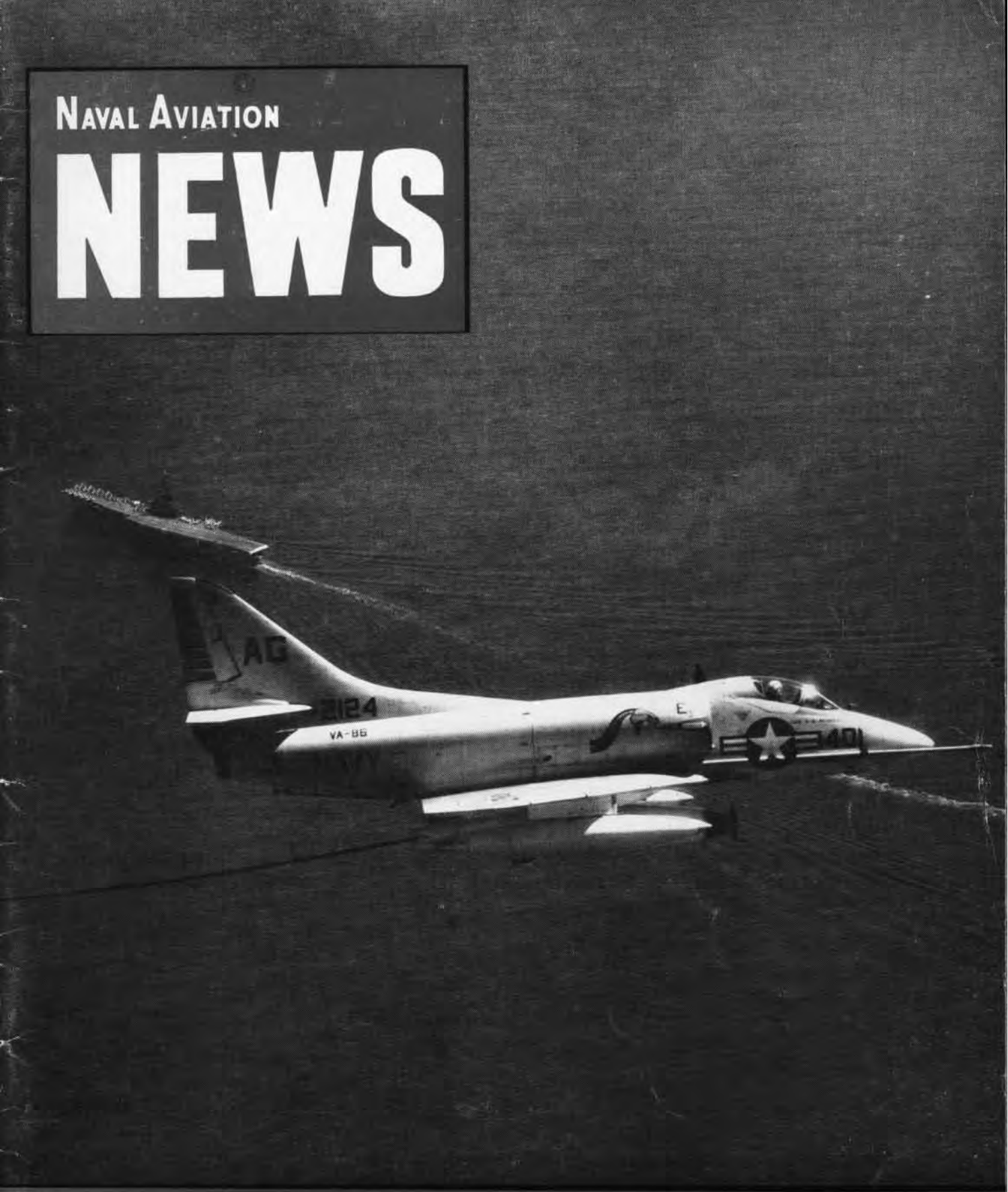
NAVAL AVIATION NEWS



40th Year of Publication

MAY 1959

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NAVAL POWER FOR PEACE, 1959

The combined capabilities of American carrier striking forces, submarines, anti-submarine units, logistic support forces, and amphibious forces with Fleet Marines provide strength necessary to meet military aggression wherever it occurs.

Naval forces are more important in the missile age than ever before. Mobility is a primary capability of navies. Support of our free world allies depends upon the ability of the Navy to move, unhampered, to wherever needed to support American foreign policy. This is the contribution of United States seapower toward progress of free civilization.

Arleigh Burke

★ ★ ★ ★ CNO

NAVAL AVIATION NEWS

OUR FORTIETH YEAR OF CONTINUOUS PUBLICATION, MAY 1959

F4H Production to Begin

$61.8-million Contract Awarded

A $61.8-million contract for production of F4H-1 airplanes has been awarded to McDonnell Aircraft. Previous F4H developmental contracts awarded McDonnell by BuAer approximate $200-million.

The F4H-1 is designed to fly at more than twice the speed of sound. It is powered by two J-79 turbojet engines and is the Navy's first supersonic two-seat, all-weather fighter.

It will replace present all-weather fighters, the McDonnell F3H *Demon* and the Douglas F4D *Skyray*, now in the fleet.

The F4H-1 will be armed with *Sparrow III* air-to-air guided missiles partially recessed into the fuselage for supersonic flights.

Four F4H-1's have been delivered to the Navy. They are undergoing extensive aerodynamic, structural and other tests before introduction to the Fleet.

Air ASW Trophy Received

Will Go to Top Fleet Squadrons

A special trophy for excellence in air antisubmarine warfare has been presented to the Navy by the Martin Company. Named in honor of the late Capt. Arnold Jay Isbell, the trophy will be kept in the Navy Department.

The names of winning ASW squadrons will be engraved on it annually.

Adm. James S. Russell, Vice Chief of Naval Operations, accepted the strikingly modernistic trophy from Martin President George M. Bunker during the Navy League sponsored seapower symposium in Washington.

Accepting the trophy, Adm. Russell said, "It was the small carrier task groups, led by such men as 'Buster' Isbell, that broke the back of the Nazi submarine campaign in the summer of 1943. Thus this air antisubmarine trophy of proficiency is well named.

MR. BUNKER, ADM. RUSSELL WITH TROPHY

"I am particularly honored to accept this Isbell trophy because I can say truthfully, 'There but for the grace of God, go I.' I was with Capt. Isbell when he was killed on the *Franklin*."

Adm. Russell then introduced to the symposium delegates Capt. Isbell's two sons, Donald and Clarence. Both are graduates of West Point.

The trophy will be awarded each year to those squadrons within each fleet who have earned Battle Efficiency "E" awards for excellence in operating land based aircraft, seaplanes, carrier aircraft and blimps on ASW maneuvers.

Winners will, in addition to having their names engraved on the trophy, receive engraved plaques at the ceremonies in which they are presented with Battle Efficiency "E" Awards.

Norfolk Has New Center

Nuclear Weapons Courses Taught

Adm. Jerauld Wright, Commander in Chief, U. S. Atlantic Fleet, has announced the establishment of a new training activity at Norfolk known as the Nuclear Weapons Training Center, Atlantic. The new center will provide operational and technical training in nuclear weapons for Atlantic Fleet units.

The center is under the military control of RAdm. H. H. Henderson, Commander Training Command, Atlantic Fleet. It is commanded by Capt. Francis W. Ingling. With a staff of 150 officers and men, the center is really two schools: the Nuclear Warfare School, located at the Norfolk Naval Base, which conducts orientation and employment courses for officers in nuclear weapons and guided missiles; and the Technical Training School at NAS Norfolk, which trains officers and enlisted personnel in the assembly and handling of nuclear weapons.

Two former commands have been abolished: the Special Weapons School, formerly under the command of the Fleet Training Center, Norfolk, and the Special Weapons unit, which was previously assigned to the Commander Naval Air Force, Atlantic Fleet.

Sanford Now Ramey Field

Honors Pilot for Heroic Sacrifice

The airfield at NAS Sanford has been officially named Ramey Field in memory of the late LCdr. Robert Winford Ramey, USN.

LCdr. Ramey was the pilot of an A3D *Skywarrior* of Heavy Attack Squadron Eleven stationed at Sanford. In a routine training flight in June 1958, his A3D developed engine trouble. LCdr. Ramey ordered his crew members to jump to safety. He physically assisted them out of the plane. He then went down with his *Skywarrior*, guiding it away from the residential areas of Seville, Fla.

VAH-11 requested that the airfield at Sanford be named in his honor. This was approved by the Chief, Bureau of Naval Personnel, in December.

DESIGNED, BUILT *and flown in less than 16 months, the world's largest amphibious helicopter was unveiled recently at the Sikorsky Aircraft plant in Stratford, Conn. The twin-turbine powered aircraft was hailed by VAdm. R. B. Pirie, DCNO(Air) as a most significant addition to helicopter ASW capabilities, citing the improved sonar gear, greater weight-lifting capabilities and all weather configuration. The first helicopter to be designed as an ASW weapons system from the ground up, the HSS-2 is scheduled to become operational in early 1961. The 'turbocopter' is capable of carrying both conventional and atomic depth charges.*

Page From Old Handbook

All 'Do's' in 1911 Instructions

A nostalgic reminder of the good old days in aviation was forwarded recently by Cdr. A. G. Russell, Carrier Air Group Four. The following is quoted from operating instructions issued with the 1911 Glenn Curtiss "Pusher" airplane. In his covering letter, Cdr. Russell notes that the simple instructions should be of interest to many readers who fly our rather complicated modern machines. We agree.

"The Aeronaut should seat himself in the apparatus, and secure himself firmly to the chair by means of the strap provided. On the attendant crying 'contact' the Aeronaut should close the switch which supplies electrical current to the motor, thus enabling the attendant to set the same in motion.

"Opening the control valve of the motor, the Aeronaut should at the same time firmly grasp the vertical stick or control pole which is to be found directly before the chair. The power from the motor will cause the device to roll gently forward, and the Aeronaut should govern its direction of motion by use of the rudder bars.

"When the mechanism is facing into the wind, the Aeronaut should open the control valve of the motor to its fullest extent, at the same time pulling the control pole toward his (the Aeronaut's) middle anatomy.

"When sufficient speed has been attained, the device will leave the ground and assume the position of aeronautical ascent.

"Should the Aeronaut decide to return to terra firma, he should close the control valve of the motor. This will cause the apparatus to assume what is known as the 'gliding position,' except in the cases of those flying machines which are inherently unstable. These latter will assume the position known as 'involuntary spin' and will return to earth without further action on the part of the Aeronaut.

"On approaching closely to the chosen field or terrain, the Aeronaut should move the control pole gently toward himself, thus causing the mechanism to alight more or less gently on terra firma."

Things haven't really changed a bit.

NRL Scientist is Honored

Receives Robert D. Conrad Award

Dr. Robert M. Page, Director of Research at the Naval Research Laboratory, has been awarded the Captain Robert Dexter Conrad Award by the Office of Naval Research.

He was chosen for his contributions to science in the fields of radio communications, radar, and electronics.

The award is made annually in recognition of outstanding achievements in Naval research and development.

'Savvy Tiger' is Filmed

To Help Train Replacement Pilots

"The Savvy Tiger," a training film for fighter pilots, is being produced for Carrier Air Group Four.

Facing Kleig lights in Dallas to put final touches on the movie were Capt. Robert G. Dosé, Cdr. A. G. Russell, and Cdr. L. A. Hoke, Jr. Cdr. Hoke is a recent graduate of the Replacement Training program and has been ordered to command of VF-32.

The film shows F8U *Crusaders* in carrier landings, catapult shots, spins, formation flying, field and mirror landings and *Sidewinder* missile kills.

USS Iwo Jima Keel Laid

Built for Vertical Assault Task

The $40 million dollar amphibious assault ship USS *Iwo Jima* (LPH-2) will be the first ship of its type to be built as such from the keel up. Its keel was laid at the Puget Sound Naval Shipyard 2 April 1959.

This type of ship carries troop transport helicopters for use in the U. S. Marine Corps "vertical assault" doctrine. The *Iwo Jima* will be a 15,000-ton, 600-foot long ship with a combined crew and troop capacity of approximately 2500 officers and men.

Reorganization Planned

Bureau of Naval Weapons Proposed

Combining the Bureau of Ordnance and the Bureau of Aeronautics into a new Bureau of Naval Weapons has been recommended to Secretary of the Navy Thomas S. Gates, Jr., by a committee headed by William B. Franke, Under Secretary of the Navy. The Bureau realignment was one of a series of changes in the Departmental organization and in the officer structure of the Navy recommended in the committee's report, implementation of which will require action by the Congress in some instances.

The committee recommended that the position of Assistant Secretary of the Navy (Personnel and Reserve Forces) be the one eliminated to satisfy the reduction imposed by the Department of Defense Reorganization Act of 1958, and that there be established an Assistant Secretary of the Navy for Research and Development. At the same time, the committee urged a change in the Act to permit the Navy to have four Assistant Secretaries instead of three provided by the Act.

The report recommended abolition of the post of Assistant Chief of Naval Operations (Research and Development) and the assignment of its functions to a newly created Deputy Chief of Naval Operations (Development). The new Deputy would be charged with coordination of all research, development, test and evaluation programs. He would also take over the Guided Missile Division now under the Deputy Chief of Naval Operations (Air), and also assume the task of scientific data collection and development coordination now performed by the Office of Naval Research.

In addition to the Guided Missiles Division, the following activities of the Deputy Chief of Naval Operations (Air) would be transferred elsewhere within the Office of the Chief of Naval Operations: Coordinator, Naval Air Reserve, Flight Services Division, Liaison Branch, Air Warfare Division and the Naval Weather Service. The Deputy Chief of Naval Operations (Air) would retain cognizance of aviation plans, programs, requirements, training and safety.

The functions of the Commandant, Third Naval District, would be combined with those of the Commander, Eastern Sea Frontier. Similarly, the functions of the Commandant, Twelfth Naval District, would be combined with those of the Commander, Western Sea Frontier.

In the officer personnel structure, the committee recommended that all specialist designators within the line of the Navy be abolished. The present line structure includes specialists in Engineering, Aeronautical Engineering, Communications, Hydrography, Law, Naval Intelligence, Photography, Psychology and Public Information. The report recommended the creation of a Naval Technical Corps to include specialists in Design Engineering and Research, Naval Construction and Engineering, Advanced Nuclear Engineering, Aerology, and Communications, and other present special duty officers who do not elect to transfer to the line. Present restricted line officers would be given the choice of either transferring to the line or to the Naval Technical Corps.

The committee recommended that an increased number of officers of the line be given post graduate education.

ATU-611 Ends First Year

Students Fly 26,617 Hours Safely

Advanced Training Unit 611 at NAS Corpus Christi has completed its first full year of operations with 26,617 accident-free hours flown. The year's final flight was made in an S2F *Tracker*.

ATU-611 was commissioned March 1, 1958, with personnel and aircraft from ATU-604 which had been disestablished at Hutchinson and ATU-201, a jet unit at Corpus Christi.

In the unit's first year, 416 student pilots were trained in multi-engine familiarization, advanced instrument and radio navigation flight, field and carrier landing practice, and solo student cross-country flights in which two-student teams commanded their own flights to various points around the U.S. without instructors on board.

More than 70,000 landings were made during this period, including 1354 aboard the USS *Antietam*. Ninety percent of the carrier landings were made by student aviators. Thirty percent of the flight syllabus at ATU-611 consists of students flying solo.

BIGGEST EVER! *The USS Kearsarge (CVS-33), biggest ship ever to be put in the drydock at the U.S. Naval Shipyard, Long Beach, Calif., gets her hull cleaned. The 43,000-ton carrier is the yard's first complete carrier overhaul; the project is scheduled to take four months. The big ship, once an attack carrier and now an antisubmarine carrier, is homeported in Long Beach.*

GRAMPAW PETTIBONE

Ramp Rammer

A pilot was catapulted in his F8U-1 for initial carrier qualification in the *Crusader*. He felt pretty confident, for he had just completed a good 100 hours of flight training in the F8U, which had included 227 field mirror landings.

He made one pass around the big CVA in a clean condition and entered the pattern to commence carquals. Six approaches were made, which included two touch-and-go's, three wave-offs and then a successful trap, catching No. 1 wire. All wave-offs had been given for a tendency to be long in the groove.

Catapulted off once more, he came around on the seventh pass long in the groove again, but looking good on speed, altitude, and apparently on glide slope. A short distance out from the ramp, the F8U settled on the glide slope, the meatball dropped out of the bottom of the mirror, and the main landing gear struck the ramp on the round-down, three to five feet below flight deck level!

The *Crusader* then continued up the flight deck partially airborne until the hook caught No. 4 wire. The plane veered sharply left during the arrestment and finally came to a stop with the nose gear and cockpit overhanging the port catwalk aft of the No. 2 elevator and well out over the side. The pilot shut down the engine. After some delay he was hoisted, uninjured, from the cockpit to the flight deck by means of an improvised rope sling.

