfolk Especially Designed for ASW

A Royal Canadian Air Force *Argus*,

the latest in land-based aircraft especially designed and fitted for antisubmarine warfare, has been exhibited at NAS NORFOLK.

The plane, the largest ever built in Canada, went into operation in late 1957 and is flown by the Maritime Air Command. It was redesigned from the civilian Bristol *Britannia*.

It carries a crew of 16 and the necessary equipment and weapons to search, detect, localize and destroy enemy submarines. Its "deep ocean" capability permits it to remain on a station for hours at distances of 1000 miles from its home base.

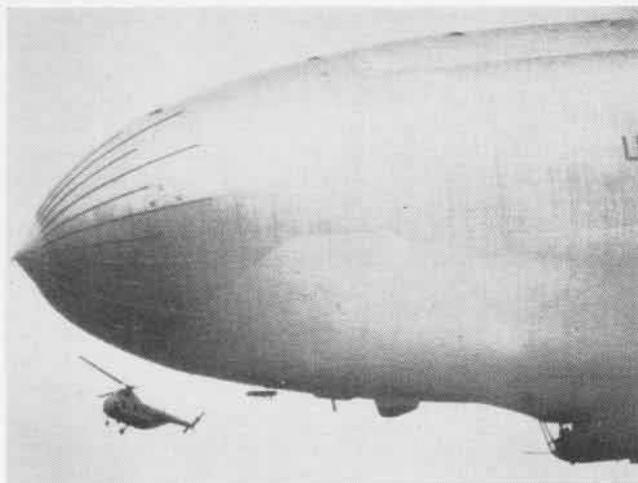
Air Commodore W. I. Clements, RCAF, Air Officer commanding Canadian Maritime Air Command, accompanied the *Argus*. RAdm. W. A. Sutherland, Jr., Commander Fleet Air Wings, Atlantic, was host for the visit.

Youngest Chief in Navy? Lipinski Dons Hard Hat at Age 24

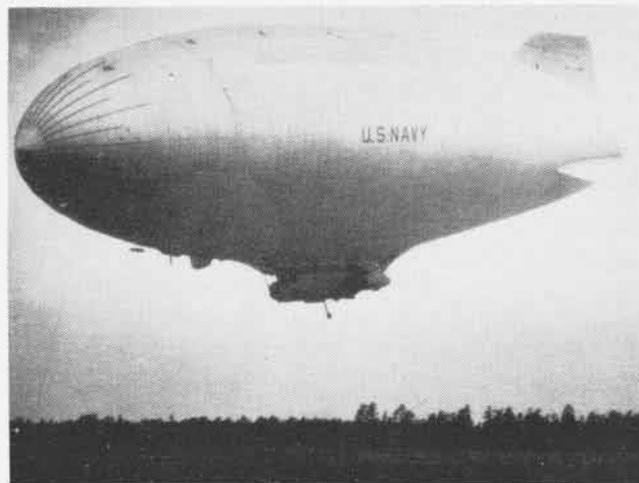
Members of VA-56 claim to have in John B. Lipinski the youngest chief in the Navy today.

Lipinski, who became 24 in May, made aviation chief electrician's mate in July. He joined the Navy at 17 and made third class 17 months later. In November 1953 he sewed on second class stripes and was advanced to first class January 1, 1955.

Lipinski reported to VA-56 in February, 1956. His duties since then have consisted primarily of working on the complex electronic circuits of the squadron's FJ-4B *Fury* jet airplanes.



WHEN AN AIRSHIP arriving at NAS Lakehurst lost its after mooring line and threatened to float nose-down as a derelict, a HU-2 heli-



copter went to the rescue. The helicopter flew a line up and over the blimp, and line handlers were able to moor the airship properly.



MODERN F9F-8P COUGARS ARE LOADED WITH AERIAL CAMERAS IN PREPARATION FOR AN IMPORTANT RECONNAISSANCE MISSION

CAMERAS ARE THEIR WEAPONS

DURING THE KOREAN conflict, a Navy *Panther* jet streaked across the sky and roared northward over the land of the enemy. As it swooped low over installations, the pilot's fingers tripped a switch, but there was no cannon fire, no scream of rockets. This was one of the many unarmed photofighters on behind-the-line activities.

Today Navy and Marine pilots are perfecting that technique. A *Cougar* flies over the "target"

at 300 feet. Shutters click, the aircraft returns and within two hours, pilots may view the "wet lay" of the terrain, noting camouflaged areas, gullies and high points of the area they must fly over in the next Fleet exercise.

It takes guts of a high order to push an undefended aircraft into enemy territory. But it also takes real know-how to catch on film the right target area from just the correct angle.



FIRST NAVY PHOTO JETS WERE PANTHERS



STUDY OF NORTH KOREAN PLANT TARGET



POST-STRIKE DAMAGE ASSESSMENT PHOTO



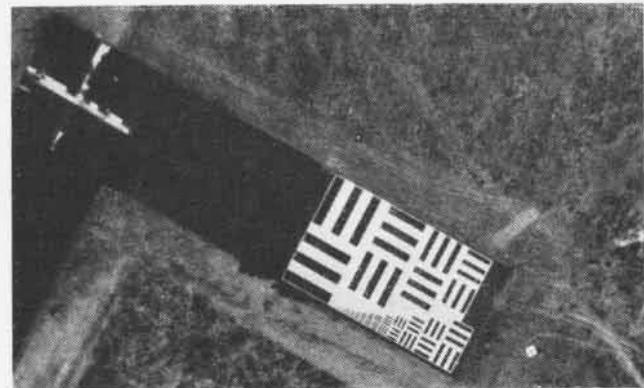
AJ-2P SAVAGE IS USED BY VAP'S FOR LONG-RANGE PHOTOGRAPHY



VAP-62 SHOT SHIP TARGET AT NIGHT DURING A TRAINING HOP

photographic squadrons have the capability of obtaining cartographic photography for mapping and charting.

To obtain at long range this type of photography, multi-engine, high performance aircraft are used. The VAP's are equipped with the AJ2P *Savage*, a four-place, single-control, high-wing airplane powered by two reciprocating engines and one turbojet. The *Savage* will be phased out in 1959 when the photo-configured A3D-2P *Skywarrior* becomes operational. These aircraft normally fly at high-altitudes and carry many different types of cameras with lenses of varying focal lengths which can obtain many kinds of photographic coverage simultaneously. Designed for day or night reconnaissance from a land-base or from a CVA-class carrier, the planes are equipped to perform cartographic mapping as well as to record all reconnaissance phases (pre-strike, strike and post-strike). The flight crew consists of a pilot, photo navigator, photo technician and plane captain.



'RESOLUTION SQUARE' SHOWS NIGHT PHOTOGRAPHY CAPABILITY

YET, during hostilities, the members of the Navy and Marine photo squadrons, as a matter of routine, do exactly this again and again. In peacetime, too, there are jobs to do. Cartographic information must be obtained; training techniques perfected; realistic exercises held to be ready for an emergency.

In war or peace, photographic squadrons provide aerial photographic intelligence in support of naval operations. Obtaining complete coverage of sensitive areas is absolutely essential. Since stockpiled intelligence becomes obsolete rapidly, new material must be gathered continuously.

Seven squadrons handle all aerial reconnaissance photography for Navy and Marine operations. Heavy Photographic Squadron (VAP)-62 at NAS JACKSONVILLE and CECIL FIELD-based Light Photographic Squadron (VFP)-62 fill the Navy's Atlantic fleet requirements. VFP-61, headquartered at NAS MIRAMAR, and VAP-61 on Guam, take care of the Pacific. The Marine Corps is serviced by Marine Composite Reconnaissance Squadrons. VMCJ-3 is newly arrived at MCAF IWAKUNI, VMCJ-1 is in the process of being formed at MCAS EL TORO, and VMCJ-2 is located at MCAS CHERRY POINT.

The differences in these squadrons lie not in their primary mission, which is the same, but in the tasks they execute and the type of aircraft they fly. Both heavy and light photographic squadrons are responsible for photographic reconnaissance for intelligence purposes. In addition the heavy

A Photo Plane Commander may be required to hold the same heading and altitude for as long as 250 miles, with a minimum of drift. His flights may call for altitudes from 100 feet to over 30,000 depending on the mission. He must develop a seaman's eye for putting the plane over the target area, and a photo 'sense' about sun angles, shadows and cloud coverage. The photo-navigator, in addition to normal copilot duties is the "eye" of the aircraft. After the PPC arrives in the target area, it becomes his job to direct the plane exactly over the target. By means of an optical viewfinder, he can scan the area, direct drift and compute ground speeds. It is his responsibility to select the cameras and inform the photo technician of flight data, as well as keep the aircraft on the flight path.

Organization of photographic squadrons is standard with the addition of a photographic department. The squadrons never deploy as a whole; instead detachments are sent out on specific assignments. Overseas, the heavy squadron detachments are usually self-supporting, although they may operate as a part of a task force. These units not only do photographic reconnaissance for the Navy, but cartographic work for such federal agencies as the Hydrographic Office, Army Map Service, Coast and Geodetic Survey and U. S. Army Engineers. Projects, which may last from two weeks to six months and require one to three aircraft, are varied and may take pilots and crews anywhere in the world.

VAP-62 maps the Okefenokee Swamp in Florida for the

Fish and Wildlife Commission, or it photographs North and South Carolina for the Army Map Service. A VAP-61 detachment goes to Alaska to shoot glacier formations for the International Geophysical Year. Another Pacific group maps a part of Thailand at the request of that government.

GOVERNMENT agencies use aerial photography in planning major construction jobs. VAP's are often called upon to make photo maps, particularly in mountainous and densely wooded areas where the cost of a ground survey runs considerably higher than the cost of the flight. Time is also a great factor, for in rugged terrain the same work might take years longer to accomplish without the use of photo planes. What is more, photographic coverage increases accuracy a hundred-fold. A map scale large enough to plot five-foot contour line intervals is not uncommon.

Films made on many of the reconnaissance missions are used to train Fleet units. Pictures of target run-ins are invaluable in briefing attack squadron pilots. Shot from an altitude of several hundred feet to 40,000 feet with various focal length cameras, photographs aid air intelligence officers to brief pilots accurately on target location and identification.

Since not all the work of heavy photo squadrons is long range, detachments are geared to pack up and go at a moment's notice to handle special rush jobs. Not long ago, VAP-62 received an order at 1700 to photograph the St. Lawrence Seaway Project. Films were processed and inter-

preted in time for a morning briefing the very next day in Washington, D. C. For executing the mission quickly, the squadron and the Photographic Interpretation Center were officially commended by the Chief of Naval Operations.

Trimetrogon systems are one of the installations which take one vertical and two oblique aerial shots at the same time at regular intervals. Cameras with long focal length lenses, mounted vertically, are used for large-scale projects. Simultaneous coverage may include infra-red, camouflage detection, color and black and white. Minimum installations provide for radar recording, trimetrogon, vertical and oblique photography. Both heavy and light photographic squadrons have the capability for night photography.

THE TASK of the light photographic squadrons includes tactical reconnaissance which immediately precedes or parallels an operation, giving daily or up-to-the-minute intelligence regarding the enemy. In the absence of hostilities the tactical commander still requires this data to insure readiness and to conduct fleet exercises. To carry out this requirement, each attack carrier has aboard a detachment from a Light Photographic Squadron.

A VEP runs about twice the size of a VAP, consisting of over 75 officers and more than 500 men. The number of detachments, deployed and in training, varies with operational requirements. The F9F-8P and the F8U-1P are the squadron aircraft. Use of fleet planes, configured to handle reconnaissance, greatly simplifies logistics and maintenance.



CRUSADER AND COUGAR ARE SLEEK PHOTO-FIGHTERS OF TODAY



BANSHEE WAS RETIRED FROM MARINE PHOTO WORK LAST SUMMER



AJ-2P HAS CREW OF FOUR AND GREAT VARIETY OF CAMERA GEAR

To guarantee complete familiarity with its mission, each detachment is formed months ahead of the scheduled departure date. The four-pilot units train as a group to insure uniform instruction and at the same time promote a spirit of competition. In addition to the pilots, there are a photographic interpretation officer and 25 men. They perform all the necessary maintenance on the three aircraft assigned and are independent administratively.

In a battle situation, photo fighters gather pre-strike photography to provide interpretation reports and damage assessment information. Routine assignments include developing tactics and techniques for aerial photography, and carrying out target and weather reconnaissance. Carrier photography is usually obtained during regular operations. If reconnaissance is the primary objective, diversionary attacks are carried out as protective measures.

The Marine Corps squadrons have a different set-up. Photographic aircraft comprise half of the three Composite

squadrons; the other half is composed of electronic-configured reconnaissance planes. All Marine photographic aircraft are currently F9F-8P *Cougars*. These are scheduled to be replaced by photo *Crusaders*.

Not only do Marine photo planes gather intelligence for air operations, they must also provide support for the ground forces. The concept of vertical envelopment entails the use of small, isolated groups of troops, dispersed over a wide area. Unless communication lines are strong, and reconnaissance is accurate, the territory between units becomes no-man's land. The realization that the war of massed armies is a thing of the past is the basis for renewed emphasis on aerial photography in the Marine Corps. Its role has assumed such significant proportions that the Marines are considering variations in handling the job.

Observations squadrons are now assigned the secondary mission of limited photographic reconnaissance, but the Cessna OE monoplanes have no built-in photo capability; they can only carry portable cameras. If it is finally deter-

Escort fighters covered the photo strikes, but the element of great risk was by no means eliminated.

The original step taken to overcome the slow recycle rate (three seconds) of the aerial cameras installed in the modified F9F-2, was accomplished by the VC-61 (now VFP-61) photographic officer, Lt. Elroy J. Shafer, in late 1950. By modifying the camera drive mechanism a recycle rate of .96 seconds was obtained, thus permitting the jets to fly at higher rates of speed over enemy territory.

Even at the increased rate, improvement was needed. The problem was solved largely through the ingenuity of one man, and it won for him the Legion of Merit. LCdr. Harlan D. Williams, also attached to VC-61, while deployed aboard the *Philippine Sea* in 1952, developed on his own time the "wiggler" Image Motion Compensator (IMC). The device moves the aerial camera within the aircraft to compensate for the forward speed at the instant the film is exposed. The end result was the same as having an infinitely higher shutter speed. Cameras designed for prop planes



MARINE PILOT GETS BRIEFED FOR MISSION



FINAL CAMERA CHECK BEFORE A TAKE-OFF



PHOTO FIGHTER MISSION IS ONE-MAN SHOW

mined that high-performance aircraft are unprofitably used for certain missions, the VMO slow, low-altitude aircraft will be modified accordingly.

Many new requirements grew out of the Korean conflict, largely because jet photography made its start then. This led to the transition, which still goes on, from low to high speed photography, from large to small format cameras.

When the first photo F9F-2 *Panthers* were delivered to the squadrons in the fall of 1950, aerial reconnaissance was catapulted into a new era. But it took time and experience to develop its great potential.

Photographic prop aircraft had carried a normal load of guns; jets were unarmed. The pilot's defense consisted of speed, maneuverability and superior headwork. As the enemy perfected methods to knock him down, the photo pilot had to fly higher and faster or much lower and much slower to complete his particular mission successfully. The tempo of the time can be summed up in the words of one CO, "You will be shot at, and you might get hit, but you get your pictures and then run like the blazes."

At the start, this was easier said than done. Aerial cameras in use were incapable of high-speed photography, because of slow recycle rates and inadequate shutter speeds,

could at last be used efficiently and effectively in jets.

A second type of IMC device was developed during this period, but did not become operational until late 1953. Called the "MA-10 magazine," it moves the film to compensate for the air speed of the aircraft.

Because jets fly higher, faster, further than prop planes, it was a logical step to consider smaller format cameras. Reduced space and weight requirements would permit more space to go into power plants, more weight to go into fuel.

