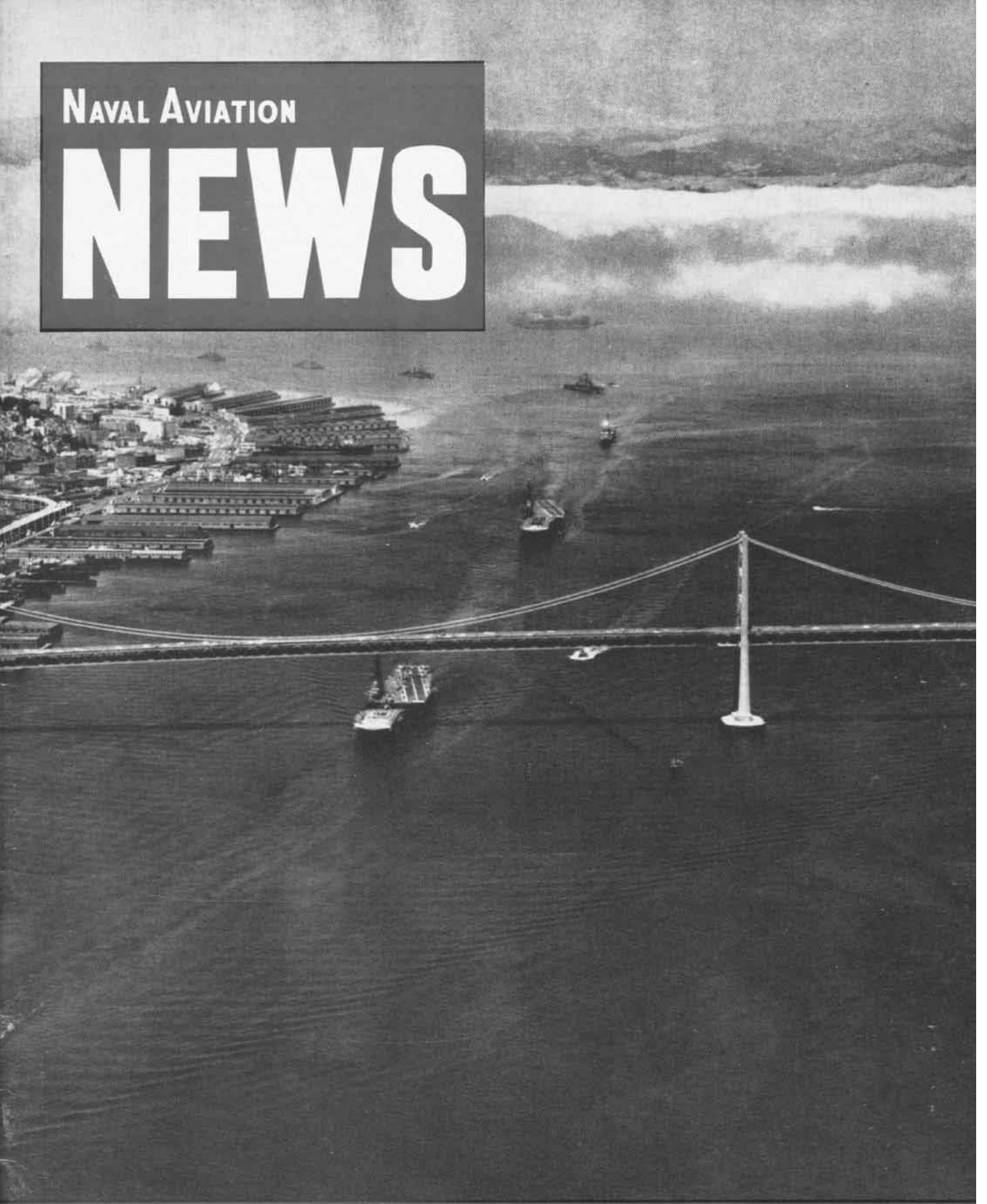


NAVAL AVIATION

NEWS



41st Year of Publication

DECEMBER 1959

NavAct No. 00 75B 3





'CHOW CALL' OVER THE ESSEX

Linked by the refueling line, four A4D's from VA-106, based on USS Essex (CVA-9), displayed their skill in this maneuver. During the three-day strike exercise portion of Operation 'Crescent Mace,' the 'Gladiators' required tanking for 13 of 19 missions. These 1959 CNO Safety Award winners fully demonstrated the capability and flexibility of their small but potent Skyhawks.

NAVAL AVIATION

NEWS

FORTY-FIRST YEAR OF PUBLICATION, DECEMBER 1959

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■ THE STAFF

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■ COVER

Aerial view of the First Fleet entering San Francisco Bay was taken from a UF-1 by LCdr. K. J. Mackie, NAS Alameda Photo Officer, and Chief John Zaplishny, co-pilot. Chief Al Labendz, station photo lab, provided the negative, and the U.S. Naval Photographic Center, the required enlargement.

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NAVAL AVIATION NEWS



HARE-Y HOPI! A low-flying Blue Angel soloist in an F11F Tiger caused thousands of frightened and confused jackrabbits to stampede at the Seventh Annual Air Fair at NAS Oakland. A San Francisco Chronicle photographer caught the unusual sight. The scared hares stole the show.

New Dip Sonar Developed Has Increased Range, Performance

A new, light-weight, long-range helicopter-borne submarine detection device has gone into limited production. Fleet evaluation tests for the system are scheduled for January and volume production is expected later in 1960.