Grampaw Pettibone says:

Shucks! The moral of this story should be pretty obvious. Your old Dad learned some time ago that one sure way you can hit the blunt end of the ship is to fly a low meatball. This lad was flyin' a low one or he wouldn't have caught No. 1 wire on his one trap. A good landing starts on the downwind leg and a goofed-up pattern usually pyramids into a dangerous approach. The only cure for a low meatball close in is *power* and a voluntary wave-off. For my money he was doggone lucky.

Midnight Ride

It was an extremely black night, overcast, with no horizon visible, and an experienced F4D pilot was making a night CCA approach to his carrier just off the island of Oahu. The let-down through the overcast was normal and the approach very steady, with the meatball clear, visible and right on the money. With 192 day and 46 night CV landings under his belt, he knew his business. As he came in close to the ship a quick final airspeed check showed 140 knots, FAST, and a glance back at the meatball showed it going up. He hesitated in making a correction, the meatball went off the top, and he came over the ramp high and fast!

He saw the deck, nosed over, and hit hard. Both wing tanks were smashed and instantly burst into flames. He hit full power, went into afterburner and became airborne again, climbing steeply into the overcast. A quick check revealed the right wing ablaze, no cockpit lights, smoke in the cockpit, gear indicating "barber pole" and the left wing damaged, apparently a slat bent up. Expecting to blow up momentarily, he shined his flashlight on the altimeter and when he saw 2500 feet, pulled the curtain, heard an explosion and felt wind flapping around his head.

He thought he was out so he peeked under the curtain. Imagine his consternation to find he was still a passenger! He gave the curtain a half dozen hard jerks to no avail.

Suddenly he realized that the F4D was almost on its back and shuddering in a steep climbing stall. He grabbed the stick, rolled back level and got back in a more normal climb attitude, still in burner. He raised his sun visor, which had snapped down in his struggles with the curtain and could see a little better.

The CCA final controller meanwhile could be heard over the background wind noise saying over and over, "What are your intentions, 207? What are your intentions?" Then he recognized the CCA officer's voice tell-

ing him to eject through the canopy. He could have cried.

The right wing fire seemed to be getting more intense, so he had to get out. Passing 13,500 feet and above the overcast in a max climb, he pulled the D-500 ring, opened the safety belt, threw the harness back out of the way and checked for any cords, plugs, straps, or wires holding him in.

A quick roll to the left and he fell out of the cockpit, tensed up for a smashing blow from the tail section. It was a clear miss, with the afterburner roaring right by his head.

Feeling somewhat relieved and exhilarated by his successful escape, he grabbed the D-ring, pulled, and felt a barely noticeable shock as the chute opened. Things seemed to be breaking a little better.

While floating down the chute oscillated wildly due to an estimated 43 knots of wind, but he managed to get his pararaft out. Slipping out of the chute as he hit the water, he pulled the toggle on the raft CO^2 bottle, but it only hissed a little and he had to inflate it with the oral inflation tube.

Once in the raft a few tracers from his .38 and one night flare brought the plane guard destroyer racing to his rescue at flank speed. An hour later he was highlined safely back to the CVA.

Grampaw Pettibone says:

Great balls of fire! This lad had a purty narrow squeek! Diving for the deck was doggone near a fatal mistake. You just don't have to "get aboard" that bad! A wave-off or bolter and a go around is nothin' to be ashamed of. The alternative can be too hairy for comfort. In a survival situation, no matter how hopeless it may seem, if you keep your head as he did, you can salvage your chestnuts from the fire. Ol' Gramps took the liberty of quotin' a bit from the pilots own narrative, "Happy Hour" style, but you git the "feel" of it better that way.

Fuel Stretchers

Two aviators were scheduled for a weekend cross-country instrument training flight in a TV-2 from their New England base to the West Coast and return. They took off at 1807 EST on Friday evening and flew IFR without incident down the Atlantic coast to a major Marine Corps Air Station. Here they ate hamburgers and malts and had the aircraft refueled. A decision was then made to continue on to a Southern Air Force Base and to RON there, with the West Coast the next day's goal.

They made up their IFR flight plan, received a weather forecast which predicted 100 knots of head wind for the 875 miles to their destination and figured two hours and 51 minutes time enroute at a cruise altitude of 35,000 feet, 3+30 fuel aboard. NAS DALLAS, approximately 145 miles further west, was given as an alternate.

Take-off was at 2110 EST. Climb-out on course was GCI monitored. Cruising at 35,000 feet, they passed four checkpoints and were eight minutes behind estimate and 34 gallons over on planned fuel consumption. They pushed on. Arriving in the vicinity of their destination, the weather looked VFR ahead and below, so the pilot at the controls cancelled the IFR flight plan, requested a DF steer, and received a fix of 52 miles from the field. His fuel state was 40 gallons as he started his descent.

The airfield blinked the runway lights to give him a positive fix, and he set up for a simulated flameout approach, right hand pattern. Initial point was reached a little high at 9500 feet, so he lowered gear and flaps and hit the abeam position still high at 6500 feet and just under 10 gallons of fuel remaining. He decided to fly a deep 90° position to dissipate excess altitude. As he turned final, the engine flamed out.

He had gone too deep to get back to the runway with a dead engine. A wings-level glide, gear and flaps down, at 110 knots was set up and held until ground contact. After striking a ditch and shearing the landing gear and nose section, the TV-2 slid to a stop. The canopy was jammed shut, but the pilot climbed out through a large hole. The copilot was finally freed after 45 minutes. Both men suffered back injuries and were hospitalized. Total time in flight had been 3 hours and 26 minutes on a 2 + 51 estimate.

Grampaw Pettibone says:

Great horned toadies! Such poor flight planning and poor headwork once airborne is almost incredible! Figuring you have 3 + 30 fuel aboard in a TV is str-r-r-etching it just a bit, and an alternate still further along on track when you've already stretched it is really a gasket blower!

This man passed up so many good fields in the last stages of this goof-up, there isn't room here to list 'em.

This entire trip was too long for a two-day period and left no margin for error. Errors in cruise control and flight planning are sometimes forgivable *if* a pilot recognizes an unfavorable situation and adjusts his plan to compensate for them. But plain bulling along to the fuel exhaustion point—really, that's impossible to swallow.

ANTISUB WEAPONS UNVEILED

PARACHUTE GUIDES TORPEDO'S DESCENT

SOME 1200 Navy Leaguers, their guests and officials from the Navy "got their feet wet" on the Navy's antisubmarine problems at the Sheraton Park Hotel in Washington during the Navy League's recent 1959 Seapower Symposium.

The two-day briefing was highlighted by a typical ASW battle problem conducted realistically in the Sheraton Park ballroom, with a considerable portion of the floor simulating a sizable section of the Atlantic. In the darkened arena, ships, subs and planes were sent through their tactical maneuvers by Capt. J. H. Carmichael and his staff from the ASW Tactical School of the Atlantic Fleet.

The menace of the Soviet submarine threat was brought out by the opening remarks of Adm. Arleigh Burke, Chief of Naval Operations, who was followed by Adm. Jerauld Wright, Commander in Chief, Atlantic, VAdm. Robert B. Pirie, DCNO(Air), VAdm. W. G. Cooper, Commander, Antisubmarine Force, Atlantic Fleet. The part played in ASW by the destroyer force and the nuclear submarine was explained by RAdm. E. B. Taylor, Commander Destroyer Force, Atlantic, and Capt. R. B. Laning, former skipper of the nuclear submarine *Seawolf*, now attached to the Office of CNO.

During the course of the symposium, three new antisubmarine weapons were unveiled. RAdm. Paul D. Stroop, Chief of the Bureau of Ordnance, said the new weapons are part of a stepped-up underwater ordnance program to combat the growing threat of the Soviet submarine.

One of the weapons shown was the small and versatile Mark 44 torpedo. "This lightweight underwater missile," said Adm. Stroop, "has improved characteristics over others now in the Fleet and is capable of attacking faster targets at greater depths."

When launched from aircraft, a small parachute guides the descent of the torpedo. Upon impact, the parachute is automatically released and the torpedo begins to seek its target.

Like the smaller Mark 43, the Mark 44 is a target-seeking, electrically propelled torpedo. It can be launched from both aircraft and surface ships. Fleet evaluation is now underway.

Designed and developed by General Electric Company, Pittsfield, Mass., under the technical direction of the Naval Ordnance Test Station, Pasadena, Calif., the Mark 44 is now in production at the General Electric plant at Pittsfield and the Naval Ordnance Plant, Forest Park, Ill.

Two aircraft-launched mines complete the trio of underwater weapons introduced at the seapower conference. The mines, designated Mark 52 and Mark 55, can be launched from the latest high speed aircraft at extremely high altitudes with pinpoint accuracy.

The Mark 52 has been approved for service use and is in full production at the Naval Gun Factory, Washington, D. C. The Mark 55 is scheduled for fleet evaluation next fall and will become operational about January 1960. It is now in the prototype production phase at the Naval Gun Factory.

Both mines were designed and developed by the Naval Ordnance Laboratory, White Oak, Maryland.

The Mark 52 and Mark 55 are both ground mines, that is, they lie on the bottom when planted. This type of mine is considered extremely difficult to sweep. When dropped in a harbor, river, canal or other areas which have soft bottoms, ground mines are soon buried in mud making detection and location almost impossible, with no effect on their lethal capabilities.

Analyses have shown that in WW II, the mine was the most effective anti-shipping weapon used by aircraft, and that the losses of aircraft for each enemy ship lost were lower than in other forms of attack. Both Navy and Air Force planes were employed by the U. S. in WW II for mine laying.

NEW, WINGLESS *Army VZ-8P, the revolutionary ground-and-air vehicle built by Piasecki Aircraft, is shown here on its first "out-of-ground effect" flight. It achieves lift and flight by two small horizontal rotor props.*

Fleet Cadets' Reunion

Two-Day Festivities at Pensacola

On May 23-24 at NAS PENSACOLA, the 21st annual reunion of former fleet cadets is to be held. The first 20 cadet classes (81c through 109c) were known as fleet cadets. They were the only pilots to earn their wings and fly with the fleet as cadets. After that, all aviators were commissioned before entering fleet service.

Today many members of this rare and extinct order of fleet cadets remain in the Navy. Originally there were some 1200 in this group.

All former fleet cadets are urged to attend. If this is impossible, send a letter to be read at the reunion dinner to Cdr. H. H. Hershey, O&R Department, NAS PENSACOLA, Florida. The dinner will be held the evening of May 23rd at Martines, a famous landmark owned by a former fleet cadet. Events are also planned for May 24th.

More Sparrow III's Ordered

$64.6 Million Follow-on Contract

The Navy has announced a $64.6 million follow-on production contract with the Raytheon Manufacturing Co., Waltham, Mass., for *Sparrow III* guided missiles.

About 55 percent, or 38 million dollars, will be awarded by Raytheon to more than 550 direct sub-contractors, many of whom may further sub-contract to other manufacturers.

The *Sparrow III* is being procured as armament for the McDonnell F4H-1.

JOHNSVILLE HIGH G STUDY

AMAL'S R. F. GRAY READIES FOR RUN IN G CAPSULE

THE SCENE is the world's largest human centrifuge at the Navy's Aviation Medicine Acceleration Laboratory (AMAL) at Johnsville, Penna.

Mounted near the end of the 42-ton arm which extends ponderously from a gigantic rotor is a light blue metal capsule shaped in the form of a seated human. It resembles a medieval torture device. Glistening fittings, a thick glass faceplate and a variety of control cables lend a modern touch.

Inside the capsule, completely immersed in warm water is R. Flanagan Gray, AMAL biophysicist, as well as *High G Protection* Project Director.

An oxygen mask covers his nose and mouth. His eyes, peering through special glasses and the water layer, are magnified eerily. Extreme care has been taken to work out all air bubbles from the liquid sheath enveloping the scientist. An air bubble next to his skin could allow minute distortion of his body at the high G levels expected.

His fingers ride buoyantly on a series of switches. One—the most important—is a dead man's switch. Engaged by tension, its release brings the centrifuge to a sudden, shuddering halt. At the same instant a siren is activated. Within five seconds the capsule is emptied of water, and within 20 seconds, a specially trained crew will have released him.

The remaining switches afford an outside appraisal to fellow scientists of his reaction to a display of colored lights. Every 1.5 seconds, he must match red light with red switch, green light with its counterpart, and so forth. The light display is mounted in line of peripheral vision inasmuch as peripheral blurring is the initial sign of adverse effect of G force. Should he miss one light signal, the centrifuge is automatically stopped.

A radio check establishes normalcy of communication and the subject's readiness for the test.

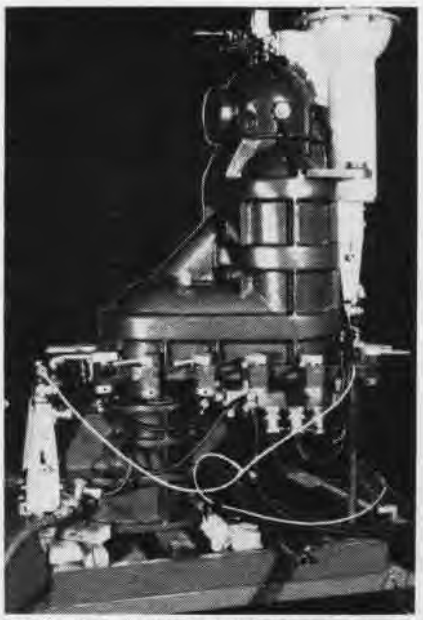
He inhales deeply, holds his breath and shuts off his oxygen supply.

Without delay, the counter-clockwise swing of the delicately balanced centrifuge arm commences. Recordings show that his pulse rate is now 120.

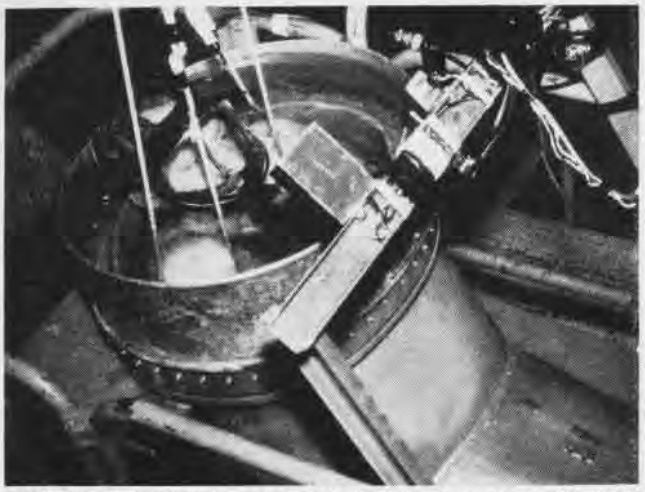
In the next 11 seconds, the centrifuge accelerates to 5, 10 and then 20 G's. Gray's responses flicker methodically on the master control panel every 1.5 seconds as planned and the acceleration increases.

The vast concrete chamber vibrates as the whirling arm touches 25 G's. Pulse rate now registers 75. Still the responses from the water-encased scientist come routinely, and the gigantic arm is urged to even greater speeds. At the end of 12.5 seconds, acceleration is imposing a fantastic 31 G's on

G DRESS: MASK, VEST, 'PANIC BUTTONS'



METAL RIG CARRIED SCIENTIST TO 31 G'S



HERE WEBB, PARTIALLY IMMERSED, AWAITS RUN IN MAYO TANK

LCDR. WEBB, CAPT. E. K. SMITH, GRAY, HEAD G CAPSULE STUDY

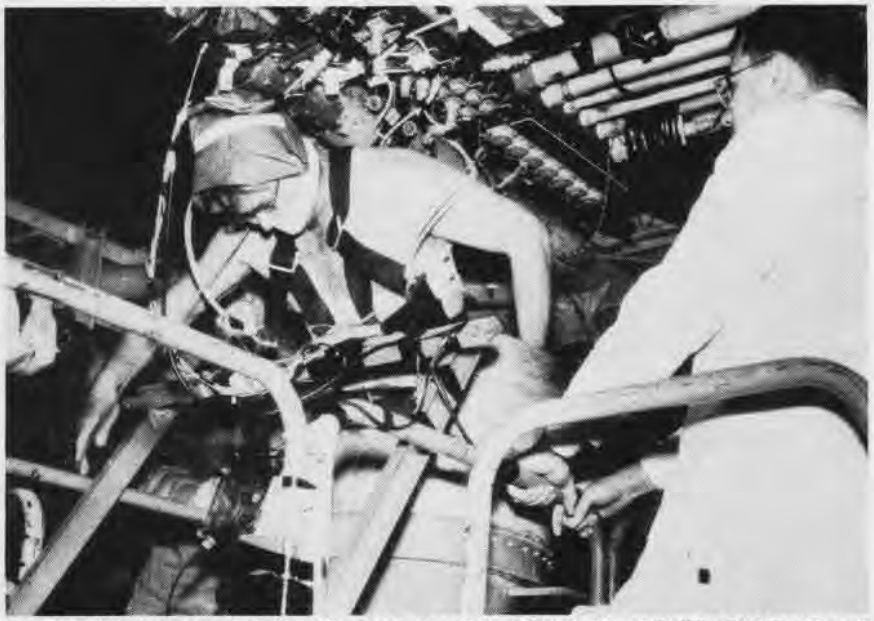
the imprisoned subject and it levels off at this peak force. Still the responses are normal. For five long seconds the blue metal capsule revolves at a record-breaking level of G force.