The small format camera is represented in the Navy by the CAX-12. Installed only in the F8U-1P, it takes 70 mm. film. The resulting photo is 2¼ sq. inches compared with the 9"x9" or the 9"x18" pictures taken by the K-17 and K-38 cameras in the F9F-8P and AJ-2P. CAX-12, which has lens focal lengths equivalent to the older equipment, not only saves space but permits a higher re-cycle rate.

Another innovation in the field of aerial photography, automation, was the direct result of the transition to jet aircraft. During WW II, photographic personnel made their own computations, manually set the controls and clicked the shutter. Today, more and more complex remote control systems do the work of men. Position, speed and other factors are worked electronically by means of con-



ROLL OF AERIAL FILM PROCESSED IN LAB

NEGATIVE DENSITY AND CONTRAST STUDIED

DRY NEGATIVE PUT ON CONTACT PRINTER

trol panels in the cockpit. Thus, the modern photo-fighter pilot can concentrate to a greater degree than ever on flying his complicated piece of machinery.

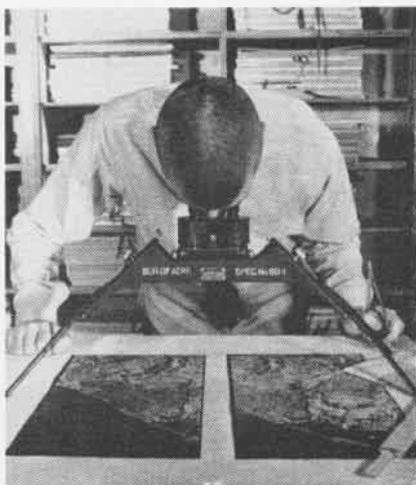
Many problems have been solved, but there are still challenges to be met. The Research and Development Branch of the Bureau of Aeronautics' Photographic Division is making rapid progress. Cameras are being developed which will incorporate better optics, increased photographic capability, in-flight processing, scanning and read-out, as well as a built-in means of transmission back to home station, for fast dissemination. All this will be accomplished electronically—in push-button style—paralleling the advances made in navigation and weapons delivery methods.

NIGHT photography, in the interim, presents a rich R&D field. VFP's rely on dead reckoning to locate targets. In wartime, the enemy is not usually cooperative enough to supply fixes. The trend is toward radar and automatic navigators coupled with improved infra-red viewfinders. The information will be fed from the navigational aids to pinpoint the targets and to insure the proper overlap in night photographic films. This will be a real step forward.

Although Heavy Photographic squadrons have photo navigators and radar, they will also benefit from the experimental work. However, VAP's working with present equipment, have proved conclusively that aerial photography does not end when the sun goes down. As a result of intensive training, with fleet units at sea as well as land targets, VAP-62 is qualified to conduct night aerial photography nearly anywhere in the world. They have refined it to such an extent that they can identify surface craft and detect troop movements, supply and rendezvous points that are concealed during daylight. A photo flash bomb is used.

Training is the key to the effectiveness of aerial reconnaissance. Therefore, when a Navy or Marine photo pilot reports to his squadron he must undergo the unit's training program. He is, of course, checked out in aircraft-type, but regardless of his background in aerial photography, he must be brought up-to-date on the latest techniques, and learn the specific functions of his new organization.

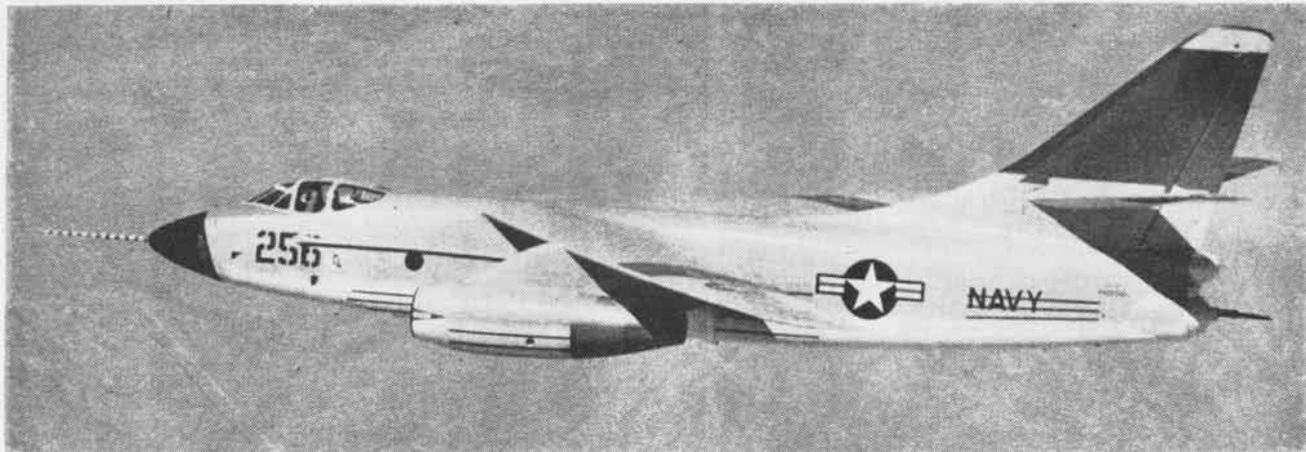
VFP-61's curriculum is typical. Pilots must first successfully complete two weeks of ground school before entering the flight phase of the program. Basic photographic principles, film processing, aerial cameras, related equipment



ENLARGEMENTS MADE OF PINPOINT TARGETS

PRINTS STUDIED THROUGH A STEREOSCOPE

FINISHING TOUCHES MADE ON MOSAIC MAP



FIRST FLIGHT OF THE LONG-RANGE, CARRIER-BASED, TWIN JET A3D-2P PHOTO RECONNAISSANCE PLANE, WAS MADE IN SEPTEMBER

and the laws which govern their use are taught. Through practical exercises the students learn to use flight planning formulas, photo computers and map plotting techniques. Visits to the photo lab supplement lecture material.

Of the 22 flights which make up the air syllabus, the first ten are devoted to fundamentals. Qualified photo pilots review the results of each hop.

THE FIRST four flights give practice in taking pinpoint targets such as road intersections or small airfields. Pilots must figure the corrected altitude for proper scale, ground speed, true air speed and intervalometer settings.

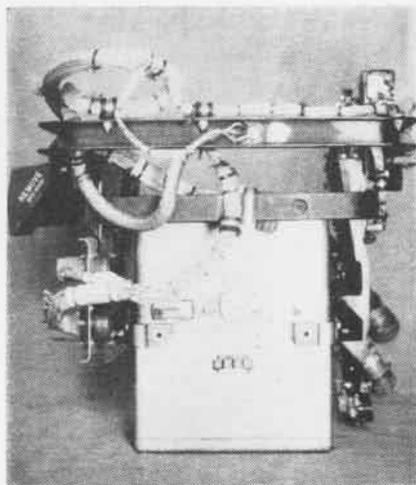
There are two route study hops during which continuous strips of a railroad or highway are made. Proper overlap and sidelap are obtained during the next two flights by flying parallel flight lines. Number nine is a photo reconnaissance mission requiring extreme precision. Continuous strip, shot at low altitude, high speed and used in evaluation of landing beaches, is the final project. The 12 remaining flights are tailored to fit the area in which the detachments will operate.

The Heavy Photographic Squadrons have basically the same program. Photo navigators, who are usually first tour

pilots, ground officers or outstanding enlisted personnel, take the same course. Depending on operational experience, they go on to become qualified as Photo Plane Commanders in three to 18 months. The Marine Corps conducts training modified to meet the needs of their operations.

The Light Photographic Squadrons were commissioned in 1949; three years later the VAP's (then VJ's) came into being. The years intervening have been important. Jets have revolutionized photo techniques and brought the need for new equipment into sharp focus. Great advances have been made. More will come.

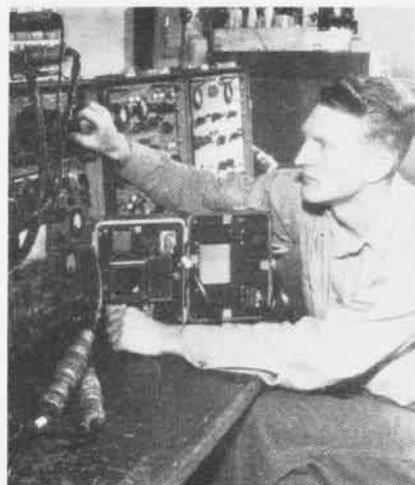
Operational tactics are changing rapidly, causing a revision of the entire aerial reconnaissance concept. Electronic detection equipment is frequently combined with cameras to gather intelligence. The Marine Corps Composite Reconnaissance Squadrons use F9F-8P's and F3D-2Q's together in many operations that require both detection and photography. There may come a day when it will be advantageous to develop a true reconnaissance vehicle—from the drawing board—to meet the complicated requirements of modern warfare. Meantime, pilots of Navy and Marine fighter and attack aircraft equipped with the cameras now available, are making sure they are ready to carry out their mission.



CAX-12 MODEL OF NAVY'S 70 MM. CAMERA



FILM IS LOADED INTO PROCESSING MACHINE



CAMERA ELECTRONIC PARTS ARE TESTED

MIDSHIPMEN TAKE TO THE AIR



TODAY'S LINE officer must not be surface bound; he needs to understand and respect air power. To make certain that he does, the U. S. Naval Academy, headed today by RAdm. C. L. Melsom, gives all midshipmen a well-rounded survey of Naval Aviation. Academic courses are supplemented by indoctrination flights in various types of aircraft, visits to aviation shore activities, and cruises in aviation ships. This nice balance of theory and practice is designed to provide a future officer of the line with a basic knowledge of air warfare.

The Department of Aviation was established at the Naval Academy in December 1945 as a result of the lessons learned in WW II. VAdm. Robert

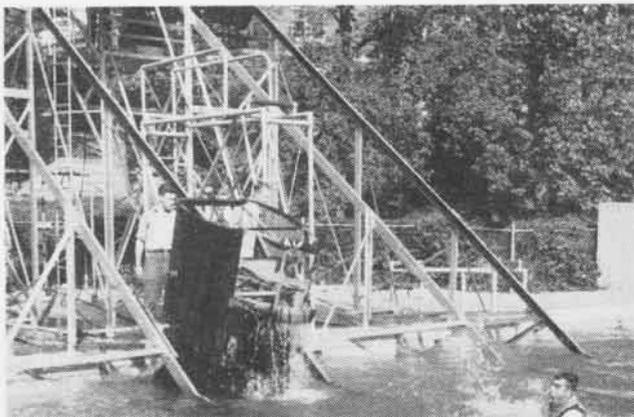
B. Pirie, DCNO(Air), headed the section as a Captain. He energetically brought into being the program envisaged by Academy Superintendent VAdm. Aubrey W. Fitch. Today, under the command of Capt. Ralph Weymouth, the department continues to give Annapolis men an introduction to air seapower.

Training begins during plebe summer with a one-hour flight in "Ye Ole Yellow Peril," the N3N, at NAF ANNAPOLIS. For many of the embryo officers, this is the first trip in a plane of any type. For nearly all, it is the first time at the controls.

Almost two years pass before the midshipmen are again involved with the practical aspects of aviation. To-

ward the end of third class year they all "ride" the *Dilbert Dunker* and receive a survival lecture on equipment carried in single-place naval aircraft.

The program gets into full-swing during Aviation Summer which is the midshipmen's third. They leave Annapolis, Maryland, to venture into the real world of Naval Air. Three weeks are spent at Naval Air Basic Training, Pensacola. A good working knowledge of the T34B trainer is acquired by five day-flights of over an hour each, and one 60-minute night hop. Trainer check-outs in instrumentation; drills in pre-start, start, pre-flight, and shut-down procedures; lectures in safety and flight maneuvers, and a blindfold



IT'S FUN—AND TRAINING—TO TAKE A SPIN IN DILBERT DUNKER



NOT IN FASHION, BUT IT'S STILL A SOUND TRAINING PLANE



PENSACOLA EXTENDS A REAL WELCOME TO ARRIVING MIDSHIPMEN



VISIT TO ELLYSON FIELD INCLUDES RUN-DOWN ON HELICOPTER

cockpit check, are necessary adjuncts of flight time. There is also an hour ride in a T2V, a 30,000 foot "ascent" in the pressure chamber, and practice in seat ejection.

The syllabus is basically that given to all student Naval Aviators during the first phase of flight training. It is impressed upon the midshipmen that this is not a series of "demonstration" flights, but rather a very practical course in which they are expected to learn and to do. A standard Aviation Training Jacket is kept for all midshipmen. Each flight is graded and the final mark becomes a part of their Naval Academy records.

After seeing and participating in the activities of the Training Com-

mand, the midshipmen move on to the Jacksonville area for a week with the operating forces. At NAS JACKSONVILLE, they are briefed by heavy and light attack pilots and are shown static displays of operational attack aircraft. Soon they are deep in air group doctrine, observe weapon loadings and watch delivery maneuvers.

The fighter side of the picture comes into focus at NAS CECIL FIELD, where the trainees inspect fighter and intercept type aircraft, jet engines and ground equipment. At squadron briefings, they are given the straight word on squadron missions. An insight into aerial reconnaissance is given by the photo squadron at Cecil. This involves an explanation of camera equipment,

a demonstration of the installation and a brief run-down on photo interpretation. The same day also includes observation of FCLP landings and a demonstration of the Mirror Landing System.

For many the highlight of the week is participating in anti-submarine warfare operations with the VP and VS squadrons. After a thorough briefing on mission and tasks, the midshipmen take an hour flight in WV or P5M aircraft. A large number welcome the opportunity to return during liberty time to fly actual squadron 12-hour sorties in order to learn more about the ASW phase of Naval Aviation.

The group is split for one day during the stay in the Jacksonville area. Some go to the Mayport Carrier Basin



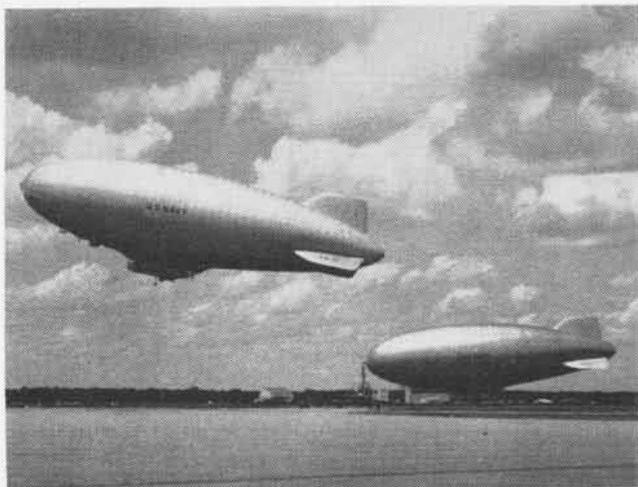
LTJG. P. J. SMITH DESCRIBES CAPABILITIES OF PHOTO CRUSADER



VA-44 AT JACKSONVILLE PROVIDES THOROUGH A4D ORIENTATION



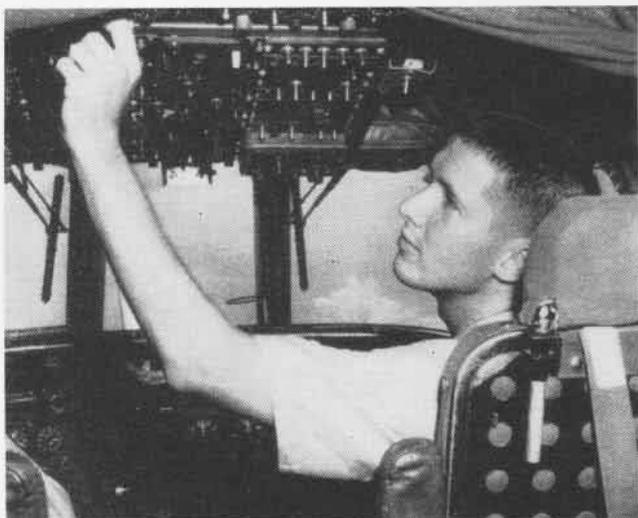
MIDSHIPMEN ARE PROPERLY INTRODUCED TO A CVG-17 SKYRAIDER



USE OF MORE-THAN-KING-SIZE ZP-2 AIRSHIPS IS DEMONSTRATED



ABOARD P5M FOR ASW FLIGHT, MIDSHIPMEN ARE STRAPPED IN



MIDN. HOPPIN PILOTS A VW-4 SUPER CONNIE ON ONE MISSION



MIDSHIPMAN WORKS RADIO GEAR ON SUB



SUB CRUISE SHOWS OTHER SIDE OF ASW



SPIKEFISH PLOWS THROUGH PLACID SEA



A VFP-62 OFFICER GIVES SIMULATED PHOTO MISSION BRIEFING



ANNAPOLIS MEN TAKE THEIR TURN AT PHOTO INTERPRETATION

to see the other side of the ASW picture by a submarine orientation cruise. The rest are flown to NAS Glynco to tour the CIC School and take part in airship operations.