Inside the capsule, Gray experiences minor difficulty. Slight frontal sinus pain is felt during maximum G. Otherwise, as he continues to indicate by his responses, he has complete control. The pre-planned deceleration of the centrifuge commences and 12.5 seconds later the test is over. A world record has been set.

A wet but wiser scientist is released. He's been where no other man has for so long a period. A most significant probe into the long standing mystery of high G force effects on man has been made.

This particular run marked the three-year point in high G test work at AMAL. It also marked more than 200 rides for Gray who is in his eighth year at the Naval Air Research and Development Activities Command lab.

Water immersion for protection of subjects against acceleration is not entirely new. Considerable study and use of equipment and principles developed by other experimenters have been made by Gray and his associates. One device, an open-top tank shaped like a huge shoe, was made available for the Johnsville project by the David Clark Company of Worcester, Massachusetts.



PARTIAL IMMERSION TESTS FORCED GRAY TO TAPE MOUTH TO PREVENT ESCAPE OF AIR

Originally used in 1942 at the Mayo Clinic by Code, Wood and Baldes, it provided for water immersion of a subject to the level of the third rib. It was reasoned by Gray that the water pressure would increase G tolerance by compressing air in the chest, reduce expansion of the circulatory system, and aid the heart in pumping blood to the head. These experiments with the open tank at Johnsville pointed the way for improved design of the present high G capsule.

During initial experiments with the Mayo tank, involving partial immersion, three of AMAL's acceleration experts exposed themselves to a variety of high G test runs on the centrifuge. They were LCdr. M. G. Webb, MC, USN, AMAL Deputy Director; Surgeon Commander Herbert Ellis, Royal Navy; and Gray.

Runs up to 10.5 G for 12.5 seconds were successfully made. Acceleration which imposed higher G's was found to be impractical owing to the inability of the subject to retain air by holding his breath. Despite clenched teeth and lips, and muscular abdominal straining, air was still forced out in the neighborhood of 10 G's.

Believing this involuntary tendency could be overcome and higher G levels reached, Gray prepared for a subsequent assault by having his mouth taped. In this manner he hit 14 G's without losing air. Above 14 G's, spasmodic passage of air by his soft palate induced progressively increased throat irritation. At 16 G's, vibration caused by air passage irritated his throat so much that slight bleeding resulted and the run was terminated.

This level of 16 G's was about 13 G's above Gray's normal blackout level and showed that the idea of water immersion with respiratory pressurization was basically sound, but greater lung pressures would be required than could be safely attained and maintained in an open tank.

The answer was found in the design and development of a high G capsule which permitted total immersion of a subject in water contained by rigid walls.

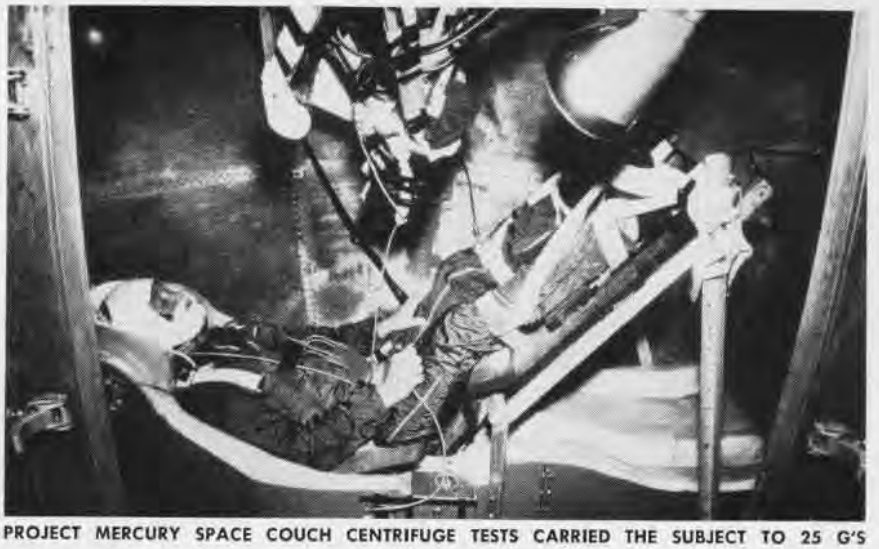
The capsule, also manufactured by the Clark Co., is made of ¼" sheet aluminum and weighs 400 pounds empty. Loaded with water and a subject, total rig weight is approximately 720 pounds.

The theory attending total immersion as a means of protection is a simple one. Water, being incompressible when contained by rigid walls, prevents external and therefore internal distortion or expansion of elastic tissues. Blood circulation to the brain and normal heart functions are maintained.

The Johnsville G study is a long way from being concluded. Still confronting Gray and his associates are a number of problems. The major one of these involves a usable respiratory system which will maintain sufficiently high pressures internally under changing conditions of acceleration. In current tests, subjects hold their breath for periods up to 30 seconds.

BESIDES development of a respiratory system, sights are set on operational versions of water-filled capsules. Two concepts are considered. One involves a bigger capsule which will permit a pilot to move around freely. Another (see drawing, right) envisions a suit whose total weight with water will be about 100 pounds. A pilot will be able to leave the suit for normal flight operation. When high G forces are expected, the pilot will be able to regain protection by activating automatic equipment which closes the rig and fills it with water. Besides high G protection, the suit may be used in standard aircraft for emergency purposes, such as crash landings, where high shock G's and structural fragmentation may be encountered.

The larger capsule concept may have future use in manned space flight. In addition to protection against acceleration effects on a weight basis, water is one of the most effective shielding agents against radiation.



PROJECT MERCURY SPACE COUCH CENTRIFUGE TESTS CARRIED THE SUBJECT TO 25 G'S

AMAL is not alone in its scientific search for the ultimate in G safety. Two awesome examples of courageous experimentation in this regard were noted by Mr. Gray as singular contributions to ever-increasing research knowledge concerning deadly levels of G force.

The Air Force's Col. Paul Stapp facing forward on a rocket sled sustained a shock impact of 40 G's. He experienced severe eye pain as his eyeballs almost left their sockets; and, following the test, he was limp, confused, and passed blood from his nose. Gray's unique, water-filled capsule has almost completely solved this acute problem.

In another test on the Daisy Track at Holloman AFB while riding backwards, Capt. Eli Beding sustained 83 G's for .04 seconds. His reactions were also severe. Besides excruciating back pains, no blood pressure was discernible for the first 30 seconds. After recovering consciousness, he suffered headaches and stomach cramps.

With each such daring plunge into higher acceleration, the way is paved for another advance.

Asked what the conceivable limits of G force were, the *High G Protection* Project Director's calm reply was as startling as his daily occupation: "On the basis of prolonged duration, around 400 G's. From a shock impact standpoint, nearly 1000 G's. We still have a long, long way to go however."

FUTURE CAPSULE WILL PERMIT NORMAL MOVEMENT; CLOSE AND FILL AT PILOT'S OPTION

ASW PROBLEMS ATTACKED

DETAILS of a unique task force, created within General Dynamics Corporation to deal with the growing problems of antisubmarine warfare, have been announced.

The program has been underway since 1957 when an ASW planning and co-ordinating committee was formed under L. B. Richardson, senior vice president of engineering.

Convair, Electric Boat, and Stromberg Carlson Divisions, as well as Canadair Limited, have been actively engaged in air, undersea and surface aspects of ASW, according to the release.

"The increasing threat of the Russian submarine force dictates that every relevant resource among the free countries be marshalled against it," said Frank Pace, Jr., president of General Dynamics.

These ASW projects were outlined:

At Electric Boat, USS *Tullibee*, the nation's first true antisubmarine submarine is now under construction. Study completed under a Navy contract analyzes the submarine's role in antisubmarine warfare.

At Stromberg-Carlson, a new sonar test tank—reported to be the largest and best equipped indoor facility of its kind in the free world—is now in operation. High powered underwater transducers have been developed for use in a new sonar system. An airborne radio receiver is being designed as an important unit in new sonobuoy systems.

Other Stromberg-Carlson projects include shipborne mine-hunting sonar, research in non-acoustic detection, and underwater target classification.

At Canadair, the CL-28 *Argus* is flying, equipped with late advances in sub-detection and attack equipment.

At Convair, both under Navy contract and company funding, ASW systems integration problems are being attacked, with careful consideration being given to nuclear-powered aircraft as a possible ASW weapon. Also at Convair, the "Lobber" logistic missile system is reported to offer many possible ASW applications. Equipped with either nuclear or non-nuclear warhead, the missile appears attractive to company engineers for depth charge applications. Others include placement of sonobuoys and flares.

In addition to its hydrodynamics laboratory, Convair has a privately-owned towing basin, ideally suited to research into surface and subsurface ASW components. Controlled tests have been conducted at speeds in excess of 100 feet per second. This is the equivalent of 300 knots full scale.

'SCAR' Details Announced

Submerged Sub Navigation System

A revolution in submarine warfare has taken place with the development of a device that makes it possible for subs to take celestial fixes while submerged. The system is called SCAR, Submarine Celestial Altitude Recorder. It is being produced by Sperry Piedmont Co., a division of Sperry Rand.

Fitted into the periscope, SCAR makes it possible to use a time-tested, reliable method of navigating by the sun and the stars from periscope depth. When the star, moon or sun is sighted a switch on the scope is pressed, and the exact altitude of the celestial body is computed automatically, giving the angle of sighting in degrees and minutes as well as the time in hours, minutes and seconds. This information is printed instantaneously on a slip of paper which looks very much like the bill rendered in a supermarket at the check-out stand. The timing device is accurate to within one second a day.

After two or more stars have been sighted, all the navigation officer has to do is consult the Navy almanac. The point where the lines of the star fixes intersect indicates the position of the ship on a chart.

The importance of SCAR is self-apparent. With the development of the snorkel and atomic power, it became possible for submarines to remain submerged on extended trips, such as the 60-day record set by USS *Seawolf*. The ideal manner of checking the accuracy of inertial and other advanced systems is to take a celestial fix. If a sub must surface to do this, it runs the risk of exposure to the enemy. SCAR has solved this problem.

The value of the system was conclusively demonstrated by the historic voyages of *Nautilus*, *Seawolf* and *Skate*. After returning from the trans-polar trip with the *Nautilus*, Cdr. W. R. Anderson, the commanding officer, said SCAR "ranks with the development of the snorkel and the *Albacore* submarine hull design as a truly significant advance in submarine navigation."

WHEN SECRETARY OF NAVY *Thomas S. Gates (second from left) visited the ASW carrier, USS Valley Forge, he spent two days at sea observing hunter-killer operations of RAdm. John S. Thach's Task Group Alfa. RAdm. Louis de Florez, USNR, retired (right foreground) head of Naval Aviation Special Devices Center in WW II, was a member of his party. Here they are talking with carrier officers in the wardroom. Valley Forge skipper is Capt. W. M. McCormick.*

NO 'GAMBLE' FOR TEST PILOTS

GAMBLING *ceases to be a game when the stakes are life itself. Cherry Point test pilots—Maj. G. C. Greenfield, Capt. J. S. Read, and MSgt. J. R. Todd—stake their lives on the perfection of man and machine. Here MSgt. Todd checks out in the log book for a test run of an F3H.*

MSGT. TODD *is the only enlisted pilot assigned to the Overhaul and Repair Department. He has a total of 395 test flight hours to his credit. He leaves nothing to chance as he makes his thorough pre-flight inspection. He carefully checks the speed brakes on the Demon.*

STRAPPING IN *comes after a last-minute check on all instruments and safety devices. Todd has made sure with a complete visual check that everything is in order. The three pilots in Flight Test Operations have maintained a major accident-free record for more than two years.*

ACCORDING TO *MSgt. Todd, a test pilot never forgets that, if he gets careless, he could cause disaster beyond human comprehension. All three pilots in Flight Test Operations derive comfort from the fact that every precaution is taken to insure that each plane is perfect.*

GCA Record Announced

Kingsville Records 100,000th

On 11 February 1959, at 1317, GCA Unit 24, at NAAS KINGSVILLE recorded its 100,000th approach. This is the third naval air station in the United States to record 100,000 approaches.

It was a perfect day for such an approach; the ceiling was 300 feet and the visibility three-quarters of a mile.

The GCA controller was C. L. Feese, AC2. The pilot was NavCad L. O. Taylor. With him were his flight instructor, Lt. W. A. Dominique and another student, Ens. J. G. Becker. They were flying a Grumman S2F *Tracker*. It was Cadet Taylor's first GCA approach.

French TV Shows Randolph

Viewers See Life Aboard Flattop

USS *Randolph* was featured on Monte Carlo television while the attack carrier was anchored at Cannes, France.

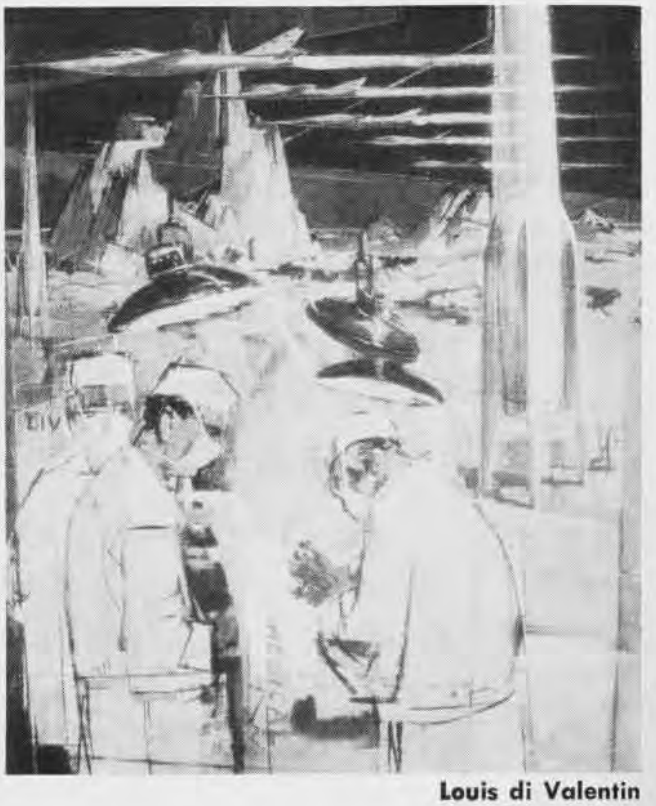
The telecast consisted of an interview with Capt. Bernard M. Strean, commanding officer, a short movie of a typical "Randoo Candoo" sailor and his daily routine, and a medley of popular songs by the ship's orchestra.

In keeping with the President's People-to-People program, the presentation was designed to give French viewers a clear indication of the purpose of the Sixth Fleet, the role of the *Randolph* in the fleet, and a glimpse of life aboard the carrier.

NAVY FLIGHT SURGEONS' EXHIBIT

Stevan Dohanos

Paul Hoffmaster



Louis di Valentin

THE COLORFUL life of the Navy flight surgeon is the subject of the interesting exhibit the Bureau of Medicine and Surgery prepared for the Aero Medical Association meeting in Los Angeles, April 27-29.

Rear Admiral B. W. Hogan, MC, USN, Chief of the Bureau of Medicine and Surgery, wanted to find some way to tell the Navy Flight Surgeon story in a new and dramatic manner, primarily to motivate young physicians toward a career in aviation medicine.

Five of the country's most outstanding artists were asked to portray the flight surgeon as they saw him, with no further directions as to subject matter. The illustrations shown here are the artists' preliminary sketches. Following the Los Angeles meeting, it is planned to show the completed exhibit in medical schools throughout the country. The eyes of medical students can focus readily in this manner on a promising career.

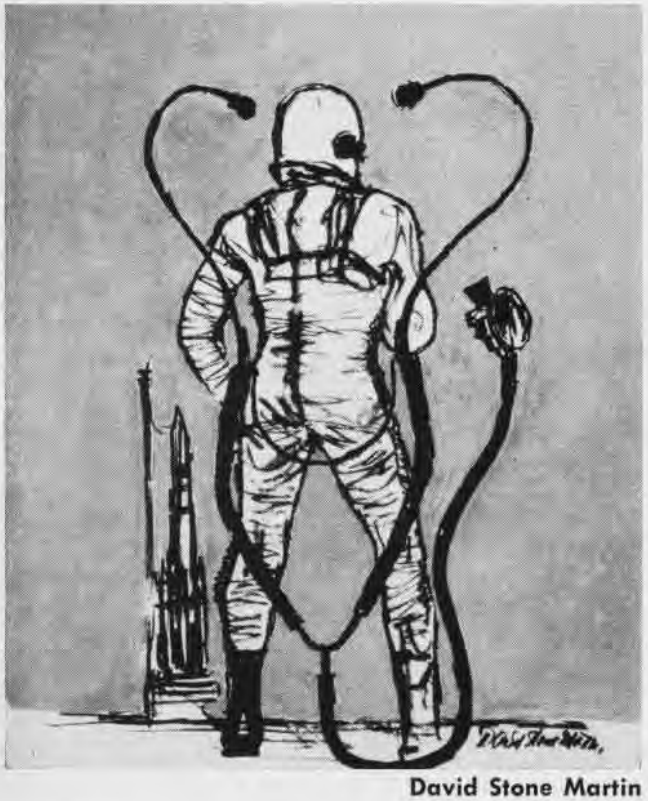
The research aspect of the flight surgeon's mission caused Stevan Dohanos to depict a flight surgeon subjecting an airman in a Navy full pressure suit to seat ejection tests. "As an artist trained in the graphic medium of visual communication," Dohanos says, "I have tried to convey the drama and excitement of those men who participate in this pioneer effort into our 'vertical frontier'."