If operational commitments permit a short cruise is made aboard a carrier at some time during the summer. This year the men went to sea for a day aboard the USS *Ranger* (CVA-61). The sight of actual flight operations—Naval Aviation in its natural environment—is a dramatic one.

A few days of each Aviation Summer are spent at Annapolis. During this period all midshipmen take the Aviation Selection Tests. The Academy is also used as a base for staging field trips to activities in the vicinity. One-day excursions are made to the Naval Research Laboratory, the David Taylor Model Basin, the Naval Ordnance Lab., the Baltimore Glenn L. Martin plant,

and the Grumman Aircraft Corporation in Bethpage, Long Island. In the Philadelphia area, the midshipmen visit the Naval Air Material Center, Naval Air Development Center, the Naval Shipyard, and Damage Control School.

Over 90 percent of the Second Classmen participate in Aviation Summer. Three groups of about 260 each rotate through the program. The rest stay at the Naval Academy as a Fourth Class Supervisory detail. However, they take part in the local field trips and fly the N3N throughout the summer.

There is a lull in aviation indoctrination until the following year when "spring training" is conducted at NAF ANNAPOLIS. Each midshipman participates in about three N3N flights and two UF hops. The N3N syllabus consists of basic airwork and landing practice. The UF course entails radar, loran, and celestial navigation training

and affords copilot time. This type training continues through the fall of the First Class year.

During the academic year, midshipmen are permitted to fly at the Air Facility during regular liberty hours on week ends. Many take advantage of this opportunity for flight experience.

The on-the-spot indoctrination to the Air Navy augments academic courses, such as aerodynamics, meteorology, ordnance, and air operations. It gives all midshipmen a well-rounded knowledge of Naval Aviation. Officers of ships of the line as well as future pilots profit from the training. In recent years, approximately three-fourths (270) of those physically qualified have entered flight training.

Armed with an understanding of air seapower, the graduates of Annapolis, aviator and non-aviator alike, embark upon their careers with confidence.



AFTER SIX-DAY TOUR OF NAVAL AVIATION FACILITIES IN THE JACKSONVILLE AREA, MIDSHIPMEN DEPART IN A NAVY TRANSPORT

LET'S LOOK AT THE RECORD

Quonset O&R Rates High 'Most Effective' of its Class

The Overhaul and Repair Department, NAS QUONSET POINT, was rated by the Bureau of Aeronautics as the most effective of the nine Navy O&R's in the country for the January-March quarter of the 1958 fiscal year.

Effectiveness is judged on the basis of the best application made of available personnel and funds.

According to Capt. Thomas B. Payne, station C.O., Quonset's performance has been achieved by the station's implementation of the BUAER Management Control System and the "plus effort" of production employees. Outstanding effectiveness has also been attained in the fleet support which included repair of aircraft, fleet services and repair of aviation equipment.

The O&R department, headed by Capt. Frank E. Rogozienski, is valued at \$19 million dollars and employs 2500 civilian workers in its shops.

A Supersonic Student? Goes Through Primary in 38 Days

Ltjg. David L. Cooley finished primary flight training at Sausley Field in the record time of 38 days. One of his instructors was Lt. J. H. Olsen, who attributed the feat to "the willingness of the instructors and schedules officers of VT-17 to fly their students."

While relating that he was in no special hurry to leave Sausley and was completely unaware that he was establishing a new record, Ltjg. Cooley said getting permission to take two quizzes early was one factor which sped him toward his goal in record time.

9000th Helo Landing Made Follows Record Fixed-wing Landing

Less than a week after the 71,000th fixed wing landing was made aboard USS *Princeton*, Ltjg. Arch T. West and his copilot, Ens. Charles Carr, recorded the 9000th helicopter landing aboard that ship.

The helicopter landing, made by a HS-4 aircraft, was made while the *Princeton* was on ASW operations.



IN RECOGNITION of more than 1600 accident-free hours of flight instruction given to primary student pilots, LCdr. Irvin E. Eagerton, left, receives CNABTra commendation from Capt. E. M. Stever, C.O., NATTC Memphis.



LT. R. G. STAMMERJOHN is congratulated by Cdr. W. J. McNeil, Jr., C.O. of VA-66, after recording A4D-2 squadron's 1000th flight hour in 21 flying days. Feat was accomplished during exercises at Leeward Point Field.



SPECIAL TANKS made it possible for Col. J. F. Kinney, LCol. J. A. Etheridge, and TSgt. Marcel Baucher of Marine Light Helicopter Group 16 to fly an HUS-1 non-stop from Oppama to Itami Air Base and return, 546 nautical miles.

Idea Earns \$290 Award Catalog Consolidation is Result

For helping to develop a better method of cataloging engine material, William R. Roedel of the Aviation Supply Office, Philadelphia, Pa. has earned a \$290 award.

Roedel expanded an idea originated by Michael Thorrick of ASO's Weapons System Division. The result was ASO's adoption of a policy which consolidates various jet engine and jet accessories stock list sections into one publication. Initial distribution of the composite catalogs is being made this fall.

The consolidation is expected to save \$9500 annually and reduce distribution time as much as three weeks.

34th Birthday Celebrated Lakehurst PR School Shows Growth

The Class A Parachute Riggers School at Naval Air Technical Training Unit Lakehurst has celebrated its 34th anniversary.

Class No. 1 was convened in September, 1924, with 15 students sitting in an old, unheated shed, with barely enough equipment with which to work. At that time, a "parachute man's" duties were collateral and the qualification was designated by a specialty badge on the left sleeve.

The growth of Naval Aviation has been reflected in the expanded training required by the parachute rigger who now receives, in a 13-week course, instruction in the proper methods of packing, rigging, repair and maintenance of parachutes, plus a knowledge of oxygen and survival equipment.

VA-104 Wins 44 E's AD-6 'Drivers' Show Up Well

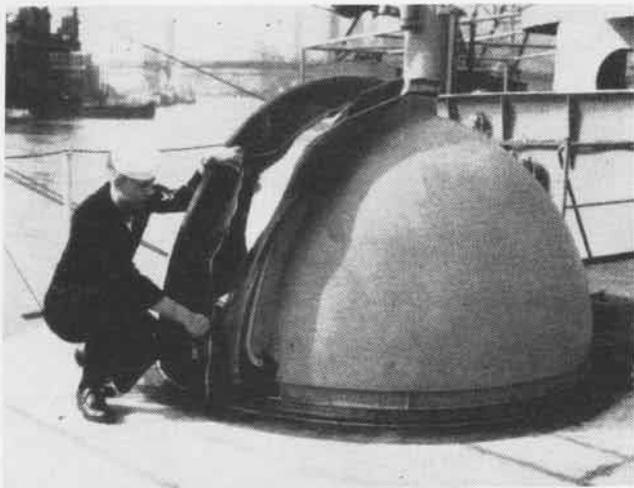
Cdr. Jack N. Durio's *Hell's Archers*, VA-104, have won 44 individual E's in competitive exercises this year.

Top *Hell's Archer* is Ltjg. James A. Brooks with a total of four E's. Runners-up with three E's are Cdr. Durio, LCdr. Robert G. Coleman, Jr., Executive Officer, Lt. William H. Ashley, Ltjgs. Douglas R. McCrimmon, John J. Maloney, Joseph A. Robbins, Ralph N. Davis, and Joseph E. Porter, III.

For the *Archers'* primary mission, atomic weapons delivery, 21 pilots earned E's, 91% of the AD-6 pilots.

VA-104 is now deployed aboard the USS *Forrestal* in the Mediterranean.

'SINS' ABOARD COMPASS ISLAND



CREWMAN UNZIPS the canvas covering to inspect a star tracker located topside of experimental ship Compass Island while in port.



GIANT ROLL stabilizers reduce the ship's roll by as much as 90 percent and prove most helpful in testing of special equipment.



COMPASS ISLAND cuts the brine. Mission of experimental ship is to assist in the development and evaluation of a navigational system which is completely independent of shore-based aids.

USS COMPASS ISLAND was commissioned in 1956, chock-full of new electronic equipment which was to be tested in an effort to provide the Navy's Fleet Ballistic Missile Program with the elements of mobility, concealment and readiness required. A major portion of the equipment is S.I.N.S.—Ship's Inertial Navigation System—a means of obtaining precise navigation without reference to fixed land navigation aids.

In addition, the ship is equipped with various experimental stabilization aids, computers, gyros, compasses, star trackers, cameras and other new developments, all being designed to make the Navy FBM program successful.



FARRAND star tracker's camera assembly is adjusted by a ship's Electronics Technician.



ENGINEER from North American Aviation goes over inertial navigation system's stable element.



ELECTRONICS Technician Donald L. Cover checks a G-15D Bendix Aviation computer.



NAVY NURSE HELPS CARPENTER WITH MEAL JUST BEFORE FLIGHT

ADM. WRIGHT (L) CONGRATULATES TABOR AS HE LEAVES CHAMBER

FLIGHT SURGEON IN 'SPACE'

IN SEPTEMBER, the quest for the knowledge necessary to put a man safely into space was advanced when a Navy flight surgeon, who is also a jet pilot, completed 72 hours in a low pressure chamber which simulated a trip into space. Never before has one man stayed so long at "altitudes" of over 80,000 feet.

Lt. Richard H. Tabor, MC, USN, was accompanied by a "traveling companion," Carlin B. Carpenter, HM3, during the first 24 hours of the flight. The "trip" started 1145 September 5th when Tabor, wearing a new model Goodrich full pressure suit, and Carpenter, wearing an Arrowhead full pressure suit, entered the chamber at NAS NORFOLK. The purpose of the trip was to determine whether man can function adequately in a "space" suit for prolonged periods.

The research experiment was under the direction of Cdr. A. L. Hall, MSC. According to Cdr. Hall, Dr. Tabor was just the man for the job "since he is the ideal combination of scientist, doctor and aviator who we feel will be capable of a sustained flight in space."

The question of how to be comfortable at 100,000-foot altitudes was solved by Dr. Tabor who brought his "television chair" from home. The green contour lounge served as home for the 198-pound doctor for the 72-hour stint. "It's not plush, but it's home" quipped Tabor.

Carpenter stayed in the chamber for the 24 hours he was scheduled to stay in order to test the new suit design.

Several pressure points in the suit caused him some discomfort.

"Trying to think of something to occupy my mind was my biggest problem," Carpenter said.

Tabor wore a full pressure suit of more recent design than the one he regularly wears while flying an F8U *Crusader* in Air Development Squadron Three at NAS OCEANA. His last flight in the *Crusader* prior to making the simulated space flight took him to 56,000 feet.

He made the 72-hour endurance flight to observe, at first hand, the problems noted in other research projects. His first hand medical knowledge of symptoms and their causes was considered important to the test because he could more clearly report data about his feelings and sensations to Cdr. Hall who conducted the test outside the chamber. The test went so well, however, there was little to report.

DURING THE TESTS, he was taken to an altitude of 139,000 feet. A major portion of the flight was made above 80,000 feet.

To minimize the effects of aerobolism or "bends," it was necessary for Tabor to undergo a full hour of breathing pure oxygen to purge the nitrogen from his blood prior to the ascent. Even with this precaution, Tabor experienced some discomfort on the initial ascent and had to be lowered to 20,000 feet for another hour to complete the removal of the nitrogen from his system. From then on, Tabor was

absolutely free of the dread "bends."

Tabor was "wired for sound" during the flight. A special hook-up of an electro-cardiograph was made to allow data to be taken periodically. This gave an almost continuous check on his physical condition to a Navy doctor outside the chamber.

Tabor's feeding was accomplished by bringing him back to 35-40,000 feet where he could open his visor momentarily to partake of the low bulk diet used for the "flight." After an initial meal of ham and scrambled eggs, his diet consisted of highly concentrated foods used in many hospitals for patients unable to accommodate a normal diet. The low bulk was a necessity to minimize elimination problems. He was fed regularly every eight hours.

Dehydration caused some small problems which were overcome by increasing his liquid intake. Each drop of liquid and every ounce of food was carefully weighed to insure accurate data from the test.

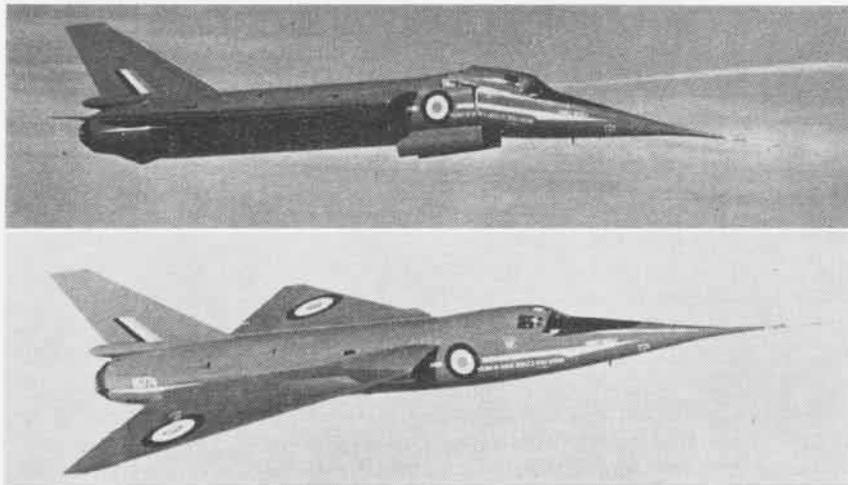
When the trip ended 72 hours after it began, Tabor was greeted by his wife, a son aged four, and his 10-month-old daughter, and an official delegation headed by Admiral Jerould Wright, Commander in Chief of the U.S. Atlantic Fleet, who welcomed the weary "space traveler" back to earth.

Once the greetings and congratulations were over, Tabor was subjected to an extensive series of physical and psychological tests which lasted for hours. The tests were similar to those he underwent just prior to the "flight."



'AREA RULE' AND BOUNDARY LAYER CONTROL GIVE N.A.39 HIGH SPEED AT LOW LEVEL, FLEXIBLE SPEED RANGE FOR CARRIER USE

BRITISH AIR POWER DISI

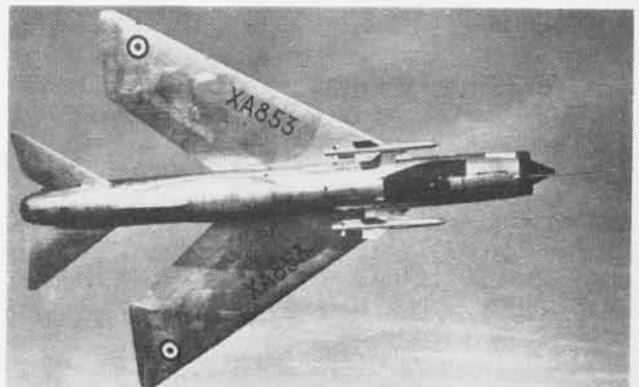


DROOP NOSE OF WORLD SPEED CHAMPION F.D.2 GIVES PILOT VISIBILITY AS IT IS NEEDED

Most spectacular part of Farnborough Display in England was a formation flight in which 22 Hurricanes of the Royal Air Force Squadron 1 took part. The display, which warranted the application of special paint and color, year after year, was a triumph for Aircraft Constructors to enter the field from all over the world. In the display, the Blackburn N.A.39 low-level fighter, the Rotodyne, and certain miscellaneous aircraft have been described by one of the specially designed, low level



GANNET ASW PLANE FEATURES RADAR POD UNDER ITS FUSELAGE



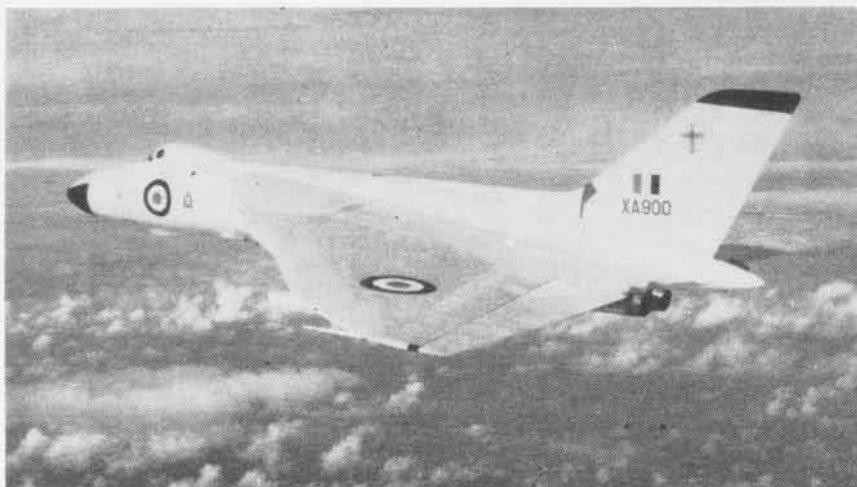
ENGLISH ELECTRIC P.1 AIRCRAFT IS ARMED WITH FIRESTREAKS



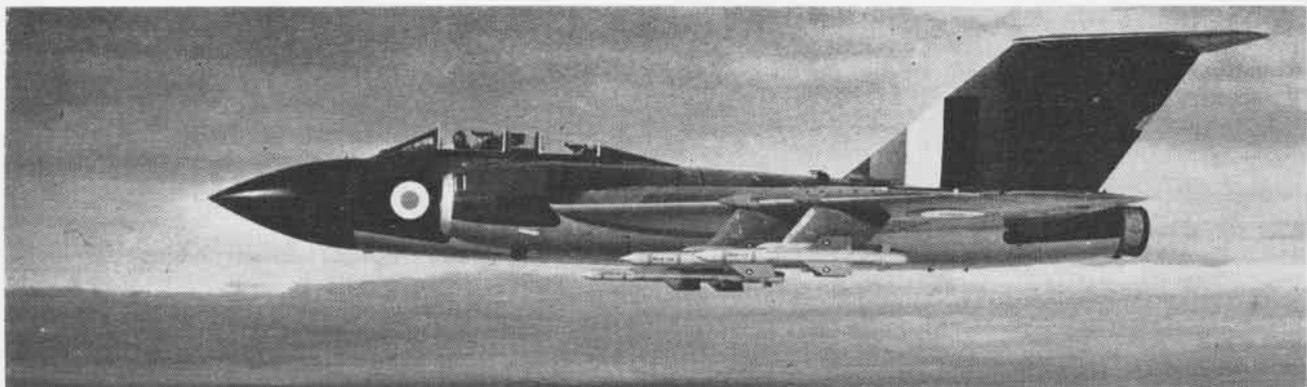
HANDLEY PAGE VICTOR, POWERED BY FOUR JET ENGINES, FIRST FLEW IN 1952 AND IS IN SERVICE WITH RAF BOMBER COMMAND

LAYED AT FARNBOROUGH

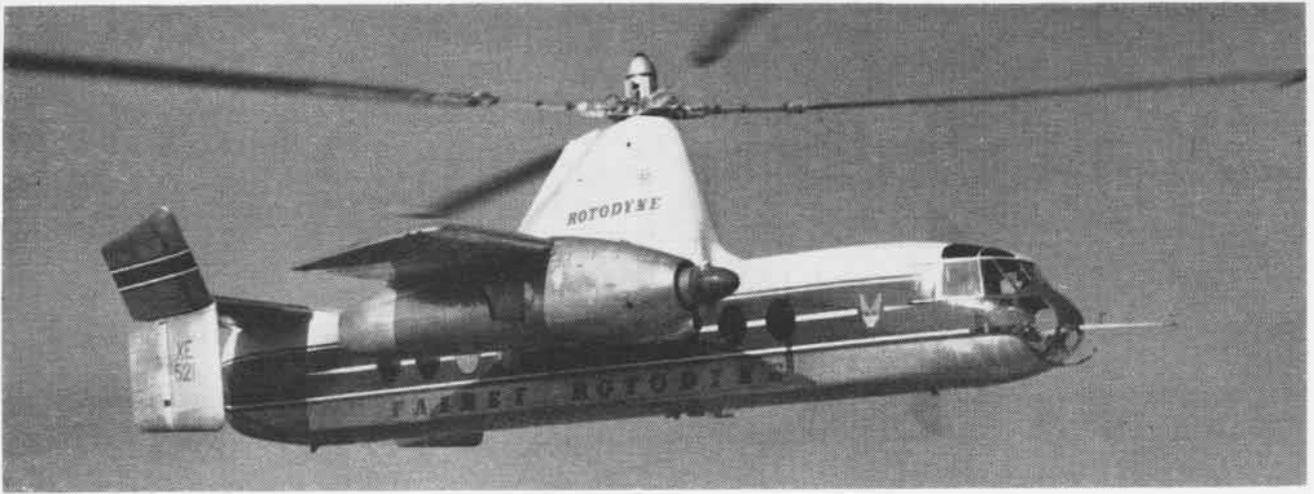
...e flyboys at the 19th annual
 ...September 1-7, was the forma-
 ...r Hunter Mark VI fighters of
 ...xecuted a series of maneuvers
 ...they were given. Such drama
 ...enabled the Society of British
 ...ousands of overseas observers
 ...uced for the first time was the
 ...naval attack fighter, Fairey
 ...and test vehicles. The N.A.39
 ...ud Briton as 'the world's first
 ...high speed strike aircraft.'



DELTA-WINGED VULCAN CAN CARRY AVRO-DESIGNED AND DEVELOPED 'STAND-OFF' BOMB



LATEST, MOST POWERFUL VERSION OF JAVELIN IS ARMED WITH 30MM CANNON AS WELL AS FIRESTREAKS AND ROCKET BATTERIES



ROTODYNE DIMENSIONS ARE IMPRESSIVE: CRUISE SPEED, 185 MPH; 48 PASSENGERS; ALL-UP WEIGHT, 18 TONS; ROTOR DIAMETER 90 FEET



WESTMINSTER CRANE/TRANSPORT VERSION WHICH CAN LIFT LOADS OF SIX TONS OR MORE, HAS COMMERCIAL AND MILITARY CAPABILITIES



FAIREY ULTRA LIGHT CAN TAKE OFF AND LAND ON SHIPS DURING VERY ROUGH WEATHER

THREE HUNDRED and sixty-two exhibitors participated in the SBAC Flying Display and Exhibition, the largest number of exhibitors in all the 19 shows thus far held at Farnborough.

A stand-out in the varied helicopter design demonstration at the Display was the *Rotodyne*. This Fairey vehicle takes off vertically as a pure helicopter. It demonstrates its hover capabilities for a few seconds, then the undercarriage is retracted and the *Rotodyne* climbs away.

At about 1000 feet and 115 mph, the *Rotodyne* translates from helicopter to autogyro flight. The auxiliary compressors and pressure jets at the rotor blade tips are closed down. All power is transferred to the forward facing propellers, and the *Rotodyne* continues on as a conventional airliner.



WITH WINGS REMOVED, GNAT CAN BE FERRIED BY AIR TRANSPORT



ALL-WEATHER NAVAL FIGHTER SEA VIXEN CARRIES FIRESTREAKS

ANOTHER impressive rotary wing design was the Westland *Westminister*, which first flew June 15 of this year. The largest single rotor turbine-powered helicopter to be built in the western world, its fuselage is 89 feet, 3 inches long, its rotor diameter 72 feet. Powered by two Napier Eland shaft engines, it can fly with full load on one engine. It can carry 51 fully equipped troops, five missiles of the *Thunderbird* class or four jeeps. With full loads it cruises at 100 knots.

The Fairey *Ultra Light* helicopter attracted attention when it used a truck for a platform rebuilt and modified to simulate a helicopter landing deck at the after end of a Royal Navy frigate. The truck "deck", a 16-foot square surrounded by "safety nets," moved at a speed between 12 and 17 mph. The *Ultra Light* is used chiefly for observation and communications.

It has a vertical rate of climb as

high as 1400 feet a minute. All-up weight of the *Ultra Light* is 1800 lbs.; cruising speed, 95 mph; maximum range 185 miles; and maximum endurance 2½ hours.

Before Farnborough, the *Ultra Light* had made highly successful trials from two frigates in exceptionally rough weather in the English Channel.

Two other helicopter designs are worthy of note: Saunders Roe P.531 and the Westland *Wessex* (both below). The P.531 is a five-seat general purpose helicopter designed and built as a private venture. It first flew 20 July 1958. The *Wessex* is an anti-submarine helicopter now in production for the Royal Navy. Its automatic devices make it an all-weather aircraft. Search gear and destructive weapons, which it carries, fit it for the roles of hunter and killer. Various fittings can make it available for other uses: transport, air/sea rescue, mine

sweeping and the towing of targets.

NANEWS' reporter at Farnborough was particularly impressed by the smooth, skillful maneuverability of the Folland *Gnat*. This light jet fighter can be used as an interceptor, a tactical fighter, or as a photographic research plane. Two 30mm cannon with radar ranging are the *Gnat's* standard armament. A variety of rockets or bombs can be carried for ground attack. Folland Aircraft stresses its ease of maintenance.

The *Gnat* two-seater transonic trainer is now under construction. It is designed to bridge the gap between the primary trainer and the advanced operational type.

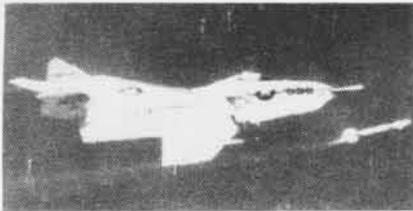
This year the *Sea Vixen* (two Rolls-Royce Avon engines) enters service replacing the deHavilland *Sea Venom* as the Royal Navy's all-weather fighter. It carries 4 *Firestreak* missiles or alternative bomb and rocket loads.



P.531 IS POWERED BY BLACKBURN TURMO GAS TURBINE ENGINE



WESSEX WAS BILLED AS 'MOST ADVANCED COPTER IN THE WORLD'



A DEADLY SIDEWINDER SEEKS ITS TARGET

MIGHTY MOUSE, *Zuni*, *Sidewinder*, *RAT* — these are strange but increasingly significant names in the strategy and tactics of modern war.

Mighty Mouse and *Zuni* are aircraft rockets; the *Sidewinder* is one of the most effective air-to-air guided missiles; and *RAT* stands for Rocket Assisted Torpedo, the powerful new anti-submarine weapon.

All are economical, practical, effective weapons which have been developed at the Naval Ordnance Test Station, China Lake, California.

NOTS has facilities scattered widely over southern California. China Lake, 155 miles northeast of Los Angeles, is headquarters. Covering an area of 1,000 square miles, it is larger than the state of Rhode Island, but only a speck on the vastness of the Mojave Desert. In this immense proving ground, top civilian scientists and engineers join forces with the military to analyze new ideas in ordnance and to support research, development, experimental production and full-scale weapons testing.

ORDNANCE FOR THE FLEET READIED AT NOTS

Wheels within wheels run within the framework of the main plant. For example, the Test Department operates Randsburg Wash Range, located 23 miles southeast of the station near the Death Valley Borax Road. It is one of the places in the nation where targets as large as B-29 bombers can be suspended 150 feet above the ground for special experiments. Hoisted by means of non-metallic lines (to avoid extraneous effects), these targets are fired on by simulated rockets and missiles,

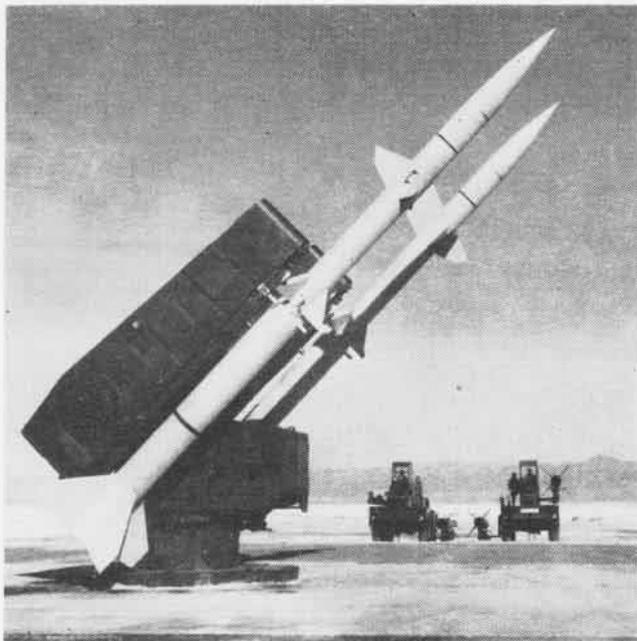


MISSILE RAPIDLY LATCHES ON TO BOGEY

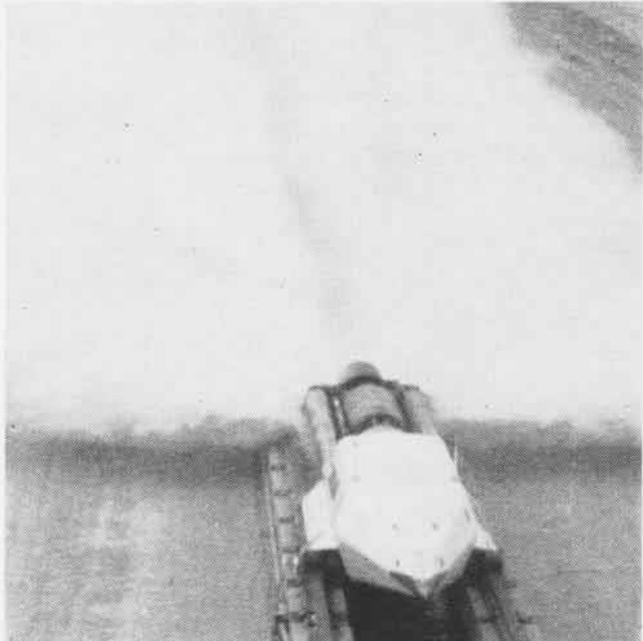
launched from 150-foot towers, in order to obtain accurate data on fuses and trajectories.

The Propulsion Development Department, found east of China Lake, consists of two pilot plants with 230 buildings, two ranges and a magazine area. To further work in the field of pyrotechnics, the deck-hangar of the troop-carrying sub *Sea Lion*, has been acquired. The 50-ton compartment will be made into a high-altitude test chamber for pyrotechnics, igniters and small-scale rocket motors to be fired at extreme altitudes.

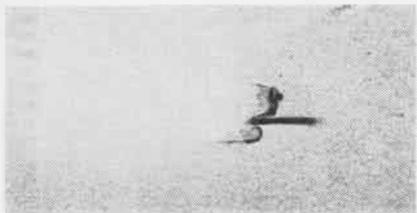
Developing, testing and evaluating better missiles and armament control systems is the mission of the Aviation Ordnance Department. To do this, AOD operates a set of highly instrumented ranges, and has its own data reduction and analysis group to uncover sources of error and deficiencies of design. 'Charlie' Range, with its profile tracker and array of photoelectric sky screens, has been duplicated at other activities engaged in training.