Paul Richard Hoffmaster found the flight surgeon and his charges, the fliers aboard a carrier, typical of Naval Aviation Medicine. From that point he went on to choose the most dramatic situation, "Flight Quarters," and presented the flight surgeon in vivid poster colors. Mr. Hoffmaster points out: "These elements are combined in a greatly simplified pattern. The treatment is symbolic, the situation quite literal. The flight surgeon lives and works in close association with his first concern, the pilots."

Artist Louis di Valentin included several levels of thought and action in his picture. "I used the foreground to symbolize the concentrated efforts and achievements of the medical profession in an area requiring judgment, astuteness and knowledge. The top horizontal section of the composition portrays the jet age in aviation, the advances already made, and the problems solved by the application and study of medicine. The background shows the future attainments not only in aviation and space, but by medical inspiration and foresight, the possible solutions for man's acclimation to the stars and planets of the universe."

Regarding his portrayal of a pilot in space clothing, David Stone Martin says, "I intended to imply the importance of the medical service to the man in space by using the superimposed stethoscope."

THE SEA itself is foremost in Ben Stahl's painting. Of it, the artist says, "I tried to convey the intense violence of the sea and one of the Navy's problems in defeating it. Into this violence, I placed the small life raft containing one forlorn figure silhouetted against an area of white water. The chopper coming in looks sturdy and strong, but one huge wave appears to reach up and threaten to engulf it. It is the time just before the rescue is effected and the man snatched safely from the sea. So most of all I tried to illustrate a scene loaded with dramatic tension, yet one familiar to flight surgeons of the Navy as a part of their every day job." □ □ □



David Stone Martin

Ben Stahl

SPARROW-CARRYING DEMONS OF FIGHTER SQUADRON 193 WING THEIR WAY OVER PACIFIC WATERS ON SORTIE FROM BON HOMME RICHARD

DRESS REHEARSAL ON BONNIE DICK

By Lieutenant Jerry Solomon

It's 0400 somewhere off the Coast of Formosa. The USS *Bon Homme Richard* (CVA-31) silently slips through the serene waters of the China Sea. Outwardly, the ship is still and somnolent. Within, the crew of the carrier and the men of Air Group 19 are awake and on the alert.

Flight quarters sound. Instantly, the flight and hangar decks are alive with action. Blue-shirted plane pushers and brown-shirted plane captains join their red, yellow and green-shirted shipmates in the midst of the orderly confusion. Each man has his specific job to do. The livery he wears labels it.

Below, in the ready rooms, pilots are preparing for a 0530 flight. The Duty Officers in Air Operations are funneling down all the essential information that each pilot will need.

Sunrise is still hours away.

On the catapults are two F3H-2 *Demons* of Fighter Squadron 193, ready to launch on a moment's notice. The lonely watch is drawing to a close for the men in the cockpits. In Ready Room 1, the three *Ghost Riders* who have been in alert status for four hours are wearily crawling out of their flight gear to "hit the sack" for a few hours before once more becoming airborne. VF-193 pilots maintain constant vigilance whenever air operations are not in progress.

As CVG-19's all weather fighter squadron, the *Ghost Riders*, who must perform night and day, usually draw the heaviest jet-flying load. Even as the duty section secures, Cdr. Tony Capriotti, the skipper, briefs his flight for the first combat air patrol.

The EXEC of VF-191, LCdr. C. W. Roesner, is doing very much the same in Ready Room 2. Cdr. George Watkins' boys are getting ready for a CAP hop in which one of VAH-2's *Skywarriors* will be the bogey. At this stage of the briefing 'Rosey' slyly queries the A3D pilot, LCdr. Rufe Small, as to what altitude they'll be working. In reply he gets nothing but a broad grin. VF-191 and VAH-2 share the same ready room and a strong "friendly" rivalry has developed over who can or can't catch whom.

Satan's Kittens are both day and night qualified, making VF-191 one of the few F11F *Tiger* squadrons that can make

'DAM BUSTERS' OF VA-195 RECEIVE BRIEFING IN READY ROOM 3

PILOTS AND PLANE CREWS PRE-FLIGHT AIRCRAFT BEFORE LAUNCH

STREAMLINED SYMBOLS OF POWER, TWO SLEEK SKYWARRIORS OF VAH-2 DETACHMENT ECHO, ARE ON A SPECIAL TRAINING MISSION

that statement. They'll take to the air at the drop of a hat.

In Ready Room 3, the *Dam Busters* of Attack Squadron 195, led by Cdr. F. H. Burnham, are getting the word on their doings for the day. They fly the AD-6 *Skyraider*, which at one time or another has drawn just about every job available. On this particular launch, Lt. Clancy Jenista will orbit a cruiser some 100 miles away for four hours as an in-flight service station. The returning CAP fighters will rendezvous and get a drink of much-needed JP-5. With this kind of teamwork, the jets can stay on station much longer.

In addition to the tanker hop, LCdr. Ben Lehman, the Operations Officer, is briefing a flight for a coordinated attack on the ship. He's passing out the run-in altitude, time on target and type of delivery to be made. The strike has already been planned with the FJ-4B drivers of VA-192. At the moment, LCdr. Wes McDonald is passing the same information to the *Fury* pilots in Ready Room 5.

VA-192 *Golden Dragons* are also day and night qualified, and have numerous jobs, ranging from in-flight refueling to conventional close air support. Being in the jet attack business is a tough and serious task, but LCdr. Larry Baumgaertel's men are among the best.

Since the *Bonnie Dick* is seldom in company with an anti-submarine carrier, she has to supply her own defense against an underwater enemy. The AD "Guppy" pilots of Lt. Red Poynter's VAW-11 Detachment Echo find the sub; LCdr. Jerry Johnson's AD-5N men of VA(AW)-35 go in for the kill. These pilots and their crews operate around the clock—fair weather or foul—performing the vitally important hunter-killer mission for a CVA. During a deployment there are always some *Skyraiders* from CVG-19 patrolling the western Pacific. The two detachments share Ready Room 3 with VA-195 "Spad-mates." The AD's are known as "Spads."

Meanwhile, back in AirOps, LCdrs. Doc Mossburg and Frank Barton, who have the duty, have double-checked all data to make sure that the teletype operator has relayed everything correctly to the ready rooms. This information includes the present ship's weather, the conditions at any airfield within range where a plane may have to land, radio and navigational aid frequencies, the ship's course and speed —in short, everything pertinent and current. On their status boards, they correlate name and plane assignments of each pilot on every launch. Doc and Frank are in for a long and busy day. They have control of the ship-to-shore circuit by which emergency messages may be sent. Between the two of them, they are continuously on duty as long as the ship is at flight quarters and aircraft from CVG-19 are airborne.

As the last bit of info is disseminated and the time for

EACH MAN ON THE FLIGHT DECK HAS AN IMPORTANT JOB TO DO

AN F11F TIGER IS LAUNCHED FROM THE STARBOARD CATAPULT

CVG-19 CALLS THE A3D 'THE SUNDAY PUNCH OF THE SEVENTH FLEET.' A SKYWARRIOR APPROACHES THE CVA-31 FOR LANDING

the first launch approaches, each pilot in each ready room checks his personal equipment. To be a well-prepared fly-boy, one must have a goodly supply of assorted gear: knives, survival kit, hard hat, oxygen mask, knee board, charts, revolver and ammo, to name some. Everything must be available and working in case one has to walk or swim back to friendly forces.

The time is 0500. In AirOps, Doc Mossburg presses down all the buttons on his squawk box. "Pilots, man your planes!" he booms.

The familiar phrase reverberates in every part of the powerful attack carrier. It triggers off 30 minutes of fast moving teamwork. Pilots and men of Air Group 19 merge quickly with the crew of CVA-31, to form an impressive display of human efficiency.

As THE PILOTS trot down the flight deck, the plane captains add the finishing touches to aircraft for which they are responsible. Each must be absolutely ready for launch. The red-shirted gas and ordnance details are standing by, the bulk of their work done for the moment. Under the expert supervision of the yellow-shirted plane directors, plane pushers maneuver the aircraft into position for the first launch.

Despite all this activity, the flight deck remains relatively quiet. Over the bullhorn comes the voice of Cdr. E. V. Davidson, the Air Boss in Pri Fly, issuing the "Standby," and "Stand clear."

Then—"Start engines on props." And a little later, "Start engines on jets."

All bedlam breaks loose with the grinding and whining of turbines and R-3350 engines. The din brings hand signals into use. With sign language, the pilot communicates with his plane captain and the green-shirted trouble shooters if there are any difficulties. If the aircraft is O.K., the easily recognized "thumbs up" is signalled.

On the cats, two VF-193 *Demons* are turned-up and ready to go. With the white flag from Primary, the launch is commenced. Like clockwork, the *Demons*, *Tigers* and *Furies* are fired. As soon as the last jet is off, the deck is cleared for *Skyraiders*.

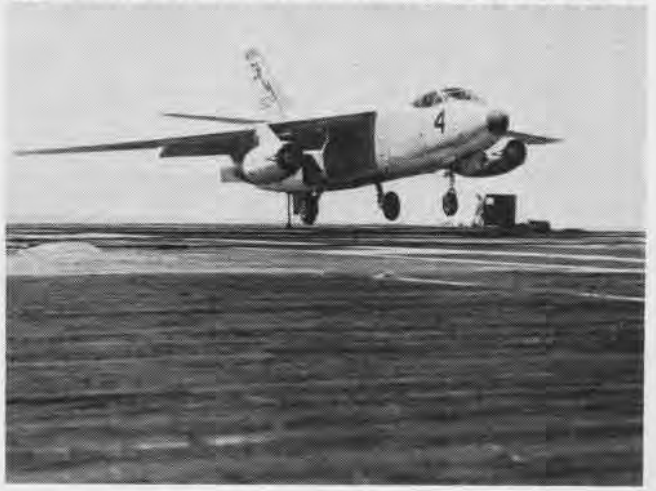
No sooner has the last AD thundered down the flight deck than preparations are completed for handling the Sunday Punch of the Seventh Fleet—the A3D *Skywarrior*, largest carrier-based jet. Within seconds the mighty attack aircraft is spotted and launched.

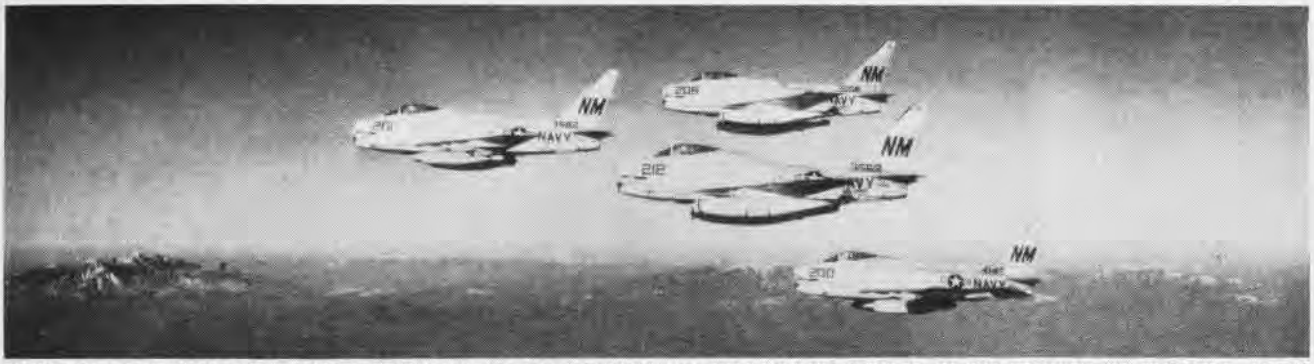
Again and again the cats fire until, from Primary, comes the word, "Respot for the next launch." The same routine is repeated in AirOps, ready rooms — throughout the *Bonnie Dick*.

Out on CAP stations, Lt. "Moose" Moore and his wingman, Ltjg. Pat Ball, fearless *Ghost Riders* of VF-193, are

A VA-195 AD-6 GOES AROUND AGAIN ON A FOUL DECK WAVE-OFF

ANOTHER JET CATCHES THE WIRE AT END OF DAY'S OPERATIONS





FLIGHT OF FOUR FURIES FROM ATTACK SQUADRON 192 FLY FAR FROM USS BON HOMME RICHARD IN THE VICINITY OF FUJIYAMA, JAPAN

reaching their assigned altitude. There are no unfriendly contacts on the controller's radar. The *Demons* split—one acts as the bogey, the other as the friendly. By using each other to simulate every tactic and maneuver of the enemy, the Air Group attains and maintains combat readiness. The armament is real and the pilots must know just how to use it should the occasion ever arise.

As the time for recovery approaches, the jets are steered to a marshalling point by their controllers. The "Spads", with their longer endurance, will remain airborne until the next go-around. At the marshalling point, the flight leaders confirm their landing time—better known as "Charlie" time.

At Charlie minus ten, LCdr. Roesner in *Tiger* 101, starts down with his flight of four. The *Bon Homme Richard* is still launching aircraft. Thanks to the split-second precision, by the time 101 reaches the break, the last plane on the flight deck will be airborne.

Each pilot calls in at the 180° point to inform the carrier of his side number and fuel status. Then he commences his approach. On the LSO platform, Ltjg. Dick Kiehl, one of four CVG-19 fully qualified Landing Signal Officers, has the duty. As the first *Tiger* rolls into the groove, Dick receives a "clear deck" from his spotter, Airman Spinning of VF-193, indicating that the arresting gear is properly set and the deck is clear for landing. Airman Vena of ship's company comes in with an "all down," meaning that the bird in the groove has his gear, flaps and hook showing.

And so it continues until all the aircraft are safely home. Bolters or wave-offs must make another pass. As the last plane comes to a stop, the bullhorn in Pri Fly opens up again. "Last plane on deck. Respot."

DAY IN, day out, aboard USS *Bon Homme Richard*, and all deployed attack carriers of the United States Navy, the daily drama unfolds in similar fashion. When the ship returns to home port, another CVA has already taken over the station. The rigorous routine of readiness is repeated the year-round, the world over. The result is an effective, versatile and mobile fighting force.

Carrier Air Group 19, headed by Cdr. Uncas L. Fretwell, carries on a proud tradition. Composed of VF-19, VB-19 and VT-19, it was commissioned in August 1943. The following year the group embarked on the USS *Lexington* (CVA-16) and made its mark in many major campaigns in the Pacific. Nineteen, with redesignated squadrons, was called upon again and again during the Korean conflict. It participated in two eight-month cruises aboard the USS *Princeton* (CVA-37).

Since 1953, CVG-19 has deployed at regular intervals. The men and aircraft merge with carrier and crew to reach peak proficiency in the unique world of air operations.

FLAWLESS FORMATIONS OF CVG-19 MEN AND AIRCRAFT MAKE THE BON HOMME RICHARD A STIRRING SYMBOL OF NAVAL AIR POWER

LET'S LOOK AT THE RECORD

Pilots Set Fury-ous Pace
Make 200-plus Carrier Landings

Five fighter pilots of VF-84 have flown 3650 hours and made 1100 carrier landings in FJ *Furies*, without an accident, for individual averages of 725 hours and 220 carrier landings in type since July 1955.

They are Lts. R. J. Norton, W. E. Ramsey; Ltjgs. F. G. Hamrick, R. M. Schlemmer, and R. C. Davis.

FIVE DOUBLE-CENTURION PILOTS OF VF-84

Their carrier-based flying has been diversified. First they used the axial deck and paddles approach aboard the *Lake Champlain*, then the angled deck and mirror configuration aboard the *Forrestal*. Other carriers from which they have operated are the *Saratoga* and *Intrepid*.

Another pilot in the squadron, Ltjg. R. A. Pliers, almost reached the double-centurion mark in the *Fury* before he departed on TAD orders to VF-174. At the time of his departure he had logged 197 carrier landings and 498 hours in the North American *Fury*.

Texas DAR Gives Watches
Advanced Training Pilots Honored

The Texas Society of the Daughters ot the American Revolution presented engraved gold wrist watches to the outstanding advanced training students of 1958. At special ceremonies at NAS CORPUS CHRISTI the awards were made to Ltjg. Howard B. Thorsen, USCG, for the multi-engine seaplane phase; 1st Lt. Anthony Wynn, USMC, for the jet fighter syllabus; Ltjg. Lewis W. Blackwell, USN, for achievement in the multi-engine land-based program; and Ltjg. James H. Newton, USN, for the highest standing in the propeller-driven attack plane section.

RADM. CLIFTON, MRS. RIGGS AND PILOTS

The officers appear left to right in the picture above, with RAdm. J. C. Clifton, Chief of Naval Air Advanced Training, and Mrs. E. R. Riggs, State Regent, Texas DAR. Capt. J. S. Thompson, USMC, far right, accepted for Ltjg. Newton, who was not present.

Diplomas Awarded to 66
USAFI Helps Men of AEWWingLant

Through the use of USAFI High School general education development tests, 100 percent of the Airborne Early Warning Wing staff personnel at Argentia are now educated to at least a high school level.

Last June the staff had 66 men who were without a high school education. Since then these men have all taken and passed the USAFI course.

"Many staff officers and chief petty officers took an active part in the program by holding personal consultations with men striving for their educational goal," said CWO J. F. Phelan, staff Information and Education Officer.

During fleet-wide competitive examinations conducted in February, 85 men were eligible and competed for advancement in ratings from petty officer third class through master chief. They represent more than two-thirds of the AEW Wing's staff enlisted allowance.

Texans Grow Frustrated
Coyotes Have a 'Light' Appetite

Coyotes at NAAS CHASE FIELD, Beeville, Texas, have ripped and chewed away at the wiring on runway and taxiway lights at the rate of six to eight per night.

Despite efforts of armed security patrols and a few stalwart sportsmen the animals continue their heckling operation.

Donald A. Bonifay, electrician at Chase Field, describes the whole business as annoying. "It takes only a few minutes to replace the lights and about five minutes to repair the broken cord on each light," he says, "but they tear into the lights every night."

One of the culprits, a 40-pound male, was killed. For about 10 days the lights went unmolested, then the coyotes returned in force—damaging a new high of 15 lights in one night.

FROM ONE SQUADRON TO ANOTHER! *The recent merger of VA-44 and VA-105 brings the number of plane types used in Navy's Replacement Pilot Training Program to five. The AD-6's of VA-105 are now being used by VA-44 along with the TV's, T-28's, F9F-8T's, and A4D's which have been flown by the Blackbirds all along. In front of aircraft display, Cdr. C. A. McDougal (R) VA-44 skipper, welcomes Lt. Len Hilder of VA-105 who will head AD pilot training phase.*

A TWENTY-QUESTION GAME

This unusual story of polar rescue is reproduced from the FAA News-Memo.

IN TEN minutes and with 20 questions, Edward L. Ward, Airways Operations Specialist of the Federal Aviation Agency at Kotzebue, Alaska, identified a downed plane, able only to answer "yes" and "no" in an improvised code. Pilot and passenger were rescued.

Late on October 6, Ward, a communicator who had been recognized previously for exceptional work, heard clicks in one of the receivers he was guarding in the station communications room. No flight plan on record indicated that an aircraft was missing. The signal was too weak to carry a voice, so Ward, suspecting an emergency, broadcast on all frequencies a request that the pilot attempting to transmit on 3023.5 KC identify himself by depressing his microphone key three times. Immediately, three weak dashes were heard.

Thereupon, Ward, drawing on his knowledge of the area around Kotzebue, where he has worked for 13 years, on his experience with previous cases of planes in trouble, and his intimate knowledge of flying history north of the Arctic Circle, carried on the following inspired game of "twenty questions."

"This is Kotzebue radio. I have received a series of three dashes on 3023.5. There is some interference on your frequency. If you are calling Kotzebue radio, please repeat with three dashes."

Three dashes.

"Roger. Am I in contact with the FWS Grumman? [Fish and Wildlife Service Grumman Amphibian for which a search was then underway.] If so, transmit three dashes."

No response.

"Does this concern a disabled or a missing aircraft? If so, transmit three dashes."

Three dashes.

"Roger. A missing aircraft. I will attempt to locate you. When I am correct, push your microphone button one time.

WARD'S INGENUITY SAVED A LOST PILOT

"North?"

One dash.

"Roger. You are located north of Kotzebue. Transmit one dash for each 10 miles that you are positioned north of Kotzebue."

Twelve dashes.

"Roger. You are 120 miles north of Kotzebue. Confirm with three dashes."

Three dashes.

"Roger. Now I will attempt to locate you more exactly. Transmit three dashes for affirmative. Are you located near a river?"

Three dashes.

"Roger. You are located on or near a river. Is it the Kelly?"

No response.

"The Noatak?"

No response.

"The Kougururok?"

Three dashes.

"Roger. If you can give me distance from the Peterson crash, transmit one dash for each 10 miles that you are located up river from that crash."

Two dashes.

"Roger. Twenty miles up river from the scene of the Peterson crash. Are you located on the river or within a quarter mile of it?"

Three dashes.

"Roger. Left side of the river?"

Three dashes.

"Are there any injuries or fatalities?"

No response.

"Roger. No fatalities or injured persons. Are you requesting first available aircraft?"

Three dashes.

"Roger. Wien Airlines will send an aircraft up there tomorrow morning. Do you have a strip marked and/or will you conduct the rescue aircraft to a safe landing?"

Three dashes.

"I still don't know what aircraft this pertains to. Please transmit one dash for each numeral on a count-up basis. Nine would be nine dashes."

Seven dashes, eight dashes, 10 dashes, eight dashes.

"Roger. Seven, eight, zero, eight."

Three dashes.

"Roger. Will leave receiver on CW in case you desire further contact."

The next morning a Wien Airlines plane flew to the vicinity of the crash, had no trouble locating the plane, and brought in the pilot, Bert Beltz, and a passenger, Fulton C. Robinson, both of Kotzebue.

Following the crash, which was caused by a strong wind just after takeoff, Beltz and Robinson had salvaged the radio and battery but had insufficient power for broadcast. They did not know code. Late in the afternoon Robinson again tried to broadcast, and that fortunately, was the time he was heard.

Beaching Radio is Improved

Hailed by Pilots, Ramping Crews

A new UHF communications circuit installed in ATU-501's beach shack at the seaplane ramp, NAS CORPUS CHRISTI, has improved communications between planes being ramped and the beach crew doing the ramping.

With the new radio installation, pilots have a positive voice communication with the beach master, eliminating former frantic hand-waving and lung-powered megaphones.

A pressing need for the radio was emphasized last fall when a transient P5M experienced hazardous ramping conditions as a hurricane approached from the gulf.

The ATU-501 electronics shop used existing, idle equipment and considerable ingenuity in assembling the circuit. Pilots and beach crews hail the new set-up as a boon to operations.

PROJECT MER

THREE NA

LCOL. J. H. GLENN, JR., USMC

Nearly 38 years old . . . WW II fighter pilot with VMF-155 flying Corsairs in Pacific . . . flew 63 missions in Korea . . . set transcontinental speed record in 1957 — three hours, 23 minutes . . . 5000 flight hours, 1500 in jets.

LT. M. S. CARPENTER, USN

Thirty-four years old . . . graduate of the University of Colorado in aeronautical engineering, 1949 . . . flight training completed 1951 . . . pilot with VP-6 in Korean conflict . . . 2800 flight hours, 300 of them in jet aircraft.

LCDR. A. B. SHEPARD, JR., USN

Annapolis graduate, 1944 . . . Navy wings in 1947 . . . special research on in-service refueling, Test Pilot School instructor . . . aircraft readiness officer, ComAirLant staff . . . 3600 flight hours, of which 1700 hours were flown in jets.

LCDR. W. M. SCHIRRA, JR., USN

Thirty-six years old . . . son of WW I ace . . . Naval Academy graduate, class of 1945 . . . as exchange pilot with USAF flew 90 missions in Korea in F-84E . . . won DFC, two Air Medals . . . 3000 flight hours, 1700 in jets.

THE FIRST American to perform orbital space flight has an excellent chance of being a Naval Test Pilot School graduate. At the present time he is married, the father of one to four children, and his wife heartily approves his coming epochal venture. In the case of one Navy pilot, the query as to whether he would be a willing participant in Project *Mercury* came while he was away at sea. His wife promptly volunteered for him.

Each man is physically and psychologically near-perfect for his pioneer mission and he has no doubts about his ability to return to earth in one piece after his 270 minute ride to a point some 150 miles out in space. The astronauts are between 32 and 37 years of age and have had at least 2300 hours of military flight time.

These were some of the facts revealed about the group of seven military pilots who have been named Project *Mercury* astronauts at a National Aeronautics and Space Administration (NASA) press conference held in Washington on 9 April. Later the same day Adm. Arleigh Burke, CNO, and VAdm. R. B. Pirie, DCNO (Air) offered their personal congratulations.

Of the group of final selectees, survivors of a singularly exhaustive testing and screening series all over the nation of 69 volunteers, three are Naval Aviators and one is a Marine Aviator. All are graduates of the Naval Test Pilot School, Naval Air Test Center, Patuxent River, Maryland. They are: LtCol. John H. Glenn, Jr., LCdr. Walter M. Schirra, Jr., LCdr. Alan B. Shepard, Jr. and Lt. Malcolm S. Carpenter.

The remaining three candidates, all

VY, ONE MARINE ON SPACE TEAM

Air Force pilots, are: Capt. Donald K. Slayton, Capt. Virgil I. Grissom and Capt. Leroy G. Cooper, Jr.

Selection of the *Mercury* astronauts involved one of the most unusual screening and evaluation programs in the history of aviation medicine.

In the initial phase, NASA sought volunteers from active duty military test pilot categories on the basis that many of the conditions expected in manned space flight are similar to those experienced by military test pilots.

General requirements were possession of a bachelor's degree or equivalent in engineering or the physical sciences; graduation from a military test pilot school; 1500 hours of flying time; under age 40 and five feet 11 inches in height or less. The educational requirement was set because of the variety of scientific and technical problems that will confront the astronauts throughout the two-year training program which will start in the near future.

A preliminary search of records indicated that more than 100 active graduates of military test pilot schools would qualify under these requirements. It was found unnecessary to contact all of them, because of the first 69 called to Washington to hear the *Mercury* project outlined, 80 per cent volunteered.

Personal consultations and interviews followed and the list of candidates was narrowed to 32. During the course of the selection program it was determined that seven was the optimum number of *Mercury* astronauts, so that each could have full participation in all phases of the project as it developed.

Following the Washington interviews, the candidates were assigned to groups which reported by unit to the Lovelace Clinic in Albuquerque, New Mexico for an exhaustive series of examinations. Each candidate spent seven and one-half days and three evenings at the Lovelace facility.

General physical requirements for the space candidates were established by the NASA Life Sciences Committee. Since none of the active duty pilots were expected to be disqualified as physically unfit, degrees of physical soundness were obtained and evaluation was dependent upon a comparison of each man to his fellow candidates.

To establish a comparative yardstick, the Lovelace program began with a complete aviation and medical history. These general exams were given under normal clinical procedures.

To assess the candidates' abilities under load, Lovelace physicians developed a series of dynamic tests which were used for the first time in the Project *Mercury* selection process. If you're facing a space physical in the near future, here are a few of the items you might expect.

In the Lovelace tests, physical competence was measured by an ergometer, a device similar to a bicycle. The subject pedaled an increasing amount of

NAVY'S FIRST *astronauts are congratulated by Admiral Arleigh A. Burke, CNO (R), following appointment to seven-man team. (L to R) LCdr. Schirra, Lt. Carpenter, LCol. Glenn, LCdr. Shepard.*

weight while wearing an oxygen mask. This determined heartbeat and oxygen consumption. Evaluation was made by the amount a subject could pedal by the time his heart reached 180 beats per minute. Besides lung capacity and breathing efficiency determination, the space candidate's "lean body mass" was pegged by correlating his total body radiation count (conducted at Los Alamos), his weight in air and while totally immersed in water (specific gravity), blood and water volume.

The next step in the selection process

USAF'S *Capt. Slayton mans isolation chamber. Three hour test was given in total darkness.*

was a minute determination of the candidate's psychological makeup and an estimate of his ability to cope with stresses expected in space flight. Basis for this part of the selection took into consideration previously developed studies made in anticipation of the need for a program to select and precondition pilots for extreme high altitude flights. The program was tailored to meet the specific requirements foreseen for orbital flight.

Military specialists of the Navy, Air Force and Army conducted the psychological and stress measurements at the Wright Air Development Center, Dayton, Ohio. The senior Navy member of this group is Capt. Norman L. Barr, (MC) Director, Astronautical Division, Navy Bureau of Medicine and Surgery.

During six days and three evenings

HEAT, *130 degrees of it, is poured on Shepard as the researcher measures relative humidity.*

at WADC, the *Mercury* military astronauts were observed in a variety of stress evaluations. In these, the space subjects underwent treadmill, acceleration, heat, noise, behavior, equilibrium and vibration, tilt table and cold pressor tests. In an isolation test, each subject went into a dark, soundproof room for three hours to determine his ability to adapt to unusual circumstances and to cope with the absence of external stimuli.

The heat test involved two hours in a chamber with temperature at 130° Fahrenheit. The cold pressor test required the subject to plunge his feet into a tub of ice water while pulse and blood pressure readings were made before and during the test.

In psychological tests supervised by the NASA Life Science Committee, the candidates met the challenge of tests ranging from ink blot interpretation and a 566-question self-inventory to a determination of authoritarian attitudes and interpretation of the question, "Who Am I?"

A complex appraisal of both clinical and statistical test results went into

ONE METHOD *of testing equilibrium for the seven Mercury Astronauts was to make candidates keep chair on even keel as it rotated on two axes at once. Capt. Grissom, USAF, is being tested.*

TILT TABLE *measures ability of Glenn's heart to work with body in an unusual position.*

SCHIRRA'S LUNG *capacity is determined as, with nose blocked, he blows through a tube.*

LT. CARPENTER *is given a stress check on treadmill at Wright Air Development Center.*

the WADC evaluation of candidates. As in the case of the Lovelace exams, results were not a matter of passing or failing, but instead were measures of how one candidate compared with all others.

Because manned satellite flight is without precedent, the *Mercury* astronauts will be pioneers not only in space flight but also in the development of a program which will determine qualities best suited for such special missions.

Data from the Lovelace and WADC examinations were compiled and forwarded to NASA Space Flight Activity, Langley Field, Virginia for the fourth and final step in the selection process. At Langley, a group representing both the medical and technical fields evaluated the results. The seven ultimately selected were chosen as a result of physical, psychological and stress tolerance abilities and because of the particular scientific disciple, or specialty each represents.

The team of *Mercury* astronauts selected, future project efforts will be centered at NASA's Langley Research Center. A unit of NASA, its *Space Task Group*, headed by Robert R. Gilruth, has the responsibility for putting a manned satellite into orbit with subsequent safe recovery.

Besides readying the seven military pilots for their space roles, the task group of scientists is establishing procedures for launching, recovery, ground support and developmental testing of the space capsule being built by McDonnell Aircraft Company of St. Louis.

The seven finalists for the honor of being the first American to reach and return from outer space will train in all phases of the *Mercury* project. Only when the man-carrying satellite is completely ready for the major event will one of the astronauts be scheduled for the first space jump. Since the capsule is recoverable, the entire team anticipates making the same flight.

ADM. BURKE *shows model of capsule to be used in 150-mile high orbital flight in 1961.*

The facilities of the nation's universities, industry and Armed Forces have been implemented in the *Mercury* project. A Navy facility, the gigantic human centrifuge at Johnsville, Pennsylvania is expected to play a key role in conditioning the astronauts for the unusual acceleration forces one of them will encounter in 1961. (See pages 7-9 in this issue.)

Project *Mercury* is a basic stepping stone in development of space exploration techniques. Because the project is without precedent, no time schedule can be given for accomplishing the required developmental programs. Logically, man's initial orbital flight will be followed by research to refine performance, much the same as is done in aircraft research.

Once it has been conclusively demonstrated that man can exist in the environment of outer space, it is likely that the program will extend to sending two men into orbit, then a team. Scientists foresee construction of an orbiting space laboratory and development of a method of ferrying personnel and equipment to this station.

A major problem confronting the *Mercury* scientists has been solved—a pool of pilots is available for orbital space flight. The military test pilot, trained at activities like the Navy's Test Pilot School at Patuxent River, has been found to be completely adapted for control of a satellite into space.

MEET A MACH MEDIC

By G. W. Boos, YNC

DR. AUSTIN, CAPT. J. R. SWEENEY, SERVICE TEST, MAJ. A. R. PYTKO DISCUSS FLIGHT

PHYSICIAN, surgeon, aviator, test pilot, flight surgeon—he's more than a triple threat man! Fabulous? Yes. But these roles LCdr. Frank H. Austin, Jr., is ready and willing to play.

A native of the Lone Star State, Dr. Austin followed in the steps of his father who even now, after many years of active practice, is a physician and surgeon in Dallas.

LCdr. Austin began his medical career in 1942 when he entered the University of Texas. After pre-medical work there, he was accepted at Southwestern Medical School, Dallas, where he enrolled in the Navy V-12 program. Upon graduation in 1948, he reported to the Naval Hospital, Long Beach, California, for his internship as a J.G. A year later, he went to the Naval Hospital, Great Lakes, for his residency training in general surgery.

In these hospitals he met and worked with flight surgeons who first aroused his interest and then his enthusiasm to get into aviation. Up to that time, his total flying experience amounted to 12 hours in a "cub" type aircraft while attending Medical School.