BOTH NAVY AND MARINE UNITS WORK WITH TERRIER MISSILES



SNORT, ONE OF 3 TRACKS THAT SIMULATE FLIGHT CONDITIONS



THE KILL COMES QUICKLY AND INEVITABLY



TARGET DRONE PULLS THROUGH UNDAMAGED



THE EXERCISE WARHEAD SAVES MILLIONS

AOD is also working on the Flight Line Recorder, a unique camera used to determine the position of a point in space to an accuracy of one foot at a distance of 10,000 feet. Several of these cameras will be installed on the High-Altitude Bombing Range still under development.

Several NOTS facilities are known collectively as the Pasadena Annex. Foothill Plant at Pasadena, Calif., is the coordinating base. Here, the Underwater Ordnance Department operates the hydroballistic laboratory and the hydrodynamic simulator which tests torpedoes on dry land. Another component, the Morris Dam Test Range, near Azusa, boasts the "largest blow gun in the world." Called the Variable-Angle Launcher, it fires torpedoes through a 300-foot tube by means of compressed air in order to study water entry and underwater trajectories. Air-to-air and underwater rockets are tested at special sea ranges off San Clemente and Long Beach.

It's the people behind the machinery,

of course, that make NOTS an efficient organization. Besides the designers, engineers, scientists, laborers and clerical help, there are Navy and Marine units who work out improved delivery methods, and evaluate weapons.

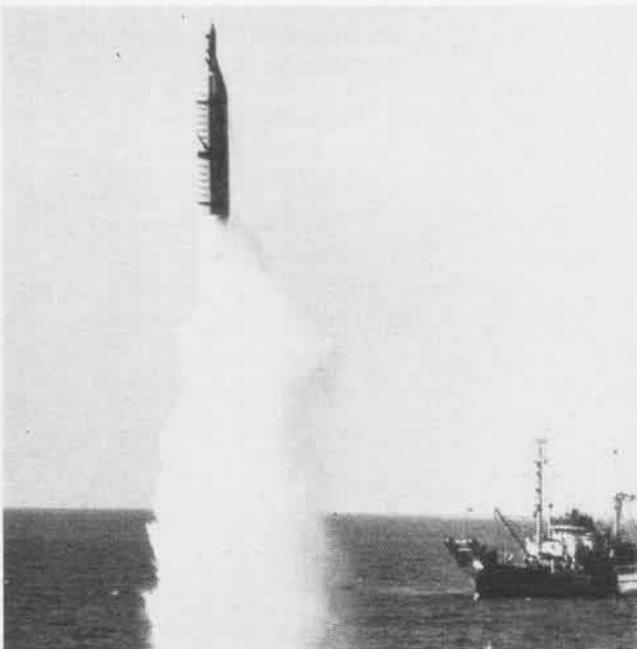
Air Development Squadron Five, commanded by Capt. R. A. Beveridge, has been engaged in developing tactics and testing the Navy's fastest aircraft, since its commissioning in 1951. Exhaustive trials of new techniques result in the do's and don'ts of Naval Aviation. Translated into the jargon of the fleet, VX-5 instruction books become the carrier pilot's bible.

SYNONYMOUS with the name *Sidewinder* is Guided Missile Unit 61. Under O-in-C, Cdr. S. N. May, GMU-61 works closely with station scientists and engineers, checking out, loading, assembling missiles; evaluating test and handling equipment; and maintaining aircraft radar and fire control systems. In putting *Sidewinder* through its paces, the officers fly the Navy's

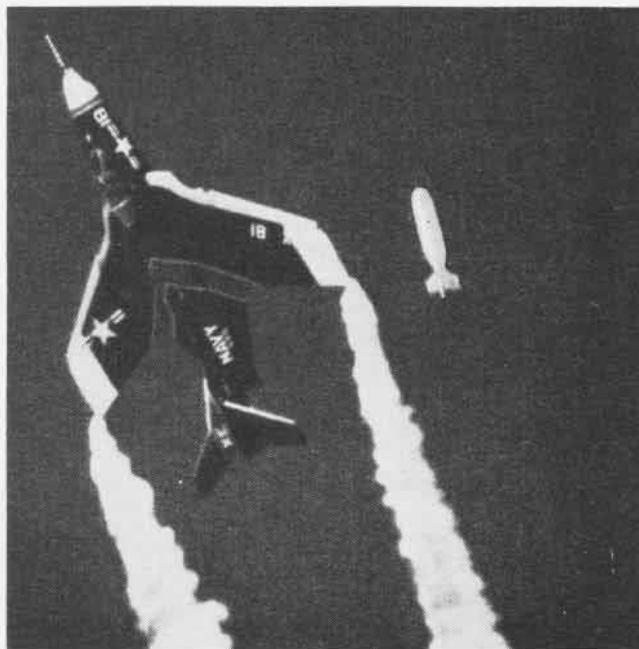
newest fighters. Indoctrination of pilots and ground personnel from Fleet and Air Force squadrons is another important job.

GMU-25's mission is to operate and maintain the *Terrier* and *Tartar* surface-to-air guided missiles, as well as to train personnel who will be assigned aboard guided missile ships. The Marine Corps Guided Missile Test Unit, consisting of six officers and 45 men, tests and evaluates selected systems and components for the Marine Corps. It is now studying different types of ground coverings that will withstand the terrific blast of the *Terrier* booster as it leaves the launcher. One of the most interesting tests during the past year was made to determine the tactical feasibility of launching missiles directly over the heads of personnel without causing casualties.

Capt. W. W. Hollister, Commander, NOTS, and Dr. W. B. McLean, Technical Director, head the 6300 civilian-military team, which works together today to design weapons for tomorrow.



DUMMY POLARIS TESTS POP-UP LAUNCHER NEAR SAN CLEMENTE



OVER-THE-SHOULDER PRACTICE BOMB DELIVERY ON NOTS RANGE



IMPOSING TAIL SECTION OF VP-672 NEPTUNE AT ALAMEDA OVERSHADOWS THE MIDWAY

ATLANTA STAGES WEST

TO MOST members of NAS ATLANTA's Naval Air Reserve Patrol Squadron 672, this was to be another taut training tour. If a very few uninitiated harbored the notion that the two-week cruise would be a vacation in sunny California, they were due a rude awakening. For upon arrival at NAS ALAMEDA, it was at once apparent that the Reservists faced a tight operating schedule with regular fleet units. Each met the challenge and was rewarded by the deep satisfaction of personal accomplishment.

Essentially, the job of a patrol squadron is to hunt, find and destroy

enemy submarines. This is not always an easy task. As Cdr. Richard F. Lewellyn, the NAS ATLANTA flight training officer puts it: "Defense against submarines is a complex operation, demanding the close cooperation of highly trained men in the various anti-submarine branches of the Navy. Consequently, Reservists work long and hard on their two-week active duty cruises to maintain their proficiency, as they put into practice the new tactics and techniques they study the year around."

Hunter-killer teams are made up of aircraft carriers, destroyers and other

surface ships, sub-killer submarines, helicopters, blimps and land-based aircraft. In the event of mobilization, Weekend Warriors must be prepared to take their places in the scheme of things, overnight, if necessary. Annual training duty is one of the best ways to insure readiness.

Therefore, when the 14 pilots, five ground officers and 55 enlisted personnel (including two WAVES) of VP-672 landed at Alameda, they were not surprised to find all hands standing by to give them full assistance in getting underway on a well planned intensive antisubmarine warfare exercise.



LTJG. BILL GOTCHER DISCUSSES MISSION WITH NEWSPAPER MEN



CDR. PACEK, ATLANTA XO, NEWS PEOPLE AND CAPT. STIELER



PILOTS AND CREW AWAIT INSTRUCTIONS FROM CDR. DELLENBACK



LUGGAGE IS WEIGHED BEFORE BOARDING AIRCRAFT FOR ALAMEDA

All crew members were given the opportunity to operate with Patrol Squadron 19 on missions involving friendly submarines as targets. Although the maneuvers were scheduled and conducted by VP-19, each Reservist monitored live sonobuoys and practiced ASW tactics on evasive bogeys. It was a "real thing" type of experience.

The Atlanta squadron also conducted independent exercises in their five P2V-5F *Neptunes*. Since commissioning in April 1956, VP-672 has made the transition from the PBY *Catalina* of WW II fame to the *Neptune*. An improved version of the renowned long-distance craft, the *Truculent Turtle*, which flew over 11,000 miles nonstop, the 5F has two jet engines in addition to twin reciprocating engines. It carries a crew of three officers—

pilot, copilot and navigator—and eight men—plane captain, mechanic, radioman, radarman, two ordnancemen and lookouts. An average patrol flight lasts eight hours and covers 1400 nautical miles. In addition to a 5000-pound payload of ordnance, there are many miles of electrical wiring and dozens of little black boxes for advanced electronic equipment.

The individual sorties were devoted to practice in firing 2½-inch training weapons, called SCARs (Small Caliber Aviation Rockets), as well as mighty five-inch rockets. The men were also checked out in bombing, instrument/night flying and mine laying. They sharpened detection methods using radar, Magnetic Airborne Detection (MAD) gear and other devices.

Upon their return, they gave complete and accurate coverage to the training cruise. Not only did they show great enthusiasm, but they presented to the Atlanta public, including the families of the Weekend Warriors, an excellent insight into the Navy part of a Reservist's life. Through impartial observations, they stressed the importance of the Naval Air Reserve in the defense program.

Cdr. Robert J. Dellenback is the commanding officer of VP-672. Both he and Capt. Stieler expressed appreciation to the commanding officers of NAS ALAMEDA, FASRON-116 and VP-19 for outstanding cooperation. Next year the Atlanta patrol squadron is looking forward to an annual cruise at Port Lyautey. They will operate in the Med with 6th Fleet and NATO.



LT. JERRY FRIES GETS WARM WELCOME HOME

ONE OF THE VP-672 patrol planes participated in a strike from the *Ticonderoga*. The radar exercise consisted of intercepting two A3D's. Two runs were made 50 feet off the water at 280 knots. The carrier credited the Reserve P2V with one kill and a successful intercept.

Five press representatives were invited by Capt. R. E. Stieler, the commanding officer of NAS ATLANTA, to accompany the squadron for the two-week period. The *Atlanta Journal-Constitution* was represented by Miss Marjory Rutherford and Mr. William Hammack, staff writers, and photographer Kenneth Rogers. Miss Sarah Hale, editor of the *North Fulton Herald*, and Mr. Martin Myers, WSB-TV cameraman, also went along.



MRS. JAMES LEWIS GREETES HER HUSBAND

Moral Leadership Stressed NATTC Norman's Family Sundays

NATTC NORMAN, Oklahoma, has inaugurated a series of "Navy Family Sundays" to further the Navy's moral leadership program. Capt. L. W. Parrish, Commanding Officer, Cdr. J. C. Fitzgerald, Catholic Chaplain, and LCdr. C. C. French, Protestant Chaplain, decided that thoughts of faith were basic to moral leadership, and determined to urge attendance by all families at the station chapel.

Inter-faith forces joined hands at Norman and enlisted the aid of everyone. Churches in the town of Norman gladly released the regular Navy parishioners to attend services on the base. Recruits and Old Salts stationed at Norman wrote home and asked their parents to attend church so there could be family attendance in spirit even though they were not together. Local newspapers and papers in Oklahoma City carried the message.

There were two services, first Catholic, then Protestant. At the latter service, the sermon was preached by Capt. H. H. Towers, senior chaplain to the Chief of Naval Air Training, Pensacola, Florida.

One commentator said, "Norman took a step forward on Sunday, and the people counted the cadence."

Helicopter Saves Youths Lost Boys Reunited with Parents

A search and Rescue helicopter at NAS JACKSONVILLE rescued five youths who had become lost and wandered aimlessly overnight in a swamp near Green Cove Springs.

The three-man helicopter crew took



VADM. F. N. KIVETTE and RAdm. William A. Schoebch, ComCarDiv 3, talk over a problem in a nuclear weapons operational course at NAS North Island. Adm. Kivette has since taken command of the Seventh Fleet.

off at 0615 Monday after an all-night search by civilian volunteers had proved fruitless. Lt. R. A. Bruning, pilot of the helicopter, estimated that the crew had scanned the swamp area 45 minutes before the plane captain, H. L. Hardy, AM1, spotted the boys in a clearing. The helicopter hovered while B. M. Atkins, AT2, the third crewman, was lowered by a sling to cut away trees to make way for the landing and rescue work.

The boys were loaded into the helicopter and taken to the highway where their parents were waiting. Except for minor scratches, red bug bites, and hunger, the boys were unharmed.

Retiring Chief Honored Cited by SecNav for 1957 Action

Upon his transfer to the Fleet Reserve after completing 20 years Naval Service, chief boatswain's mate Hubert M. Spivey was presented a letter of commendation from the Secretary of the Navy.

The citation was awarded for heroism Spivey displayed in evacuating a pilot from a crashed plane in 1957. It was presented by Capt. S. J. Lawrence, Commanding Officer at Barber's Point, where Spivey was stationed

VAH-9 Claims New Record Pilots Log 710 Hours in a Month

Heavy Attack Squadron Nine claims a record number of hours flown by a carrier-based squadron in a single month. Flying A3D *Skywarriors*, VAH-9 pilots flew 710 hours in one month while deployed aboard the *Saratoga*.

In a six-month period, VAH-9 flew 2718.8 hours for an average monthly total of 453.1 hours. Cdr. Bill Hazlett commands the *Skywarrior* squadron.

Training Units Shifted Gunnery, Carquals Moved to Barin

Both the gunnery phase of flight training and the Carrier Qualification Unit have been moved from Whiting Field to NAAS BARIN FIELD.

The gunnery and carrier qualification training will be incorporated in Whiting Field's Basic Training Group Three organization.

BTG-3 will consist of four Formation Tactics Squadrons, a Gunnery and a Carrier Qualification Squadron.



MEN OF THE USS WASP took the opportunity in September to attend the Levant Trade Fair at Bari, Italy. The *Wasp*, commanded by Capt. E. H. C. Fredericks, arrived there after conducting operations off Lebanon. At left, J. I. Johnson and J. G. Chase, both AO2's, watch a



demonstration of optical grinding. Center picture shows R. W. Beazley, AE2, and J. E. Fippo, MM2, exchanging dollars for lire. At right, looking for directions to the U. S. Exhibit in a guide book given them by Fair officials, are T. J. McCloskey, SN, and Karl Aure, AN.



CHINESE COMMUNISTS ON ALERT



COMMUNIST PILOTS IN MIG FIGHTER WATCH OTHERS IN TRAINING EXERCISE, HOUD COPTER LOWERS TROOPS GARBED FOR WINTER

THE CHINESE Communist air forces have grown in the brief span of nine years to the fourth largest air power in the world. With an air strength of approximately 2500 aircraft, 1800 of which are jets, the Chi Coms rank only behind the Soviets, U. S. and the U. K. In addition, Red China has a naval air force of more than 400 aircraft, which is larger than many of the Soviet satellite air forces.

General development of the Chi Com air forces has followed the pattern set by the Soviets. In consequence, Soviet

equipment and training is used entirely. This has provided the Soviets with control over all phases of the development of the Chi Com aviation. Soviet equipment passed to the Chi Coms includes *Beagle* twin jet bombers, *Fagot* (Mig-15) and *Fresco* (Mig-17) jet fighters, and possibly a few *Farmer* (Mig-19) twin jet fighters.

Notwithstanding all this Soviet aid, the Chi Coms still lack polish, as evidenced by their lack of success against Chinese Nationalists during air engagements in September.



RED STAR WITH BAR MARKS CHINESE FRESCO FIGHTERS (MIG-17'S)

THREE FARMER TWIN-JET FIGHTERS ARE A PICTURE OF AIR POWER

SKY DIVERS CLUB IS FORMED

By TSgt. John P. Sheehan, USMC

THE CRY "Geronimo" echoing through the valley, and the sight of a billowing white parachute over the otherwise peaceful cattle grazing land west of Kailua in Hawaii has become an accepted sight to nearby residents.