He decided to apply for training at the Naval School of Aviation Medicine, Pensacola, Florida. After graduation from that school in 1951, Dr. Austin was assigned as flight surgeon to Marine Fighter Squadron 212 at Pohang, Korea. During his tour of duty, he became convinced that to do the job as he saw it, he must be a Naval Aviator. That way he would get first-hand knowledge of the problems a pilot faces in flight.

While waiting for his request for flight training to be granted, he was deployed aboard the CVE-114, USS *Rendova*, and CVE-116, USS *Badoeng Strait*, with VMF-212. Determined to make a start in aviation, he learned everything he could from pilots, aircrewmen, maintenance men and landing signal officers. He received cockpit checkouts in various aircraft and later was permitted to taxi an F4U *Corsair* up and down the flight deck.

IN JANUARY 1953 he commenced his flight training at Pensacola. Upon completion of basic training, he selected fighter type aircraft for his advanced training and proceeded to Corpus Christi to fly the *Hellcat* and qualified aboard a carrier. His next stop was Jet Transition Unit at NAS KINGSVILLE, Texas for instruction in the TV2 trainer. It was no snap course, but despite being a medic with little or no engineering background, Austin qualified for his Wings of Gold and was designated a Naval Aviator on 3 March 1954.

Dr. Austin's first duty station as an aviator was at NAS ATLANTIC CITY with Development Squadron Three. There his time was divided between medical duties at the station dispensary and qualifying and gaining experience in operational aircraft.

In this period Dr. Austin devoted time to studying pilot fatigue, survival equipment and high altitude problems. At the same time he qualified aboard carriers in the F9F *Cougar*, FJ-3 *Fury* and flew an F2H *Banshee* and F7U-3 *Cutlass*.

During his time with VX-3, Dr. Austin kept in touch with the Air-

AN OXYGEN MASK IS DOUBLE-CHECKED

DR. AUSTIN IS READY FOR HIGH FLIGHT

AERO-MED ENGINEER DODSON SHOWS PILOT LIQUID OXYGEN TESTER

WEARING FULL PRESSURE SUIT, AUSTIN IS STRAPPED INTO F8U-1

borne Equipment Section of the Bureau of Aeronautics and with the Acceleration Laboratory at Johnsville, Pa. In connection with this, he reported his findings to the Aviation Medical Association at their 1956 meeting on "The Accelerative Forces Encountered in Navy Jet Aircraft."

In order to combine his love of medicine and his love of aviation, Dr. Austin decided to do all that he could to help solve the emotional and physiological problems encountered by a pilot in flight. He therefore requested orders to the Test Pilot School at Naval Air Test Center, Patuxent River, Maryland.

His graduation from that school brought him to the Service Test Division of the Naval Air Test Center, Pax River as head of the Aviation Medicine Branch. Here his varied experience in medicine and aviation contributed to his qualification for advanced research. Flying the newest supersonic naval airplanes enabled him to test and evaluate all types of airborne safety equipment.

During 1958, Dr. Austin's chief project and main interest was the Omni-environmental Full Pressure Suit. As a Navy test pilot, he was able to accelerate the evaluation program, spot the deficiencies of the equipment and advise what lines should be followed to procure an acceptable, safe pressure suit.

August 1958, Dr. Austin was in England at the Royal Air Force Institute of Aviation Medicine, and while abroad he went to Brussels to the World Congress of Aviation Medicine to deliver an address on field and shipboard evaluation of the Navy full pressure suit.

Toward the end of April 1958, Dr. Austin went aboard the USS *Forrestal* to conduct high altitude experimental flights in the F8U *Crusader*. Six months later, he joined the Naval Parachute Test Jumpers at El Centro, Calif. and made two jumps—including free fall —from an R4D aircraft at approximately 6000 feet. He was wearing the Mark 3 Full Pressure Suit.

Today Mach Medic Austin is in the process of transfer to Replacement Carrier Air Group Four at Cecil Field. He plans to continue in the field of flying as long as possible. Like all Flight Surgeons, he has one goal: "To keep the Naval Aviator 'ahead' of any flying job he may be called upon to perform." In this he has the full cooperation of his wife. While she might choose for him a more settled life as physician and surgeon, she's right behind him in his whole-hearted dedication to flight medicine.

ACCELEROMETER USED IN TEST IS SEEN ON LEFT SIDE OF HELMET

MACH MEDIC AT HOME WITH STEPHEN, ROBERT AND MRS. AUSTIN

SET FOR SKYNET *are Dallas-based P2V crewmen: L to R Weatherford, AT3; Maier, AE3; Johnson, AOC; Hutchinson, AT2; Scribner, ADC.*

MANIFEST SIGNED *at NAS New Orleans by VS-822 men: Pullara, LCdr. Ruthven, Kremer, Betsay, Clary, Rey, Rafael, McRee, Foise, Holetz.*

RESERVES SCORE IN OPERATION SKYNET

OPERATION SKYNET, a four-day antisubmarine maneuver, is a feather in the cap of the Naval Air Reserve. Held under the auspices of Commander, First Fleet, it was the first post-Korean major fleet exercise to place Reserve aircraft and air crews on equal footing with full-time Regular Navy components. Weekend Warrior participants passed with 'flying' colors.

The war games, conducted off the coast of California, were designed to test ASW defenses. A Blue force of ships and aircraft was pitted against Purple 'enemy' submarines trying to penetrate a 600-mile barrier. Of primary importance was the ability to detect, track and destroy the subs. That the Reserves performed well may be seen from the following plaudits:

★ ★ ★ ★

The spirited and professionally competent Reserve crews in Skynet won their spurs the hard way. Despite severe IFR weather first 30 hours all flight and maintenance schedules were met. The 750 flight hours in four days continuous airops was a tremendous achievement. Well done and come again.

—Commander, First Fleet

The way those tigers tore into the problem, their very real enthusiasm, the professionally competent operation of their complex ASW equipment, and their wonderful crew teamwork are largely responsible for lion's share of credit for our substantial success.

—Commander, Fleet Air Wing 14

I join the Commander, First Fleet, and Commander, Fleet Air Wing 14, in extending my sincerest congratulations to all participants in Exercise Skynet on a job well done. From the glowing tributes paid by the above full-time professionals it appears that once again the Weekend Warriors of the Naval Air Reserve have proved their mettle when the chips were down. To know from actual experience that we have a mobilization back-up force of 'first team' capability is indeed gratifying.

—Chief of Naval Operations

★ ★ ★ ★

VAdm. A. M. Pride, ComNavAir Pac, and VAdm. Robert Goldthwaite, CNATRA, also issued commendatory statements which RAdm. Allen Smith, Jr., Chief of Naval Air Reserve Training passed along to the cognizant squadrons and stations with his personal "Well Done."

Weekend Warrior forces consisted of Patrol Squadron 811 from NAS MINNEAPOLIS and Anti-Submarine Squadron 721 of Glenview, augmented by 'splinter' crews from Dallas, Oakland, Seattle, Los Alamitos and New Orleans. A total of 55 air crews and 36 P2V *Neptune* and S2F *Tracker* aircraft participated in around-the-clock operations, which also included components of the Royal Canadian Navy.

These men shared *Skynet's* success.

MAD TAPE *findings read by Berger, LCdr. Hollis, Clark, LCdr. Morton of Seattle's VS-891.*

LOS AL HUNTERS, *Ltjg. Long, Morgan, LCdr. Dewey, Brownyard, LCdr. Comstock report kill.*

"WE'LL BE *operating here," indicates Cdr. W. D. Wilder to LCdrs. W. R. Ost, R. E. Collins and Chief A. D. Nye, all of NAS Dallas.*

CHART CHECK *by: (front) Ltjg. Winn, LCdr. Quealey, Ltjg. Johnson; (rear) Hise, Johnson, Frace, Lanctot, Moody of VP-891, NAS Seattle.*

WAITING *for the signal to drop a smoke light is James, AEI1, of NAS Oakland's P2V Crew 7.*

MOODY, ATN2, *of VP-891 from NAS Seattle, mans station as radar operator aboard a P2V.*

PILOT RUTHVEN, *co-pilot Lea check out S2F with McRee and Foise (front) at New Orleans.*

ALVIN D. NYE, *ADJC, VP-703 at NAS Dallas, is fondly dubbed "The Old Man of the Air."*

SUBMARINE SIGHTED! *Chief H. L. Daybuff of NAS Oakland sees 'enemy' on P2V radarscope.*

UNDERWATER *detection equipment is released from Neptune by Oakland's W. J. Blacke, AMC.*

MINOR ADJUSTMENT *on an S2F Tracker is made by Mechs L. J. Kolad, Glenview stationkeeper; J. W. McLeese and K. A. Snyder of VS-721.*

EMERGENCY DITCHING *procedures are practiced during Skynet by Lt. C. Hesterman and LCdr. J. R. Anderson of NAS Glenview's VS-721.*

CONSTELLATION AIRCRAFT OF NAVAL AIR TRANSPORT WING PACIFIC HAVE LOGGED IMPRESSIVE RECORD WHILE FLYING WITH MATS

PACIFIC CONSTELLATIONS

By L. E. Heck, J02

IN THE PAST three years of operations with Military Air Transport Service, planes from VR-7 and VR-8 have flown approximately 4000 overseas transport flights. They have flown nearly 45 million miles and amassed about 120,000 hours of enroute flight time, the equivalent of more than nine years in the air.

The two squadrons, based at NAS MOFFETT FIELD, are separate units operating under one wing command—Commander Naval Air Transport Wing, Pacific.

VR-7 personnel fly the line and VR-8 personnel are responsible for the maintenance of the *Super Connies*.

To fulfill their missions both squadrons must practice double-duty teamwork. They must operate together as Navy squadrons and also as members of the Air Force-MATS family.

Their joint mission is first to maintain in being military air transport and certain support facilities necessary to meet approved emergency war plans. Secondly, they must conduct a peacetime operation which will maintain a high state of readiness for a D-Day mission; airlifting cargo, troops, personnel, patients and mail as directed by Commander Western Transport Air Force.

ComNavAirTransWingPac pilots and crewmen keep their *Connies* operating around the clock. The pattern of MATS routes reaches every corner of the world where American interests lie. This is accomplished through the combined efforts of MATS' three divisions — the Pacific, Continental, and Atlantic. As part of this organization, ComNavAirTransWingPac's planes maintain a supply line from California to the Orient and the Middle East.

The southern route passes through Hawaii, Kwajalein, Guam, and the Philippines. From Manila, the Embassy route continues on to Saigon, Bangkok, Calcutta, New Delhi, Karachi, ending in Dharan, where it links with the trans-Europe flights of the Atlantic Division of the Military Air Transport Service.

The northern route proceeds from California west to Hawaii, Wake Island, thence to Tokyo, returning by way of Midway Island to Hickam. During the winter months many of the flights between Tokyo and Hickam operate nonstop, over-flying Midway by using strong jet stream tail winds.

The comfort and safety of passengers is the first and foremost thought of all crew members. Maintaining the airborne status of the *Connies* requires intensive training and much skill. The aircraft commanders and copilots work in close conjunction at all times in flying the plane. Each item is checked carefully prior to flight to guarantee a safe and speedy trip and check-off lists are carefully followed to insure that nothing is omitted.

Pilots are assisted in their work by a skilled enlisted flight engineer who monitors the instruments and gauges connected to the engines and various operating systems. The flight engineer supervises the engine temperatures and pressure and controls the fuel flow, air conditioning and pressurization of the aircraft and provides the power setting that the pilot asks.

A radioman is an essential member of the MATS crew. He maintains contact with ground stations at the departure point or the destination. Position reports and reports on the aircraft's mechanical condition are part of his job. The weather encountered in flight is reported to aerologists so they can better predict the enroute weather for future flights.

The navigator, who is also a qualified Naval Aviator, plots the aircraft's position while in flight. He uses

celestial navigation, loran, and radar to keep the aircraft commander advised of the plane's track and position at all times. Each of three pilots takes his turn at navigating on Navy transport flights.

Flight orderlies are the direct representatives of the aircraft commander, and they are MATS in the eyes of passengers. Their duties are varied and interesting. They are responsible for loading and seating the passengers, and briefing them before take-off, as well as giving a life vest demonstration. During flight there is food and drink to be served, mothers to be helped with their young ones, questions to be answered, blankets to be issued, and information to be provided.

THE *Constellation* is often described as a flying electrical and electronic laboratory. From the automatic pilot to the red flashing grimes lights; from the generator to the tiny blade switches which control prop function; from the compasses that point the way home to the mass of instruments on the flight engineer's panel, these potential trouble points and many others have to be double checked constantly. All these tasks require training.

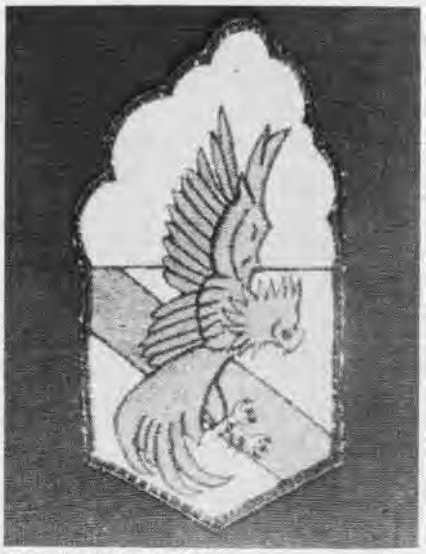
In addition to maintaining a schedule of daily departures, a rigorous training program is constantly underway to train newly-assigned flight crew members and to maintain the existing flight crews in a high state of readiness.

Pilots reporting for duty are already fully-qualified Naval Aviators, but each must receive a complete check-out in the *Connie* before flying as pilot or co-pilot. This check-out includes hours of ground training and instruction in the air.

The *Connies* are powered by four Wright turbo-compound engines and they are among the fastest prop-driven transports now in use. Cruising speed is approximately 280 mph under normal weather conditions.

As personnel carriers for overwater trans-Pacific flights, they carry 76 passengers or, when converted for air evacuation, 67 litter patients. Flying as an all-cargo aircraft, the payload is more than 10 tons.

In comparative size, the big *Connie* exceeds two railroad boxcars in length. If upended, its wings would easily tower higher than a 10-story building.



TWO JET SQUADRONS *from two great nations have a common bond—they use the same mascot and similar names. The Fighting Red Cocks of the U. S. Navy's Attack Squadron 63, insignia at left, and the Fighting Cocks of the British Royal Air Force Fighter Command's Squadron 43, insignia at right, both keep live fighting cocks as mascots. VA-63 flies FJ-4B Furies from USS Midway. Last year Sqdn. 43 took part in Lebanon crisis while VA-63 flew in Quemoy area.*

Marines Move a Mountain

Help Japanese Orphanage Expand

Members of Marine Wing Service Group 17 at MCAF IWAKUNI have literally devoted their off-duty time to "moving a mountain" to help the Garden of Light Orphanage expand its accommodations.

Heavy equipment from MWSG-17 was brought up just before Christmas to move tons of dirt surrounding the orphanage to make room for an addition which will be used for older boys.

When the ground is leveled construction of the needed addition will begin.

Marines have also spent many hours building playground equipment for the children. Swings, teeter-totters, slides and numerous other playthings have been set up.

The Garden of Light Orphanage is located high on a hill some three miles north of Miyajima in the small village of Jigozen. The trail leading up to the home is so small that most vehicles must be left on the main road, requiring occupants to walk the rest of the way. Maneuverability of the tractors enabled them to reach the home.

USS SALISBURY SOUND *(AV-13) renders tender service to unusual brood in Buckner Bay, Okinawa. Moored to the starboard side (inboard out) are destroyers Rowan, Henderson, Gurke, and sub Sea Devil. 'Sally' still carried out seaplane duties. The ship, commanded by Capt. R. L. Fowler, also transported 200 members of the four services on a two-week R&R cruise to Hong Kong. RAdm. P.P. Blackburn, Jr., Commander Taiwan Patrol Force, extended the invitation.*

RANGER MEN TRY THEIR NEW SUITS

LTJG. BROWN MODELS MULTI-LAYER MK. IV

HELMET MAKES BROWN 'MAN FROM MARS'

FLYING ABOVE 50,000 feet is not yet routine, but the fashion-conscious jet man is welcoming everything that makes high flight a safer, easier job. One of the new deals in equipment is the Navy's new Mark IV lightweight pressure suit (NANEWS, August 1958, page 1).

This suit, the latest in high flight equipment, is being tested by VF-142 aboard the USS *Ranger* (CVA-61) in the Far East. The squadron is attached to the Seventh Fleet. No longer are the *Flying Falcons* held to a ceiling of 50,000 feet. They can go right on up in the F8U-1 to its full capabilities.

Getting into the suit is relatively easy even though it has layers. First the pilot puts on waffle weave underwear if he requires cold water survival protection. Next comes special underwear which is required wearing because of its special *triloc* patches used in conjunction with the built-in ventilation ducts in the suit torso proper. A modified Z-3 anti-G suit is next, then the Mark IV torso suit. Accessories are gloves, boots and helmet.