EQUIPMENT IS INSPECTED BEFORE FLIGHT

Until recently, such a sight meant a flood of phone calls to the operations department at MCAS KANEHOE BAY, reporting "One of your planes has crashed. The pilot bailed out and is over Kailua."

It took a bit of doing, but Marines in the station tower finally convinced the townspeople that there was nothing to worry about. It was just the "Sky Divers" practicing a jump.

One of the nation's up-and-coming sports, sky diving has been introduced for the first time at Windward, Oahu, by MSgt. Dick Pringle of MAG-13.

According to Pringle, a veteran jumper with 47 free fall and 27 static line jumps to his credit, the idea of forming a sky diving club began when he and his friends were discussing parachute jumping in his office.

In organizing the club, permission first had to be obtained from the CAA. A jump site was the next item needed, and Mr. Harold Castle, owner of the Kaneohe Ranch, offered the cattle grazing land near Kailua as the jump area. Pringle next obtained official sanction from the station's commanding officer.

Planes for the jumps are obtained at the Sky Ranch, just outside the main gate. Before each jump, courtesy



CAPT. OWENS WALKS AWAY AFTER A JUMP

phone calls are made to local police and fire departments, Kansas tower, and station operations. Wind data is obtained from the station aerology.

Eight of Pringle's 10 members had jumped previously, but Capt. Maurice Owens and Sgt. Carroll Lancaster had never made a jump. Capt. Owens now has four jumps and Lancaster five.

Within a two-week period, members of the Sky Diving Club made 37 jumps without accident or injury. "We have had three tree landings," says Pringle, "but they're not bad. You just climb out of the tree."

Local Marine interest in sky diving stems from an idea introduced into the United States by Marine Reserve Capt. Jacques Andre Istel who, as captain of the U.S. Parachuting team at the international parachute meet held in Moscow, won wide acclaim.

Istel describes the new sport as "controlled free fall," the ability of a person to drop through space before opening his chute, using only his body to stabilize and direct his fall. "Perhaps nothing has intrigued brave men as much as the dream of flying through space alone," says Istel. "Sky diving fulfills this ancient and secret desire."

In competition, the sky diver, like the high diver, must hold his body in a certain prescribed position, falling face down, his body parallel to the earth, his arms and legs apart.

The jump area for the Kaneohe Bay sky divers is marked with a cloth panel, in addition to several hundred cattle. The panel acts as jump target, the cattle are quiet spectators.

Sea Dart Held For Museum Research Aircraft 'in Mothballs'

An experimental aircraft, the *Sea Dart*, has been received by the NAS NORFOLK, Overhaul and Repair Department from the NAS SAN DIEGO. This historic plane will be preserved for the National Air Museum.

NAS NORFOLK has at the present time an early World War II *PBY Catalina*; a four-motored Japanese *Emily* seaplane; the *Neptune* bomber "Truculent Turtle" and the Chance-Vought "Flying Saucer," together with numerous other aircraft awaiting transfer.

The first flying boat to feature delta-wing platform, the Convair XF2Y-1 *Sea Dart* fighter prototype, was flown for the first time on April 9, 1953. The *Sea Dart* is an experimental twin-jet seaplane which was developed and built for the Bureau of Aeronautics, in San Diego by the Convair Division of the General Dynamics Corporation. It is the first combat type aircraft to be equipped with retractable hydroskis which create hydrodynamic lift while running under water. The first prototype was powered with two Westinghouse J34 turbojet engines. The aircraft as NAS NORFOLK is of the first prototype and has a single ski.

The second prototype, the YF2Y-1 powered by two Westinghouse J46 engines, exceeded Mach 1 (speed of sound) in a shallow dive on August 3, 1954 and thus became the first water-based aircraft to fly faster than sound. It was later destroyed in an accident in San Diego harbor.

A second prototype and an initial production batch of YF2Y-1's were built for service evaluation by the U. S. Navy and Marine Corps. Three new *Sea Darts* joined the first to continue the test program which included research with single and twin skis. Performance was claimed to be comparable to that of the latest land-based fighters when it was developed.

Liberty But No Boats?

ASW Helicopters Come to Rescue

Antisubmarine helicopters of HS-11 were pressed into the unusual role of shuttling passengers when heavy seas prevented the return of USS *Wasp's* liberty party by boat.

Flying three men per helicopter, HS-11 helicopters delivered 120 crewmen from Bari, Italy, to their ship a mile off shore in a four-hour period.



CONGRATULATIONS! RAdm. Frank Akers (L), COMFAIRELM, congratulates Cdr. R. R. Sparks, C.O., ECMRON-2, upon receiving the award of "outstanding" in the Annual Administrative and Material Inspection while Cdr. C. C. Richard, X.O., looks on.

Detachment Keeps Active 6 Planes Log 365 Hours in Month

Detachment D of Heavy Attack Squadron Four, with six aircraft and eight crews embarked, logged 365.2 day and night hours of flight in one month in A3D's.

The month's operation included 103 day and 27 night landings. Each pilot averaged 45.6 hours while each aircraft averaged 61 hours. The top aircraft in the VAH-4 detachment flew seventy-six total hours.

Quonset Facility Begun Will Aid Fuel, Hydraulic Repair

Ground has been broken for a \$1,750,000 Fuel and Hydraulics Accessories Overhaul Facility at NAS QUONSET POINT. The facility is expected to be completed in about 10 months.

The project will provide expanded services required to handle the workload of the O&R department. It will also isolate the fire and explosion hazard and will improve production.

80,000th Landing Made Barber's Point CO is Talked Down

The 80,000th GCA landing has been made at NAS BARBER'S POINT, Hawaii, since GCA Unit 22 began operations nine years ago. Capt. S. J. Lawrence, commanding officer of the station, was talked down by J. F. Wonderling and N. E. Krug, both AC1, for the "milestone" approach.

The landing was one of the first to employ approximately \$1-million worth of equipment recently received.

They Served the Public Traffic Monitored by Helicopters

Navy helicopters normally used in testing and evaluating airborne mine countermeasures equipment at the Mine Defense Laboratory, Panama City, Fla., performed public service duty over a holiday week-end.

Uniformed Florida state highway patrolmen were flown almost continuously over the Panama City area during daylight hours. They transmitted summaries of traffic conditions which were rebroadcast to the general public. Vacationers were kept abreast of highway conditions, traffic blocks, and areas of traffic congestion throughout the weekend. No fatalities.



VADM. A. M. PRIDE (R), ComNavAirPac, and RAdm. C. C. Hartman, Com11ND, salute as VAdm. Hidemi Poshida (C), Commandant of Japanese Training Squadron, IMSDF, acknowledges a 15-gun salute on visit to San Diego.

Bonham Field Revisited Southern Cross Flight is Recalled

Two members of the four-man crew which flew a three-engine Fokker from the United States to Australia in 1928 visited Bonham Field this summer.

At the Field, an auxiliary of NAS BARBER'S POINT, James W. Warner, 68, and Harry W. Lyon, Jr., 73, recounted their earlier visit.

The crew of the *Southern Cross* struggled into the air in their overloaded Fokker from Oakland Airfield on May 31, 1928. After a 27-hour flight from California, the plane landed at Wheeler Field on Oahu.

Fearing the Fokker would not be able to take off from Wheeler fully loaded, the fliers took it to Kauai light,

then loaded there with gasoline and supplies for the long flight to the Fijis.

The plane took off from Bonham June 3, 1928 for the 3195-mile non-stop flight to Fiji, the longest leg of the journey. On June 8 the *Southern Cross* took off from Fiji for the last leg of the flight, 1485 miles to Brisbane. After flying through a bad gale, the plane landed at Brisbane, 83 hours and 29 minutes of flying time after leaving Oakland.

The old timers and their wives saw a *Regulus I* missile being launched, tracked by *Furies* and guided to a landing by a TV-2 during their visit.

Uniforms Flown to Iccap VR-22 Delivers Goods for Chiefs

VR-22 has gone to the aid of five men who made chief during the winter night in Antarctica.

The men made chief on the July list and were faced with the problem of getting CPO uniforms for their return to America this winter. By amateur radio they contacted an operator in Dorset, Ohio. The radio ham took their measurements (by radio) and their preferences for material, then phoned a Norfolk tailor.

Uniforms completed, the tailor delivered them to VR-22 at Norfolk in time to board a flight bound for Christchurch, New Zealand with 40 members of the Operation *Deep Freeze* staff.



MSGT. HAROLD C. Woodring is claimed to be the fastest flying sergeant in the Marine Corps. Here he boards the FSU-1 Crusader jet in which he qualified for acceptance into the exclusive 1000-miles-per-hour aircraft club.

THE P BOAT OF THE PECOS

THE NAVY had a big month in August. Some of its exploits, like the epochal passage of a submarine under the polar ice cap, captured the imagination of the world and rated millions of words of copy. On all of the world's waters, from the Med to far off Formosa, the deployment of its ships and conduct of its men rated a rousing "Well Done" for Navymen everywhere. Lest it be forgotten, an incident properly noted in the Texas press and occurring on Texas water is herewith served up to illustrate the uncommon is often routine, and recruiting is truly an all hands job.

The reservoir of mention, now known unofficially as "NAS NORTH LAKE CONCHO," is located WNW of San Angelo, Texas. It was not designed to handle P5M flying boats, but in a pinch it served the purpose admirably. The senior member of the reservoir's boated Emergency Corps is Captain "Pappy Joe" Treadway. Nearby is located "George Lowery's Betterburger Stand," and therein lies the story.

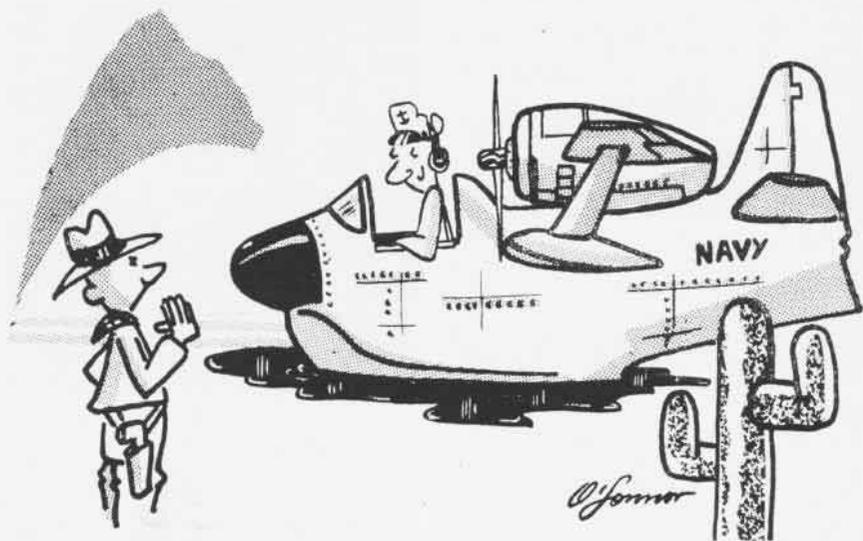
Traditionally, sooner or later, everything happens to a ferry pilot. One such ferry pilot, R. K. Jones, ACC/AP, of Aircraft Ferry Squadron Thirty-One, as plane commander of a P5M-1 destined for Baltimore, Maryland, was unconcerned with tradition as he lifted his huge seaplane from the placid waters of San Diego Bay. With him were LCdr. R. F. Heflin (VRF-32), co-pilot, and a crew of five. Destination, Corpus Christi, Texas.

Approaching Tucson, Arizona, efforts to use the bomb bay tanks were stymied by the failure of the starboard tank to transfer fuel and tradition began to rear its head.

Assured of fuel enough to reach Corpus plus 45 minutes, Jones established steady course for the Texas country despite the irregularity.

South of Midland, Texas, and after trying all possible combinations for siphoning fuel from bomb bay to hull tanks, it became apparent that a change in plans was needed. Corpus weather was down and increased fuel consumption caused by the asymmetric configuration of the *Mariner* indicated the first large pond available was desirable.

After consulting the *Seaplane Route*



Manual, Jones selected Buchanan Lake, located west of Austin, Texas. The revised plan and intentions were given to San Angelo Radio along with a request for a standby helo from Bergstrom AF Base.

While sweating confirmation, Jones was contacted by Goodfellow AFB (which he affirms is appropriately named) and was informed he could land at North Lake Concho, a reservoir WNW of San Angelo.

"It was then," said the relieved plane commander, "that we commissioned that spot NAS LAKE CONCHO."

Texans are partial to big things and the sight of mammoth P5M attracted a good-sized welcoming contingent as it circled overhead. After sweeping the five-mile-long landing area, a smooth landing was made and the hook dropped near the boathouse area.

"We then were given a heartwarming Texas welcome," Jones narrated. "An Air Force Major along with Captain 'Pappy Joe' Treadway of the Emergency Corps and owner of local radio station KPEP and two Air Force electricians were standing by when we opened the hatch.

"We weren't able to use the plane's galley enroute due to the transfer trouble, and I guess our hunger must have been showing. 'Pappy Joe' dispatched a runner to 'George Lowery's Betterburger Stand' on the double and we tackled a load of the very best Betterburgers and two gallons of coke

—compliments of the house. This gesture was noted on the next newscast.

"With the Air Force bearing a big hand, the faulty switch on the transfer pump was corrected and the fuel load evened for an early morning take-off. We split the crew, most of them spending the night on the beach.

"The next morning, with Goodfellow AFB mounting up a helo watch and after 'Pappy Joe' again directed a sweep of the sea lane, we started out. On came a starboard engine fire warning light. On boats going to overhaul this is routine, so we went through the hook-dropping ceremony again, the Air Force turned to within ten minutes and pinpointed the trouble—three loose leads.

"We got off finally and we really did bid a fond farewell to West Texas and 'NAS NORTH LAKE CONCHO,' the finest seadrome between Corpus and the Salton Sea. We made a lot of friends and the consensus of opinion of the populace was that even Texas doesn't grow boats that big!"

That they made friends during their unexpected sojourn in a Texas reservoir is pointedly expressed in the following excerpt from a letter from "Pappy Joe" to Capt. C. Wayne, CO of VR(F)-31:

"When my boys, and by the way, I have three of them, get old enough for military service, and join the Navy, I just hope that their senior officer is as nice as Chief R. K. Jones."

'Vagabonds' Keep Active Move Dozen Times in Three Years

The *Vagabonds* of Marine Attack Squadron 324 have been on the road away from their home station for more than 50 per cent of their six-year existence. An even dozen moves were made in one three-year period.

Recommissioned at MCAS CHERRY POINT in March 1952, the squadron was immediately shifted to MCAS MIAMI to become part of the Third Wing. Their return to Cherry Point six years later found the *Vagabonds* making their biggest move. In addition to squadron equipment, aircraft and personnel, dependents and household effects were transported to Cherry Point.

Fifteen days after their arrival at the North Carolina base, squadron pilots and crewmen found themselves with orders to report to the *Antietam* in Norfolk during the Lebanon crisis.

Safe Year for VMA-214 'Blacksheeps' Earn Group Citation

Pilots, plane captains and Mechs of VMA-214, the *Blacksheep Squadron* have compiled a one-year record of accident-free flying with F2H *Banshee* and FJ-4 *Fury* aircraft.

The one-year safety accomplishment entailed 73,995 man hours of work by mechanics, plane captains, engineers, ordnancemen and the remainder of the squadron which is based at the Marine Corps Air Station, Kaneohe Bay, Oahu.



SAFETY IS STRESSED IN KANGAROO COURT

In recognition of the squadron's safety record, Col. F. E. Hollar, executive officer of Marine Air Group 13, presented a safety certificate to LtCol. J. F. Bold C.O. of the squadron.

VF-142 Chosen for Tests Mark 3 Pressure Suits Evaluated

After receiving the new Mark Three lightweight pressure suit for evaluation, Fighter Squadron 142 claims to be the highest flying operational squadron in the Navy.

LCdr. R. A. Eldridge, operations officer for the F8U-1 squadron, reports that in testing the Mark Three, pilots will wear the suit on all types of flights, including carrier landings and "zoom" flights.