The Mark IV has been tested at chamber altitudes up to 139,000 feet and in flight at over 70,000 feet and has many new safety devices. For instance, if the cabin pressure fails during high altitude flight, the Mark IV automatically retains pressure, thus keeping the pilot at a safe altitude in the suit. It is also possible for a pilot trapped underwater to survive for about five minutes by breathing from the trapped oxygen in the suit.

Among the pilots trying out the new suits on the *Ranger* were LCdr. R. A. Elridge, Lt. R. A. King and Ltjg. H. A. Brown. The squadron is commanded by Cdr. L. R. Mix.

The suit, produced by B. F. Goodrich Company, represents a triumph over such problems as immobility, manual pressurization systems and ejection.

PRCM OFFENHAUGER ASSISTS LCDR. ELRIDGE

TWO PILOTS ARE HELPED INTO THEIR SUITS

CREWMAN GIVES LT. KING FINAL CHECK

IN FOREIGN SKIES

Dutch Carrier Visit

The differences between life aboard a Dutch and an American aircraft carrier were discovered when a delegation from NAS JACKSONVILLE visited the Netherlands carrier *Karel Doorman* which was moored at Mayport.

First noticeable difference was in pay. A Dutch CPO with eight years service draws 120 guilders flight pay and 480 guilders basic pay. Four guilders make one U.S. dollar.

Enlisted men must resign from the Royal Netherlands Navy when they reach the age of 50.

Karel Doorman's wine cellar, located below the waterline to keep hard liquids cool, contained some 3000 cases of hard beverages and 2100 cases of beer. Beer is drawn from Ship's Stores at 1215 to 1230 and 1800 to 2100. Approximately 60 cases are sold during a week at sea.

Lemon drink is the most popular whenever beer cannot be procured.

Feeding is the same as in the U.S. Navy except that most Dutch sailors use a stainless steel bowl, oversized, into which all food is placed and mixed together. Some three-section plates were also used.

A typical meal is one of pork chops, potatoes, salad, caplizyners (small round beans), and fruit or pudding for dessert.

Clothing stores are on the same order as aboard American ships. Shoes sell for about $3.50 American money and uniforms about $11 American money.

Haircuts aboard the Dutch flattop are four cents American money while a shave costs two cents.

Tea time is 1445 and coffee is served at 0945.

In observing the Dutchmen shop at the Navy Exchange in Jacksonville, it was noticed that they were frugal in their purchases, shying from knick-knacks. For souvenirs they preferred Teddy bears, fountain pens, postcards.

Supersonic Wind Tunnel

A new supersonic wind tunnel, capable of testing models at three and a half times the speed of sound, is now working at the British Aircraft Research Association's premises at Bedford, England. Speeds up to four times that of sound may be possible.

A 13,750-hp motor provides the "wind" through the tunnel which is two and a quarter feet wide by two and a half feet high. Models up to 30 inches long can be tested. At this size, the results are realistic enough to provide information about the behavior of full-size aircraft.

Measurements of the strain on the models are made automatically on cards that are analyzed by a computer.

Five-Seater Helicopters for RN

The British Ministry of Supply has placed a pre-production contract for Saunders-Roe P531 five-seater helicopters for the Royal Navy. The helicopter is powered by a Blackburn turbo-600 turbine engine and has a cruising speed of 100 knots and a maximum range of 210 nautical miles.

It is suitable for a number of roles, including liaison, freighting, reconnaissance and air/sea rescue missions.

RADM. T. B. CLARK, *Commander Fleet Air Wings Atlantic, inspects the Bermuda Cadet Corps Bagpipe Band in connection with his inspection of VP-49, based at Bermuda. Boys receive special training to qualify for the band.*

THE MACCHI *M. B. 326, an Italian designed and built two-seater trainer is powered by the Armstrong Siddeley Viper turbojet engine (1750-lbs. thrust). With a weight of over 6500 pounds, it has a range with tip tanks of 750 miles and a maximum speed of 430 knots.*

ChiComs Graduate Women Pilots

According to the ChiCom Press, a second group of 21 women have been graduated from aviation school and assigned duties with the aviation enterprises as pilots, navigators and radio operators.

The Press boasts that the women mastered aviation techniques in a little over one year of training. According to the report, each graduate of the pilot class has had an average of 110 hours of flying in eight months, while each of the navigators had 96 hours.

POWER PLANT FOR POLARIS

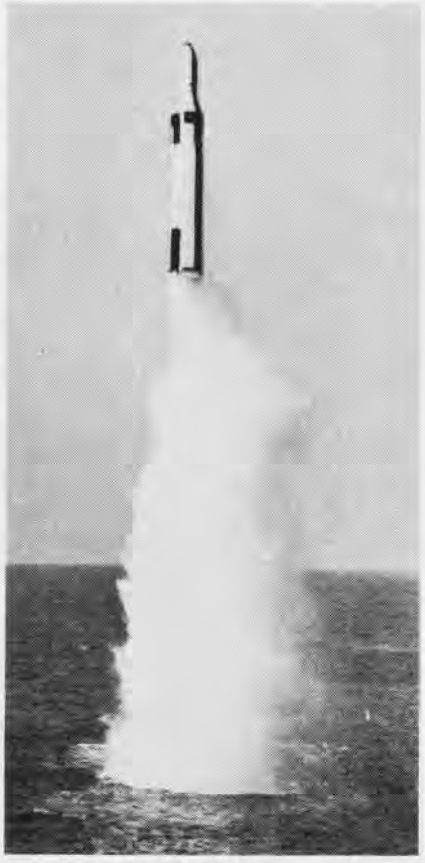
DEVELOPMENT of the Navy's *Polaris* Fleet Ballistic Missile gives America a revolutionary new dimension in deterrent power. It represents historic breakthroughs in our nation's missile effort.

Breakthroughs included those made by the Navy and the Aerojet-General Corporation of Azusa and Sacramento, California, in the field of solid propellant rocketry.

Aerojet was given the job of developing a compact, reliable and easy-to-handle SOLID fuel rocket capable of propelling the *Polaris* 1500 miles. The missile is intended to be launched from a nuclear powered sub, and its payload is a thermonuclear warhead.

That word SOLID was the challenge. As recently as two-and-one-half years ago, solid fuel rockets were regarded as completely inapplicable to 1500-mile Ballistic Missiles, because of the low impulse of solid propellents. Known solids simply did not have enough "punch-per-pound" to make a ship-borne IRBM feasible. It would have taken an unacceptably bulky rocket to do the job. Liquid fuel rockets on the other hand involved handling temperamental substances under tremendous pressures. Liquid oxygen would have to be handled at minus-300-degrees temperature. Added to this, liquid oxygen is also highly volatile—then apply these factors to shipboard conditions and it's easy to see the problems that would arise.

The Navy could not accept these



conditions. Its investigations into possible new solid rocket technologies were augmented. Aerojet-General, as the propulsion subcontractor to Lockheed's Missile Systems Division, was assigned the main task.

Early in the joint Army-Navy *Jupiter* program, the Navy commenced a parallel solid propellant motor development program to replace as soon as possible the liquid propellant motor of *Jupiter* with a safer and more reliable solid fuel version.

The original design of the *Jupiter S* (S for solid) called for a multi-stage clustered solid propellant power plant of enormous size.

Working with valuable information already available from earlier Navy work, an Aerojet scientist, **Dr. Karl Klager,** headed up the propellant work that led to solid fuels of higher specific impulse. Solids now had the punch to do the job. Klager won the Navy's Distinguished Service Award for his vital work on the *Polaris* propellant. He is a former German chemist who was brought here under Operation *Paperclip* after World War II.

Klager was only one member of the truly "All-American" team at Aerojet that contributed to *Polaris'* birth.

A cross sampling of some others:

Richard D. Geckler, Aerojet Vice President and Manager of the Solid Rocket Plant, a Phi Beta Kappa engineer from DePauw University, provided the over-all leadership for the project.

Dr. Ernest R. Roberts, Swiss-born mechanical engineer and Associate Manager of the Solid Rocket Plant, supplied valuable technical guidance and handled the task of setting up facilities for the development project.

THE POLARIS (ABOVE), WITH AN ARTIST'S AID, APPEARS TO HAVE BEEN LAUNCHED FROM A FUTURE BALLISTIC MISSILE SUBMARINE

AEROJET ENGINEER F. S. MILLER BESIDE NAVY ROCKET ENGINE

DEVELOPMENT OF SOLID FUEL ENGINES WAS MAJOR BREAKTHROUGH

Dr. Werner Kirchner, a former Polish Air Force and RAF fighter pilot is Project Manager for the *Polaris* and also Associate Manager for Research and Development of the Aerojet Solid Rocket Plant. An expert on solid rocketry, Kirchner was the man closest to the actual detailed engineering on the rocket project.

Alfred Schaff, born in Panama, and a former commercial airlines pilot with a Master's degree in engineering, headed up the early testing and now manages Technical Services on the project.

David Wang, whose father was a long-time diplomat for the Republic of China, provided resourceful engineering for *Polaris'* design aspects.

These few illustrate the diverse backgrounds of the men who made the *Polaris* rocket a reality. Many others had important roles.

Increasing the specific impulse of the Navy propellant was only one of the major gains accomplished.

One of the toughest problems was that of thrust termination. To assure accuracy of the missile hitting the desired impact area, thrust must be controlled and shut off precisely at some given instant.

This problem has been solved by an Aerojet patented invention which is still classified.

Then there was a problem of heating and erosion of metal at the aft end of the rocket motor, particularly at the rocket's nozzle.

Few materials or combinations exist that can withstand the tremendous heat (thousands of degrees) and the huge flow of gases at the nozzle end. New metals had to be found.

It took literally thousands of Navy sponsored static test firings of rocket motors at Aerojet's Sacramento plant to examine many combinations of conventional and exotic metals and nonmetals, in the company's search for those which could withstand such heat.

During this search for durable substances, Aerojet engineers had to keep in mind an important associated problem, that of reducing the weight of the inert metal parts.

They searched for stronger, but lighter rocket casings, so as to allocate as much as possible of the total weight of the rocket (thousands of pounds) to the propellant.

The Navy's *Polaris* solid fuel rocket gives America a truly push button power plant leading the way which others are now following. It is quite simple in construction.

Visualize an ordinary tin can filled with a tough black rubber. Down the middle of the rubber, running the length of the can, is a star-shaped hole. That's what the inside of the *Polaris* looks like.

TEST POLARIS IS LAUNCHED AT CANAVERAL

The star-shaped pattern, or grain configuration, was adopted to provide a larger burning surface than would have been afforded by a simple cylindrical core.

Aerojet, a subsidiary of the General Tire and Rubber Company, utilized some important chemical know-how of its parent firm on the *Polaris*. General Tire had done much work with polyurethane—the synthetic substance from which foam rubber is made.

Aerojet scientists, advancing on earlier work by the Army-sponsored Jet Propulsion Laboratory, found that polyurethane, with some changes, was an ideal binder for solid propellant. Thus today, crack-resistant, easy-to-fabricate and relatively cheap polyurethane is used in the *Polaris* rocket.

In addition to thousands of static firings of small and large rockets in connection with the *Polaris*, many other kinds of tests are given the rocket.

At Aerojet's Sacramento plant there is a structure called the Environmental Test Building. In it, rockets are subjected to tests to determine their ability to withstand long storage at sea; they undergo speeded up aging and they are subjected to heat and cold and to vibration.

When Polaris rockets reached the flight test stage, they were perhaps the best checked-out hardware in America's arsenal—weapons that will give the Navy global nuclear power from hidden, mobile bases at sea.

Navy-Marine Medal Won
Awarded to VA-112 Man for Rescue

Ronald E. Johme, AM2, NAS MIRAMAR, has been awarded the coveted Navy-Marine Corps Medal, highest peacetime award for heroism, for his part in saving the lives of two drowning swimmers.

Johme and David E. Hare, AD3, both of Attack Squadron 112, were relaxing last summer at LaJolla Shores Beach, LaJolla, Calif., when they heard cries for help. They dashed into the water and swam out to assist two swimmers who had been pulled out to sea by a strong rip-tide.

A 90-yard swim brought Johme to the first of the two young men in trouble. As he attempted to assist the struggling victim, he was grabbed around the neck and pulled under water several times. "The guy really gave me a rough time trying to fight me," Johme recalled. "If Hare hadn't come along just then, I don't think the drowning man could have been saved."

Hare and Johme began swimming toward shore with the victim. They had gone about 10 yards when Johme sighted a second man floating face down in the water. Nearly exhausted, he went to assist the stricken swimmer and left Hare to carry the first man in alone.

He turned the unconscious victim over on his back and began pulling him toward shore. Gene Wheeler, seaman from VA-112, threw a rope to him and pulled him through the final 10 yards of turbulent surf, then assisted Hare in getting his man safely to shore.

CDR. M. M. CASEY PINS MEDAL ON JOHME

Although nearly unconscious from exhaustion, Johme began applying artificial respiration and revived the man as local life guards arrived with resuscitation equipment.

Johme then passed out himself. He awakened in an ambulance at the entrance to Balboa Naval Hospital and was released to his squadron two hours later.

Cdr. M. M. Casey, VA-112 skipper, pinned a medal on Johme and presented him with a Presidental Citation. Hare has been recommended for a similar award. The citation read in part:

"His outstanding courage, perserverance, and complete disregard for his own safety in saving the life of one victim and contributing greatly to the rescue of another were in keeping with the highest tradition of the United States Naval Service."

Two HSS-1N's Delivered
All Weather 'Copters Go to HS-7

Two Sikorsky HSS-1N helicopters, which incorporate automatic hovering equipment and "doppler" ground speed indicators, have been delivered to Helicopter Anti-Submarine Squadron 7.

New instrumentation permits the HSS-1N to fly to the dip position and remain so with the pilot's hands away from the controls. It also gives an accurate indication of its speed.

Jet Helicopters Coming
Kaman Gets Additional HU2K Order

Negotiations have been completed with Kaman Aircraft for a follow-on order of approximately $14-million for HU2K-1 helicopters.

The HU2K-1 is a high-speed, all-weather helicopter. It is powered by a GE T-58 gas turbine engine and is equipped with automatic stabilization equipment. It has retractable landing gear, a four-bladed main rotor and Kaman's servo-flap control system.

The HU2K was developed to meet the Navy's need for a high performance, all-weather helicopter to be used for a variety of missions.

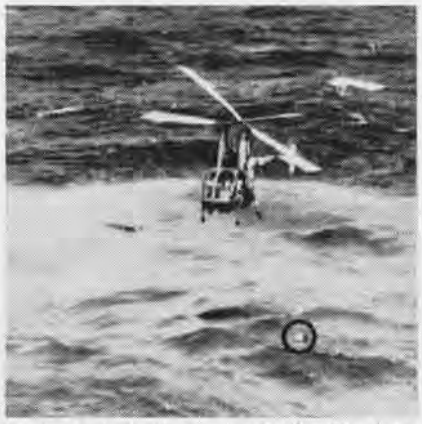
The basic helicopter is designed so that it is able to perform rescue, carrier plane guard, litter evacuation, transport of externally slung cargo, personnel transport, and observation-reconnaissance missions.

A special feature will be its self-contained flotation equipment capable of filling emergency flotation bags with gas at 20°C within two seconds.

GCA UNIT 32 *recorded its 40,000th GCA approach at NAS Glynco, Brunswick, Ga. T. D. Thomas, air controlman first class (C) controlled the approach. Skipper of the station is Capt. J. T. Moynahan, USN.*

T. L. CRITTENDEN, *BM2, is congratulated by A3D-2 pilot, LCdr. J. L. Underwood, on his qualifying for aircrewman's wings. The general service bos'n had five months navigation school and four months squadron training.*

JET FIGHTER *pilot, Capt. Dave Hess VMF-(AW)-314, is shown a log listing of his CGA landing, the thousandth for the month for Tactical Control Squadron 66, South Taiwan. Sgt. L. R. Sederling talked Capt. Hess down.*



MINUTE MOVIE *of a Navy pilot's rescue from the sea is depicted in these shots. At left, LCdr. Joseph L. Reilly, Jr., of HU-2 arrives over crashed AD-5 flown by Ltjg. Neil R. Hopkins who crashed immediately after being launched from USS Wasp. Center, rescue seat is lowered to pilot. Right, the recovered pilot is returned to his ship. The entire operation was accomplished within sixty seconds.*

ANIP Has New Addition

Called Radar Data Scan Convertor

A device which converts radar signals into television-like displays which allow pilots to perceive depth of surrounding space outside an aircraft has been developed by Allen B. Du Mont Laboratories, Inc.

Another advance in the Army-Navy Instrumentation Program (ANIP), under the direction of the Office of Naval Research, the development will permit pilots, when flying "blind," to view targets or objects in a perspective relative to their distance from the aircraft. The third dimension is achieved by special electronic processing of returning radar signals. This causes closer targets to appear more brightly on the picture tube. Brightness decreases in discrete steps as the range to the target increases.

Called the Radar Data Scan Convertor, the equipment presents a continuous, flicker-free, television type picture for cockpit display. Incorporating this device with an earlier Du Mont ANIP development—an electronic system which allows the pilot to see his mid-air position in relation to the earth's surface—the operator of the aircraft looking at the display will have the same perspective view of objects in front of him as he would if he looked out the cockpit window. The chief difference is that the objects on his screen will not appear exactly as they are, but will be symbolically displayed in proportion to the physical features of the terrain of which they are a part.

Both equipments were developed under subcontracts to the Bell Helicopter Corp. Present endeavors are being directed toward helicopter studies, but it is expected that the techniques will have fixed-wing applications.

Work continues in the program to achieve the goal of producing the ideal "man-machine" combination and includes basic studies in human engineering, computation and control.

Sperry to Provide Radar

Terrier-Armed Ships to Get Sets

The Navy has awarded Sperry Gyroscope Company a $51.9-million contract for production of radar sets which will be installed aboard some *Terrier*-armed guided missile ships under present shipbuilding programs.

Terrier is operational on USS *Boston*, USS *Canberra* and USS *Gyatt*. Future ships which will have *Terrier* capability include two *Forrestal*-class carriers, three guided missile cruisers, one nuclear-powered cruiser, 19 guided missile frigates, one nuclear-powered guided missile frigate and one nuclear-powered aircraft carrier.

FIRST MILITARY *pilot to fly the XRON-1 Rotocycle is Marine Maj. D. R. Segner of the Flight Test Division, NATC Patuxent River, Md. XRON-1 was built by Gyrodyne to be used for observation, liaison and unit tactics.*

CNATRA Flies in New T2J-1

Training Command to Use Plane

VAdm. Robert Goldthwaite, Chief of Naval Air Training, made an evaluation flight in the new T2J-1 trainer. During the flight, the admiral put the trainer through the various maneuvers that a cadet would be expected to perform on a routine flight.

The T2J-1, to be introduced in the Basic Training Command during the summer, will be used in all phases of basic training. This includes radio instrument flying, tactical training in gunnery, bombing and rocketry.

The aircraft is a tandem cockpit, single jet, midwing tricycle landing gear training plane designed for both land and carried-based operations. The design characteristics and performance are such as to acquaint a Navy student pilot with those of present day Navy high performance jet fighter aircraft.

The T2J-1 uses the North American designed and developed low altitude ejection system. This system allows a pilot to eject himself from an airplane whenever his airplane has a forward airspeed of 75 knots, either on the ground or in flight.

Adm. Goldthwaite said, "The T2J-1 handles wonderfully. I am looking forward to its introduction in training."

Pensacola History Ready

The Service Information Office at NAS PENSACOLA has published a pictorial history of the city and the air station entitled *From Pirates to Pilots*. The blue and gold covered book will be of special interest to the thousands of young men who have been trained at the famed air station.

The story of Pensacola from as far back as 1492 is given in an interesting, easy manner. The booklet contains not only the facts, but the interesting legends that relate to the area.

The well-illustrated history book is dedicated to Naval Aviation. It is being distributed through all Navy Exchanges and sells for $1.75.

JAG Journal

Law has always been an intrinsic part of the Navy. Most people who wear the Navy blue today are familiar with the *Uniform Code of Military Justice* and the *Rules of the Road*. They know that the Legal Assistance Officer is a handy man to have around. Pilots abide by Airway Control Regulations and try to avoid becoming the subjects of Aircraft Accident Reports.

There's much more to it than that, of course. *U. S. Navy Regulations* include many articles dealing with the Navy's responsibilities under international law. Whereas the private citizen looks to the law only to see what is prohibited to him or required of him, the Navy man looks to it for his authority to act. Naval officers in particular must keep themselves legally forehanded.

Thanks to the Office of the Judge Advocate General of the Navy, the best information available is as close as the nearest JAG Journal. This monthly magazine puts out the word in articles authored by top experts in the field. Much of the material should be a must on everyone's reading list. For example, past issues have carried such important topics as Defense Department Reorganization, Legislation for the Jet Age (FAA) and a Symposium on Space Law.

Every issue includes articles of particular interest to the Naval Aviator. A Symposium on Nuclear Propulsion ran in April. With USS *Enterprise*, the first nuclear carrier, in the offing, the topic is timely. In the future, there will be features on the Reorganization Act as it pertains to the Navy, Aircraft Accident Investigations and the latest legislation. All these, in addition to the latest court-martial procedures, tax helps and legal assistance notes appear regularly.

JAG Journal should not only be perused by the legal-types at your ship, station or squadron. It's valuable reading for the entire air Navy.

Veteran Visits VMF-235

Early Marine Pilot at Beaufort

Fifty years after he received Marine officer training in the Beaufort area at Parris Island, Col. Francis T. Evans, USMC (Ret), the second oldest living U.S. Marine Corps aviator, came back to Beaufort to visit.

Col. Evans was the fourth aviator in the Marine Corps and the 26th to be trained by the Navy at Pensacola, Florida. He took flight training in 1915 when he flew the early bamboo and wire machines along with such famous contemporaries in Navy and Marine Corps Aviation as Geiger, Cunningham, Read, Saufley, Cabaniss, Mitscher and Corry. On 13 February 1917, Col. Evans became the first pilot to loop a seaplane despite the fact that the experts said it was an impossible feat. He received the DFC in 1936 in recognition of this exploit.

EVANS MEETS ONE OF TODAY'S JET PILOTS

At MCAAS BEAUFORT, he inspected VMF-235's flight line of *Crusaders* and compared their performance to the 100-mph crates of his day. Col. Evans' son, Capt. D. K. Evans, USAF, is serving with VMF-235 as an exchange pilot.

Navy Receives Film Honor

Vision Deficiencies are Theme

British Ambassador Sir Harold Caccia has presented the U. S. Navy an Edinburg International Film Festival

AMBASSADOR GIVES RADM. HINES AWARD

Certificate for the Bureau of Medicine and Surgery film, "Color Vision Deficiencies." About 30 nations were represented at the Festival last year.

The 16 mm. color film with sound was produced for the Navy by Audio-Production under the supervision of the Naval Photographic Center. Technical advice was furnished by BUMED.

The certificate was accepted for the Navy by RAdm. W. T. Hines, Deputy and Assistant Chief of the Bureau of Aeronautics. This was the 35th national or international award the Navy has received for motion picture film excellency.

Color discrimination plays an important part in the performance of Navy pilots, carrier and ground service personnel, and maintenance crews concerned with radar and radio circuits and with other devices which carry color codes for identification. It is important to detect deficiencies in color discrimination since such deficiencies may jeopardize lives.

Color vision deficiencies and three types of color vision defects are defined in the film. The film shows how the color spectrum and normal colored scenes appear to persons with defective color sensing. It will be used jointly by all military services.

LT. CHARLES HATFIELD DISCUSSES LTJG. B. R. JONES' FAM HOP

CAPT. W. P. HUTCHINS GIVES BRIEFING TO LTJG. D. L. ELAM

FROM HELLCATS TO FURIES

OPERATION Change-Over, an extensive training program for Detachment Bravo of Utility Squadron Five, to familiarize them with the FJ-4 *Fury* jet, took place at NAS ATSUGI, Japan.

The Detachment, based at Naha, Okinawa, provides high-speed tow and tracking services, and until the transition, flew F6F *Hellcats*. During a two-week stay at Atsugi, the pilots were given instruction in maintenance and operational characteristics of the swept-wing jet by members of Marine Fighter Squadron 232, who have had *Furies* since January 1957.

A three-day ground school session included lectures and demonstrations on the electric and hydraulic systems, aerodynamic characteristics and emergency procedures. Each pilot received additional training in an FJ-4 flight simulator which can duplicate almost every possible operation and emergency that might be encountered in flight.

The final phase of *Change-Over* was a series of familiarization hops in the jet, with a Marine flying wing. Each VU-5 pilot logged about six hours.

While the aviators were going through their paces, the VU-5 ground crews met daily in the Aviation Training Building for classes in maintenance. Representatives from North American Aviation and the Wright Aero Division of Curtiss-Wright, manufacturers of the aircraft and the engine, did most of the teaching.

The official transfer of five *Furies* from the Marine squadron to the Navy Detachment was accomplished after holding a joint inspection of the jets.

MAINTENANCE MEN OF VU-5 AND VMF-232 INSPECT FJ-4 FURY BEFORE NAVY TAKES IT OVER

LT. A. C. TOMLINSON PULLS THE CURTAIN

VP-47 CREWMEN KEEP MARLINS AIRWORTHY

A 38-TON MARLIN IS EASED INTO THE WATER TO BE LAUNCHED

BEACH CREW USES TRACTOR, STEEL CABLE TO TOW P5M UP RAMP

O'HARA, ATN3 (L) AND LEONARD, AD3, ATTACH BEACHING GEAR

VP-47 BEACHING CREWS HAVE CUT RAMPING TIME TO 10 MINUTES

UNTIL SOMEONE devises an automatic gimmick that will permit push-button launching, beaching and "de-salting" of seaplanes, the present high state of the art as practiced by VP-47 might serve to illustrate the ultimate in manhandling and maintenance of flying boats.

The Alameda-based squadron, flying P5M-2 Martin *Marlins*, looks to its small beach crew as the best of its type in the Navy. Its Operations Officer, LCdr. C. W. Gibbs, points to a recent feat of launching all 11 of the squadron's big *Marlins* in less than two hours as a singular achievement which he believes few seaplane squadrons can equal.

In the air, the P5M is a graceful aircraft, handling and maneuvering easily. Carrying the latest in electronic equipment, its potent ASW capabilities are further enhanced by its ability to operate anywhere there is a sheltered stretch of water.

The *Marlin* is also at home on its secondary habitat, the water. By use of hydroflaps and reversible pitch propellers, maneuvering on water is accomplished without difficulty. By way of explanation, hydroflaps are water brakes which can be extended on either side of the after hull area.

It is when the props quit turning that the twin-engine, long range *Marlin* sheds its glamor and the work of VP-47's 25-man beach crew gets underway.

After each flight, beaching gear is attached and the aircraft is towed ashore. This takes patience, muscle and know-how.

The same procedure is necessary in the case of a major gripe since maintenance is difficult if not impossible while the aircraft is waterborne.

Inasmuch as the seaplane cannot be taxied on land, the opposite end of flight operations presents the same workload

CHIEF R. H. McCROREY, (R), INSTRUCTS MEN IN USE OF WINCH

P5M-2 IS UNIQUE AMONG ASW PLANES. IT CAN OPERATE FROM PROTECTED BAYS OR COVES WITHOUT REQUIRING AIRFIELD NETWORK

requirement. Each of the 11 *Marlins* must be carefully moved from a ramp spot and eased into the water. Average time for this operation is 10 minutes.

Aside from maintenance and the wrestling of the 38-ton seaplane, a major problem is salt water corrosion.

Once again, the beach crew has the ball. As part of a corrosion prevention program, each aircraft is thoroughly washed with fresh water every time it is brought ashore. The result has been a substantial reduction in the adverse effects of salt water and increased efficiency of VP-47 flight operations.

So it goes with a vital role in a vital ASW picture—salt water, launch and recovery operations, and maintenance—it's all in a day's (and night's) work for the beach crew.

BEACHING CREW WASHES OFF SALT WATER

LCDR. GIBBS AND CHIEF McCROREY INSPECT BEACHING GEAR, DISCUSS IMPROVEMENTS

LETTERS

WRIGHT-DORNIER PURCHASED BY THE NAVY

XF6C-6, OR CAPTAIN PAGE'S NAVY RACER

SIRS:

Several historical types have pointed out two omissions in the article "High Wings are Back in Style" which appeared in your September 1958 issue. I would like to point out that both high wing aircraft involved, the Wright-Dornier WP-1 and the Curtiss XF6C-6 were considered when the article was prepared, but were not included since neither project was intended to provide a possible service fighter aircraft, in spite of their designations. Both were interesting Naval aircraft, however, and you may be interested in publishing the following comments and the enclosed photos of them.

The Wright-Dornier WP-1 (Wright *Pursuit*) was built in Switzerland by a subsidiary of the German Dornier firm in the early twenties and imported by the Wright Aircraft Company as a possible production model at a time when they were interested in entering the airframe production field. After demonstrations in this country, it was purchased by the Navy. Of prime interest was its all-metal, cantilever wing design which represented a considerable advance over contemporary service aircraft construction.

The Curtiss XF6C-6, or *Captain Page's Navy Racer* as it was referred to even in Curtiss Company documents, was a much modified Curtiss F6C-3 *Hawk;* it was built as the Navy's entrant in the Thompson Trophy Race of the 1930 National Air Races. The lower wings were removed, a Curtiss *Conquerer* engine replaced the Curtiss D-12, wing surface radiators as used on the very successful Curtiss Navy racers of the mid-twenties were installed and every effort made to provide maximum drag reduction by incorporating streamline fairings at intersections and refairing the fuselage lines.

Marine Captain Arthur H. Page flew the XF6C-6 in the race and was well ahead of the field when the airplane crashed in the 17th of 20 (?) laps with fatal injuries to Capt. Page. I believe that carbon monoxide poisoning was considered the most likely cause of the accident.

Thus, while these two types were designated as fighter type aircraft, their place in Naval Aviation history is not among fighters being developed for service use.

HAROLD ANDREWS
BuAer. AD Division

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REUNION NEWS

ATTENTION, all members — past and present — of VC-3, VX-5, CAG-15 and CAG-19! The Fourth Annual Reunion of former Moffett Field Aviators will be held at the Naval Air Test Center, Patuxent River, Maryland, on 23 May 1959 in the Officers' Club at 1900.

The First Reunion was held there in 1956. Each one since has been bigger and better.

Aviators planning to attend are urged to send a postcard to Lt. W. L. Murphy, Armament Test, Naval Air Test Center, Patuxent River, Md. Wives are welcome to join in the fun.

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FIRST WRAP-AROUND *cover in NANews History shows A4D Skyhawks refueling with Buddy system. This unusual shot was taken by Light Photographic Squadron 62 while it was stationed aboard Attack Carrier Randolph.*

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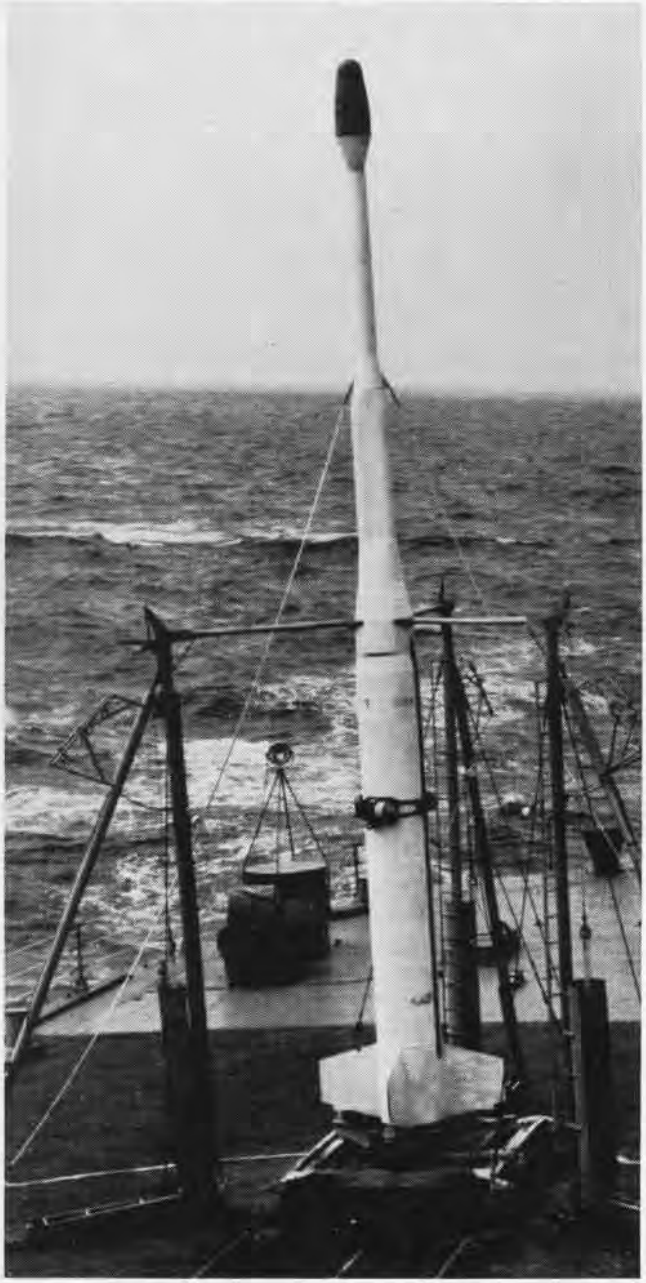
POLARIS MISSILES IN PROJECT ARGUS



Aboard the U. S. Navy experimental missile ship, USS Norton Sound (AVM-1), in the south Atlantic, an unarmed, modified Polaris test vehicle (left) stands ready for launching. Night firing from ship shows one of three Polaris missiles carrying low yield atomic bombs launched during Project Argus in August and September, 1958. The series of 300-mile high atomic blasts was part of a scientific program to increase basic knowledge of outer space, test scientific theories about the earth's magnetic fields and investigate high altitude effects of military interest. The successful experiments were conducted by the Navy for the Advanced Research Projects Agency.

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