He said, "This suit enables the pilot to use the full altitude capabilities of the *Crusader*. We are no longer held down to a 50,000-foot safety ceiling."

Enough testing has taken place in

VF-142 to prompt praise and confidence. LCdr. C. J. Deasy, executive officer, said, "With the visibility, comfort, and ease of movement the suit affords, I can foresee little or no inconvenience in using the suit on all phases of operation."

The pressure suit, made by the B. F. Goodrich Company, was described in *Naval Aviation News* in August, 1958.

Electric 'Copter Flown Drone Has Long Hover Capability

Kaman Aircraft has announced the flight of an electrically powered version of the radio-controlled, pilotless helicopter which was flown last July. The piston engine in the helicopter has been replaced with a light high-voltage AC electric motor which gets its power through a cable from a 250 kilowatt gas-turbine-driven generator on the ground.

Principal advantage of such an aircraft was given as the fact that it would be possible to keep it in the air over one location for long periods.

Airman Sets New Record Attains Perfect Score at Norman

The first perfect average ever attained by a fleet man at NATTC NORMAN, Oklahoma, has been recorded by Airman Edward M. Aldridge, who was a student in the Electrical Electronics course. Aldridge has since been transferred to AT School at NAS MEMPHIS, Tennessee.



THEY TEST HARDWARE! Naval Air Facility China Lake pilots have the important job of aiding NOTS civilian scientists in the conception, development and flight test of new weapons (Page 24). Standing left to right are: LCdr's. G. W. Bailey, S. J. Premislaar, H. E. Camp, R. O. Westcott. Kneeling are Plane Captains K. L.

Vollmert, R. C. Thormablen, W. H. Smith, L. D. Gaston. In the background are four of the score of aircraft models used for the varied projects: the F3H *Demon*, F8U-1 *Crusader*, F4D-1 *Skyray*, F6F-5K *Hellcat Drone*. The twenty experienced officers and 400 skilled enlisted personnel are commanded by Capt. G. J. Anderson.

1950—KOREA TO LEBANON—1958

THE RAMPAGERS of Attack Squadron 83, commanded by Cdr. James L. Holloway, III, have made their A4D *Skyhawks* and ram's head insignia a familiar sight throughout the Mediterranean, especially during the Lebanon landings.

Originally a reserve squadron at NAS SQUANTUM, VA-83 was called to active duty during the Korean War, and since then has compiled an impressive series of "firsts."

These firsts include FIP-ing the F7U-3 *Cutlass*, being the first squadron to deploy with a *Sparrow* missile capability, first A4D squadron at NAS OCEANA, first squadron in the Navy to deploy with the A4D-2 and first to qualify in air-to-air refueling using the Douglas buddy-store.

VA-83 received its A4D's in April, 1957, and immediately began an intensive pilot and maintenance training program. By September, basic training was completed and the squadron deployed with 10 aircraft to NAS GUANTANAMO BAY, Cuba, for advanced weapons training. Though beset by maintenance difficulties, many practice bombing missions were flown and all pilots qualified in over-the-shoulder and loft bombing.

After a month of FCLP and advanced training at Oceana, the squadron deployed to NAS CECIL FIELD and the USS *Essex* for carrier qualifications.

In November, all pilots qualified in both day and night landings. During



RAMPAGERS OF VA-83 POSE WITH INSIGNIA IN FRONT OF SKYHAWK ABOARD USS ESSEX

the carquals, the *Rampagers* and the *Essex* chalked up another probable first when A4D number 312 was hoisted back aboard ship some two hours after making a water landing.

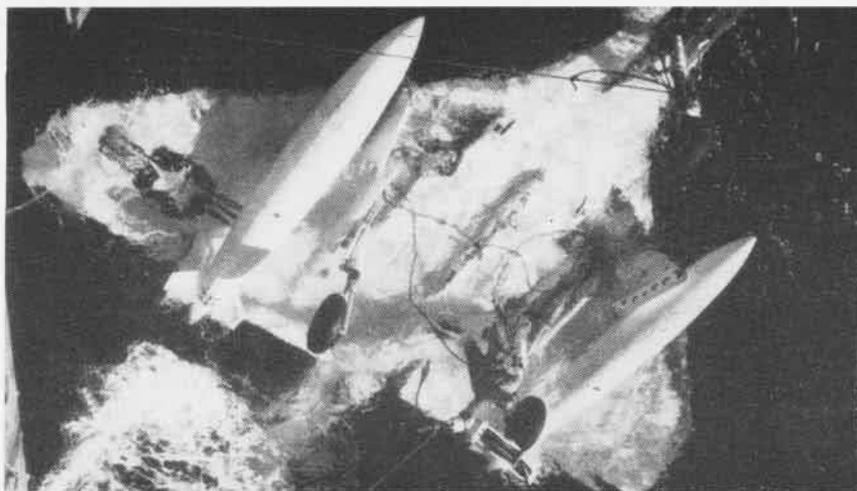
Ltjg. Tom Anderson taxied over the forward end of the angle deck while coming out of the gear and hit the water in an inverted attitude. He pulled his "ditching handle," cleared the plane, and surfaced to be picked up almost immediately by the *Essex* helicopter, wet but uninjured.

The *Skyhawk*, with a light fuel load and two empty drop tanks, floated until the qualification period had been

completed. The ship returned to the general vicinity and sent out a motor whaleboat to tow the plane alongside where it could be hooked to the aviation crane and hoisted back aboard the carrier.

Back in Oceana in December, the *Rampagers* spent a busy month with transfer and acceptance checks and pilot familiarization flights as they turned in their A4D-1's for new A4D-2's. Christmas leave and preparations for deployment filled all spare time.

On the *Essex* once more as part of Air Task Group 201 under Cdr. E. H. English, the *Rampagers* gained valu-



UPSIDE DOWN, A4D REMAINED AFLOAT TWO HOURS AFTER PLUNGING FROM DECK OF ESSEX. PILOT ESCAPED AND PLANE WAS RECOVERED



VA-83 SKYHAWK LANDS ABOARD ESSEX AFTER RECONNAISSANCE FLIGHT OVER LEBANON

able operating experience by taking part in *Intex 1-58* during January.

The *Rampagers* departed for an eight-month deployment to the Mediterranean in February and immediately began using their new capability by flying practice in-flight refueling sorties with buddy-store-equipped tankers from VA-105. Lt. Bob Thomson, squadron operations officer, became the first *Rampager* to effect a plug-in and the first to qualify.

Shortly after passing the Rock of Gibraltar, VA-83 pilots qualified in both high and low altitude plug-ins.

In the months which followed, pilots

and crewmen of VA-83 added to their reputation by taking part in a series of Sixth Fleet and NATO exercises. Efforts of the maintenance department, under Lt. Sam McKee and W. E. Jocelyn, ADC, kept an average of 12 of the 14 assigned *Skyhawks* available and it was a rare instance when it became necessary for the squadron to launch a spare.

Two planes from the squadron helped represent the Sixth Fleet at the Liege air show in Belgium in June and thus became part of the first Sixth Fleet aircraft to participate in an European international air exhibition.

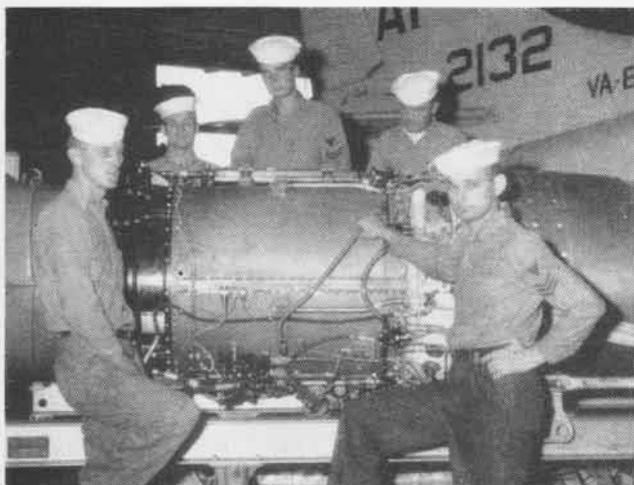
The squadron was aboard USS *Essex* for a goodwill visit to Athens, Greece July 15 when word of the impending landings in Lebanon was received. A routine cruise suddenly became not-so-routine for VA-83, as the *Essex* got underway at 0430 and headed eastward at high speed.

For the next two and a half weeks, the *Rampagers* covered Marine landings and conducted reconnaissance flights over the whole of Lebanon, as well as participating in show-of-force flights over rebel-held parts of the country and up and down the Jordan River Valley in Jordan.

More than 500 hours were flown during this time as the *Rampagers'* maintenance crew provided an even higher than normal availability. For example, on one of the flights over Lebanon, VA-83 put 13 of 14 *Skyhawks* in the air. The 14th was on the hangar deck with two rebel sniper bullet holes temporarily grounding it.

Two A4D's were hit by a Lebanese rebel "Annie Oakley" just north of the coastal city of Tripoli. Lt. Bob Thomson returned with a bullet hole through the nose of his plane and just two hours later Ltjg. N.A. "Butch" Swenson received hits in the wing and fuselage of his plane in the same area. Both planes made it back with no difficulty.

Ashore in the Mediterranean area, the *Rampagers* became bull-fight *aficionados* in Spain, Bikini gazers on the French Riviera, spaghetti and pizza eaters in Italy, students of ancient history in Greece and tourists and souvenir buyers in all countries visited by the squadron members.



THESE MECHS HELPED TO KEEP VA-83'S SKYHAWKS IN THE AIR



CDR. HOLLOWAY, LTJG. SWENSON CHECK HOLE MADE BY A SNIPER

ONE LIFE, MANY SQUADRONS

Blast Forms Tip Tanks Explosives Used Under Water



VADM. BROWN DONS HELMET IN DEMON COCKPIT. CDR. J. TEFFT, VF-31 C.O., ASSISTS



COL. CHAS. LINDBERGH ON SARA IN 1929



FELIX ADORNED THE F6F HELLCATS OF FIGHTING SIX DURING MOST OF WORLD WAR II

FELIX hasn't changed much in 26 years except for the addition of the yellow background and his new *Tomcatters* squadron nickname," commented VADM. Charles R. Brown while visiting an old squadron of his.

As Commander, Sixth Fleet, he made a brief call on VF-31 aboard USS *Saratoga*, which he knew as VF-1B, the Felix the Cat Squadron, assigned to the old *Sara* (CV-3) in 1932.

As a squadron insignie, Felix dates back to 1926 and has adorned many aircraft types—from the F3B of that era to the transonic F3H-2N of today. He's been in continuous service.

High explosives like those that blast the tops off mountains are being used to form aircraft fuel tanks, according to an announcement of the Columbus Division of North American Aviation.

Called "explosive forming," the technique was developed to make wing-tip fuel tanks for the T2J jet trainer now being built for the U. S. Navy.

Anyone who has ever lighted a firecracker under a tin can and seen how the ends bulge out after the big bang, has seen explosive forming.

Used industrially, it's simply a way of controlling explosive force so as to push metal against a containing die of the desired shape.

Explosive forming has been adopted to make a part as large as the T2J tank. The tip tank, made up of two main sections, is about 12 ft. long.

Die designs and "shooting" techniques have now been developed to the point where production parts can be made with the new system. In the forming of the fuel tank, a cone-shaped sheet of metal (about 1/16th inch thick) is placed inside the die. This cone is cut off at one end.

After the cone is placed in the die, the die is filled with water. A vacuum is created between the cone and the sides of the die by pumping out the air. The high explosive (Primacord) is then fired inside the cone. The water acts as both a force conductor and shock dampener.

The finished tank section, which has taken the shape of the prescribed curved moldline, is then removed.

Explosive forming is being used successfully in other applications at the Columbus Division. One is the swaging of tubing around plug-end fixtures. This application is an example of compressive or "implosive" effect, whereby the tube is formed into the groove of the plug to which it must be attached.

Forming with explosive instead of with conventional heavy machines simplifies production of certain aircraft components. Success with the tanks has led to the planning of an explosive forming facility.

● An 11-ton electronic calculator at a major aircraft plant solves problems in six minutes that would take a mathematician eight years.



0725 FLIGHT QUARTERS are observed aboard *MSTS* escort carrier *Cape Esperance* as Marine helicopters of HMR(L)-361 come aboard in threes at Bikini Lagoon for transport to San Diego. At left, Capt. Roger



W. Meble, C.O. of carrier, poses with Mr. Wm. Curlett, resident manager for Holmes and Narver, Inc., on Bikini Atoll. *Cape Esperance* has steamed 600,000 miles since she left mothball fleet in 1950.

HMR-361 RETURNS FROM PACIFIC

ALL DETACHMENTS of HMR-361 have returned to their home base at MCAF Santa Ana after an eventful six-months deployment in the Pacific. The tour included a sea search for survivors of an aircraft crash, participation in tests held in two Central Pacific nuclear proving grounds, and duty aboard several ships.

Capt. J. J. McCauley, Adjutant for HMR-361, was on hand at El Toro to welcome the final 47 officers and men who returned by air.

Some members of the squadron returned in midsummer when the first echelon came in via MATS. Another group returned aboard USNS *Ainsworth* and the squadron helicopters arrived aboard the USNS *Cape Esperance*.

HMR-361's first echelon departed from the Santa Ana air facility for overseas duty in January with Maj. O. W. Curtis, the squadron executive officer in charge. They went to Bikini Atoll via MATS aircraft while their helicopters went out via the USNS *Bostrom*. Later that month the group began flying its assigned missions after relieving the Air Force contingent in late January.

LtCol. J. W. Zuber, commanding officer of the squadron, commanded the second group to go to the Central Pacific. They left from San Diego on

board USS *Boxer* February 14 and arrived at Bikini in March.

Meanwhile, the first echelon had earned a citation from RAdm. David M. Tyree, Commander of Task Group 7.3, for their "splendid work in setting up operations and carrying out their assigned mission." They ferried workers, military personnel and scientists between islands of the atoll and to and from ships in connection with the nuclear tests which were being held there. Bikini Atoll has some 12 islands in its 60-mile circumference.

In Operation *Hardtack*, and later at Operation *Neusreel* which was held at Johnston Island, the Squadron's Sikorsky HRS helicopters performed many and varied tasks, amassing more than 5000 hours in the air. In addition to personnel, pilots provided helicopter support to Atomic Energy Commission personnel for the instrumentation and collection of scientific data before and immediately after the nuclear explosions.

For most of the squadron's members, this was the first time they had seen nuclear detonations. All of them were impressed with the operations in which they were taking part.

Many returnees called the highlight of their cruises the part they played in the sea search and rescue of survivors after an Air Force C-124 *Globemaster*

went down some 200 miles off Johnston Island in late June.

While aboard the *Boxer* en route to Johnston Island to take part in other nuclear tests, the call went out for the helicopters to look for the survivors. Six helicopters and a detachment of the squadron were embarked at the time.

Pilots and crewmen were cited for their heroic efforts in rescuing the three lone survivors and retrieving a large number of mail bags and other gear in the shark-infested waters.

Pilots of the copter which made the actual pick-ups were Majors Charles Sims and J. F. Allen. Crew Chief was Sgt. Donald J. Sabattus.

As a fitting climax to the overseas tour, LCol. Zucker received the following message from RAdm. Tyree:

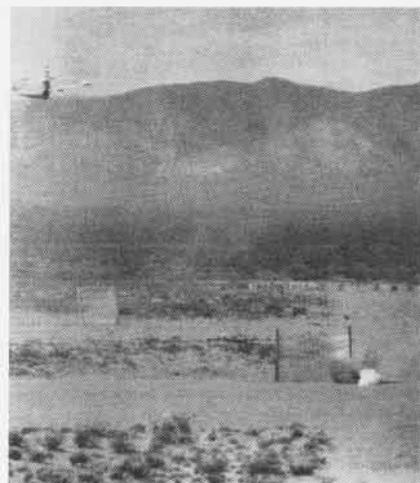
"Your splendid performance, marked proficiency and outstanding cooperation in both *Hardtack* and *Neusreel* phases reflect credit on yourself and your squadron. Your efforts have made a significant contribution to the success of this operation. Well done."

● Today's largest missile system contains a million and a half parts and getting them to work together is a problem of astronomical proportions. According to one expert, if a rocket were composed of only 500 parts, each of which worked properly 999 times out of a thousand, the unit's probability of success would still be only six out of every ten runs.

ON TARGET, COURTESY OF MASS-3



VECTORED IN BY MASS-3, FIGHTER DROPS BOMB DIRECTLY ON AN 'ENEMY' STRONGHOLD



PILOT STREAKS AWAY AFTER DIRECT HIT

ONE OF THE most important supporting units of an aircraft wing is the organization that controls the aircraft in combat. In the case of the Third Marine Aircraft Wing, the radar unit at MCAS El Toro holding down this task is Marine Air Support Squadron Three.

MASS-3 is operationally composed of two radar teams and a direct air support center. The squadron is the unit which directs all Wing aircraft to the designated target areas, as well as the deployment of troop-carrying helicopters, under all weather conditions.

Let us suppose that "C" Company has run into resistance that it cannot get past nor take care of with the weapons in that unit. They can call back to the proper agency for an air strike. As the call goes back, it is also monitored by Tactical Air Control Center (TACC) and the Regimental command center.

The call goes to the Support Squadron's direct air support center and is recorded on a plotting board of the area from whence it originated.

From this position, the request is forwarded to the TACC where it is checked out with any available aircraft in the vectoring area. The type of plane used, the weapons to be used, and time involved are all taken into consideration before planes are ordered to the target area.

Once the aircraft has been ordered to the job, it is guided to the target

by Sgt. F. R. Burke, USMC

by the Marine Air Support Radar Team and supporting radar in the area. They acquire and control the plane, sometimes actually dropping the bomb and firing the rockets.

The pilot is directed to the target by radar control procedures. Suppose the aircraft is an A4D and the pilot has been directed to the bomb-drop area. Just before his release, he hears: "Meat-head Four, this is Swift Lima; vector 340 for target. You have 10 seconds before release. Standby . . . Standby . . . Mark!"

With the word "Mark," the plane has dropped his cargo and is pulling away for another run. The target has

been hit, and this information is relayed from the observation post to the radar team's campsite and the hit is marked on the map.

The radar team is usually some eight miles behind the target area. Although it cannot actually see the target, it does the job as well as would be done by someone on the line.

These radar teams may be miles apart and many miles from the MASS-3 direct air support center, but through the use of radio-relay they are able to keep in touch. There are usually supporting radio units to strengthen the relay. One such group may be Headquarters and Headquarters Squadron-3 radio relay.

A typical example of such a connecting net would be to have Radar Team 1 at 29 Palms, radio relay tied into the net with Santa Rosa Mountain where another radio team would relay to El Toro's Tactical Air Control Center. All the while, the MASS-3 command unit is at Camp Pendleton and the second Radar Team at El Centro. Far-flung operations, but effective!

Commanded by Lt. Col. John L. Mahan, the Air Support Squadron is one of the many important units which help to make a Wing an efficient and smoothly-running combat unit, ready for any eventuality. With such units as MASS-3, pilots of Marine Fighter and attack squadrons need never worry about getting the job done expediently, efficiently, and well.



CAPT. W. E. CLARK EMPLOYS RADIO RELAY

For First Division exercises, MASS-3 is called upon to perform the exacting task of a Direct Air Support Center (DASC). Controlling the operation is the commanding officer and the senior controller. These two accept or refuse incoming requests for supporting aircraft. They pass the calls on to the officers who control the planes. These officers wear dual headphones, enabling them to listen to two separate channels at the same time.

When an aircraft request is received, one of two forms is filled out—the Tactical Air Request or the Helicopter Request. The Tactical Air Request gives details on priority of mission, type of target, location of target, whether it is stationary or moving, type of attack requested (bombing, strafing, rocket, napalm, etc.), as well as other information.

The Helicopter Request also denotes the priority of the mission, but instead of target data, it gives such information as cargo destination, number of men involved, weight of men or vehicles, and pickup point.

AFTER THE forms have been completed, a plane or copter is notified and assigned its mission. Some of the information on the form is transposed to one of two constantly-changing transparent boards. The boards tell at a glance which plane is performing what mission and where. In keeping the boards up to date, men stand behind them and write in reverse, offering communications officers an unobstructed view of the boards.

Nerve center of the operation is a huge situation map which gives an over-all view of the progress of the operation. Front lines are clearly marked to enable controllers to assign missions to aircraft.

Controllers are housed in a prefabricated shelter. Sections weighing approximately 60 pounds each, make up the dome, which theoretically can be made as large as the number of sections available.

Four men can erect the helicopter-transportable dome in approximately one hour. Adding to the ease and speed of construction is a simple but effective method of turn-key construction. The turning of a single bolt firmly locks two sections.

When finished, the dome is so tightly constructed that an extensive air conditioning system is required. Insulated



CWO HANS DE JONG MAINTAINS EQUIPMENT

with fiber glass, a terrific amount of heat would build up in a short time if the two ¾-ton air conditioners were not in operation. In cold weather, the dome is heated by a similar heating system.

Thus the Marines, pioneers of close air support tactics, have added the "portable igloo" to their mobile implements of modern warfare. A Taj Mahal shaped dome in the midst of conventional pyramid tents is a strange sight to the average Marine.

However, the relatively new addition to Marine Corps equipment will soon be as common to field troops as "C" rations and helicopters.

The dome houses the DASC which controls all tactical aircraft within a Marine Corps air-ground team operation.

To carry out its mission effectively, the division or corps level DASC main-

tains constant contact with airborne planes, directing them to assigned missions. An officer also keeps in touch with the forward air controllers of the respective battalions.

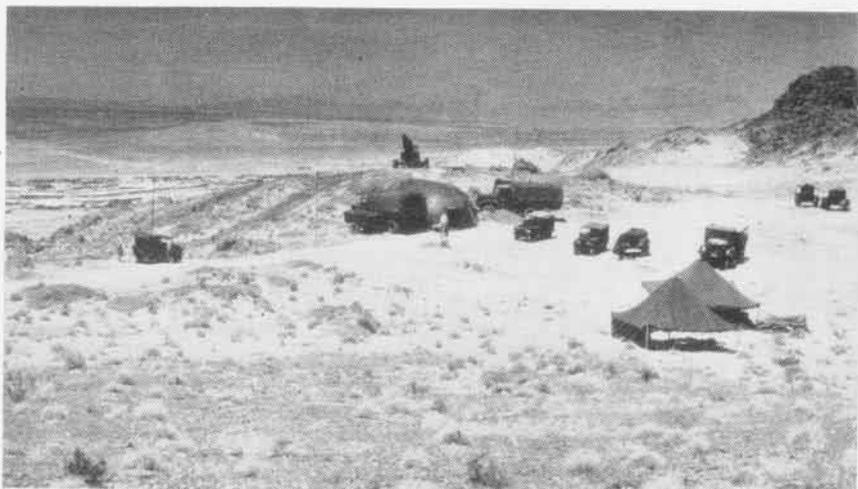
All helicopter movements are controlled by DASC, an especially important mission since the inception of the Corps' vertical envelopment doctrine which was outlined completely by 1st. Lt. Carl H. Strandberg in an



FRONTLINE OBSERVERS REPORT RESULTS

article which was featured in the May 1956 issue of NAVAL AVIATION NEWS.

In essence, the vertical envelopment doctrine was brought on by the need for dispersal of troops, ships and supplies in the event of nuclear warfare. In vertical envelopment, aircraft are called upon for a larger role than ever before. Accurate control of close-support aircraft has never been more important than it is at the present time.



HIGH IN THE HILLS, RADAR TEAM HAS COMMANDING VIEW OF THE OPERATIONS SCENE

LETTERS

SIRS:

On page 12 of the September issue, a picture is shown of Admiral Burke, CNO, administering the commissioning oath to Ens. A. A. Tingle via closed circuit TV. I would like to call attention to an error. Instead of weather briefings to CNO and his staff emanating from the Navy Hydrographic Office (at Suitland) as stated in the caption, they are made from the U. S. Fleet Weather Central, Suitland, Maryland.

Insofar as is known, this is the first time a closed circuit TV system has been used to administer a commissioning oath.

L. S. ZELLER, AGC, USN
Naval Weather Service

SIRS:

The photographs of the 1958 model full pressure suit on pp. one and five of the August 1958 NANews are particularly interesting in the foot gear department. Intrepid naval aviation cadets circa 1939 called such gear "fighter boots" and they were admirably suited for a bailout from an F4B-4. Their suitability for a high-Q bailout in 1958 is highly in doubt in my opinion. They would probably depart the wearer summarily in a relatively low-mach punchout from a modern bent-wing.

The flight surgeons at the Naval Aviation Safety Center advise all pilots to dress for each flight "as though you are going to walk back." The integral foot gear of the 1958 pres-

sure suit seems sufficiently gossamer to slip into close-fitting jodphur boots, raising doubts as to its suitability for "walking back."

Could we see a picture of foot gear designed to go with the 1958 full pressure suit?

Cdr. A. H. REID, USN
Fleet Air Wing Six

¶ BuAer AE-511 says: "The boot to be furnished with the full pressure suit is the Iron Age type modified so that it is attached to the full pressure suit. This type of boot is the best tested to date by the Bureau of Aeronautics for either pressure or non-pressure suit use. It has successfully withstood a sled ejection of 710 EAS on the pressure suit. Here is a picture of Maj. Roy Gray, Naval Air Test Center test pilot, wearing the Iron Age boot with the Navy full pressure suit."

As for walking back, it is a rare instance when a loose pilot isn't recovered by helo.

SIRS:

I noted with pleasure the fine record set by VA-72 during their training period at NAS Guantanamo during the spring of 58. However, I think that it is noteworthy that VA-172 was able to do just a little bit better by using mostly the same but slightly more beat up airplanes.

VA-172 deployed to Gitmo May 15 but planes were grounded by mechanical difficulties immediately upon arrival. They finally got their first plane in the air May 29. During the period May 29 to June 23, 23 pilots flew 939 sorties for 891 total hours. A total of 5368 practice bombs were dropped and 30,048 G's were pulled.

All 23 pilots qualified in all delivery methods and won 33 individual E's. This fine record is enhanced by the fact that average pilot time in the A4D was just slightly over 40 hours per pilot prior to deployment. Incidentally, NO ACCIDENTS.

JOHN W. FAIR
Commander, CVG-1

SEA POWER—1958

The key role assigned to Naval Aviation in the job of securing control of the seas for the Free World is featured in "Sea Power—1958." This illustrated presentation is distributed to the regular establishment, including major ships, all Naval Reserve Air Stations and Training Centers.

Using 57 photographs and charts on 35mm. color slides and a prepared 30-35 minute script, *Sea Power—1958* is a revised version of last year's *Your New Nuclear Navy—Power for Peace*.

Missions carried out with Navy planes and ships under all conditions from peace-time to full-scale nuclear war are described in the presentation. Its theme is that control of the sea gives the Free World access to 85 percent of the global surface. If that control is lost, the figure shrinks to a mere five percent.



MAJ. GRAY WEARS THE 'IRON AGE' BOOTS



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CONTENTS

Naval Aviation News.....	1
Aerial Reconnaissance.....	5
Midshipmen's Cruise.....	13
USS <i>Compass Island</i>	18
Flight Surgeon in 'Space'..	19
Farnborough Show	20
NOTS China Lake.....	24
Air Reserve VP-672.....	26
Chi Com Air Force.....	29
Sky Divers.....	30
P Boat in Texas.....	32
VA-83 History.....	34
HMR-361 Returns.....	37
Air-Ground Support.....	38

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● COVER

Four Columbus, Ohio, Weekend Warriors on the wing near NAS Cecil Field grace this month's cover. Furies belong to VA-693 skippered by Cdr. D. Carmichael.

● SUBSCRIPTIONS

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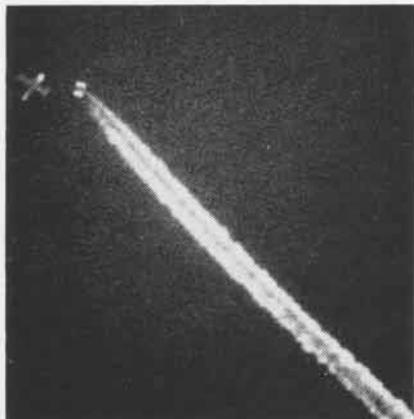
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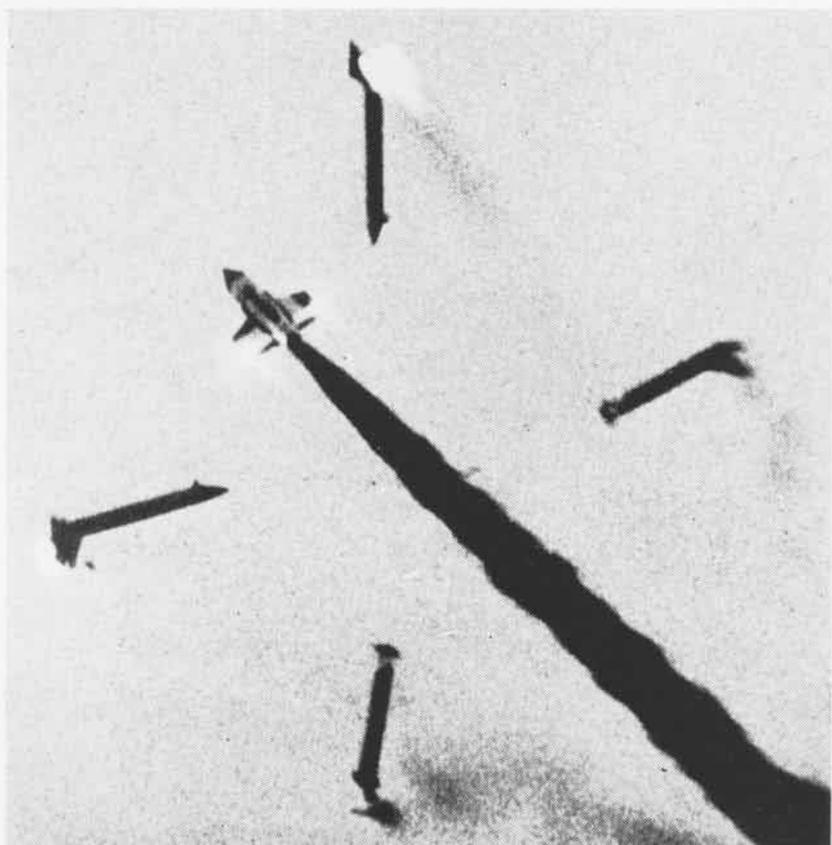
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THUNDERBIRD

This British Ground-to-air weapon, built by English Electric, is shown successfully fired against a Jindivik target. Thunderbird was shown at Farnborough show this year.



P.S. It works!
Alas, poor Jindivik!

DIMENSIONS:

Length:	21 feet
Wing span:	5 ft. 3 ins.
Control fin span:	5 ft. 3 ins.
Diameter, center:	1 ft. 9 ins.
Wing sweepback:	45 degrees





VIEW FROM AN OFFICE WINDOW

This Navy helicopter pilot has an unusual view from his office window. Unusual too is his responsibility. Millions of dollars, thousands of lives and a large segment of American Sea Power depend on his trained observation and technique. He takes over where electronics leave off—where a

skilled "man" factor is required. To select young men of outstanding ability for such a role is the purpose of the Navy Aviation Officer Candidate Program at Pensacola, Florida. College graduates 19-26 years of age, married or unmarried, may apply. Successful candidates become Ensigns after 16 weeks and begin drawing commissioned pay. Flight training is accomplished as an officer with an early promotion to next higher rank. Check your qualifications with any Navy Recruiting Office or Naval Air Station.

NAVAL AVIATION

NEWS