Called AN/AQS-10, the device is a 360-degree active scanning sonar with a range in excess of 10,000 yards and is comparable with shipboard sonar.

Dunked from a Sikorsky HSS-2 ASW helicopter by a cable, the device presents visual range and bearing information, as well as audible signals, to the sonar operator and the pilot.

The new sonar's increased range makes it possible for the all-weather helicopter to cover a search area well over 10 times that searched by current dunking sonar. The increased range also multiplies the speed at which a searching helicopter can advance, mak-

ing the helicopter capable of tracking even the fastest submarines.

Each "ping" transmitted by the AN/AQS-10 covers a 180-degree arc, two transmissions covering the entire horizon. Equipment now in use covers only 10 degrees with each ping, requiring 36 transmissions to cover a 360-degree horizon.

The new sonar was developed by the Pacific Division of Bendix and is produced under a sub-contract with the Sikorsky Division of United Aircraft.

Advanced J-57's Ordered Will Power the F8U-2N Crusader

Advanced J-57 engines to power the F8U-2N Crusader have been ordered under a \$27.3-million Navy contract awarded to Pratt & Whitney.

The F8U-2N is a limited all-weather jet fighter. Basically a development of the F8U-2, it features increased capability for finding and destroying targets in darkness and bad weather.

Radio Net is Operational AFOTC Connects 38 Commands

A new operational teletypewriter circuit has been put into operation in the Atlantic Fleet to expedite high priority messages such as unidentified submarine investigations, weather, and flight information reports.

Called AFOTC (Atlantic Fleet Operational Teletypewriter Circuit), it links 38 Atlantic Fleet seaboard commands from Brunswick, Maine, to San Juan, P.R.

AFOTC can send and receive up to 100 words per minute and it handles up to 108 stations. The headquarters of RAdm. Thurston B. Clark, ComFAirWingsLant, at Norfolk is the common terminal for the system's three networks; northern, central and southern. The new message capacity is three times that of the old.

Under AFOTC a station may store messages for automatic transmission, eliminating the need for the teletypewriter operator to stand by his machine continually for a clear line.

AF Cites Airship Officer LCdr. Cabral Helps Perfect SAGE

A Naval officer assigned to Airship Early Warning Squadron One has received special commendation from Air Force General G. L. Pritchard, Commander of the New York air defense sector. LCdr. John R. Cabral, AEW officer of ZW-1, was cited for "distinguishing himself by meritorious service as AEW control officer for ZW-1 in the first operational SAGE sector in the air defense command.

"During a 15-month period LCdr. Cabral was responsible for training and indoctrinating 26 officers and 42 air control men in the SAGE environment. LCdr. Cabral spent many hours in the direction center observing exercises and monitoring operational procedures for the blimp on AEW station 16 to improve the operations of his personnel in the Air Defense complex, and coordinating reporting procedures and seaward communications with SAGE."

P3V Production to Begin Lockheed Awarded Fourth Contract

A \$67.8-million contract for production of P3V-1 turbo-prop ASW planes has been awarded to Lockheed Aircraft Corporation. The contract amends the \$10.4-million pre-production contract let in September 1958 which provided for preliminary design, engineering and long lead time items developed for the P3V-1.

Two earlier contracts provided approximately \$10.2 million toward the P3V-1 program—\$2.2 million as a research and development contract covering design studies and mockup, and approximately \$8-million for the system's YP3V test vehicle, a modification of the commercial *Electra*.

The P3V-1 will operate economically at required altitudes and will be able to use the same length runways as the present ASW landplane, the P2V.

Hard Heart or All Heart? Sailor on Lex Sends Toys to Kids

He describes himself as the "meanest man in the Navy" but his shipmates know better. In fact, children all over the Far East refer to him as "the toy man."

Providing toys, handicraft material and hobby kits for orphans and sick children throughout the Orient has become an almost full-time job for five-hashmarked Ray H. Rennert, Machinist's Mate First on the *Lexington*.

The veteran of four years service on the *Lexington* in the Pacific says, "I like kids and I like to see them happy."

Rennert runs the ship's hobby shop. For several years he has kept his eyes open for projects half finished or abandoned. After a reasonable waiting period, he turns them over to charitable organizations in each of the ship's ports of call. They are in turn distributed to needy kids.

Rennert has won the support of other *Lex* crewmen. He had received donations in the form of airplane models, boat models and leather goods.

Named 'Instructor of Year' Title Goes to Lt. Harrison, BTG-9

Lt. Stuart E. Harrison has been named "Instructor of the Year" for BTG-9, the Navy's first basic jet training group located at Forrest Sherman Field, NAS PENSACOLA.

For the last 31 months, Lt. Harrison

has flown more than 1200 hours of accident-free instruction time. In addition to his duty as flight instructor, Lt. Harrison has spent additional hours assisting in the formation of T2V plans, policies and procedures.

Since the arrival of the T2J *Buckeye*, Lt. Harrison was selected to participate in the Fleet Introduction Program of that particular aircraft.

Helos Land on Submarine Lift Marines to Pendleton Beach

The element of surprise was demonstrated at its peak efficiency when pilots from HMR-363 heli-lifted a detachment of the First Reconnaissance Battalion from Camp Pendleton to the submarine *Carp* and then back to their staging area at Pendleton.

Pilots had less than two feet clearance on each side as they landed. The ship was underway.

The troops were waiting for the helicopters when they arrived at the Pen-

leton landing site. The first elements quickly boarded the aircraft and the lift started.

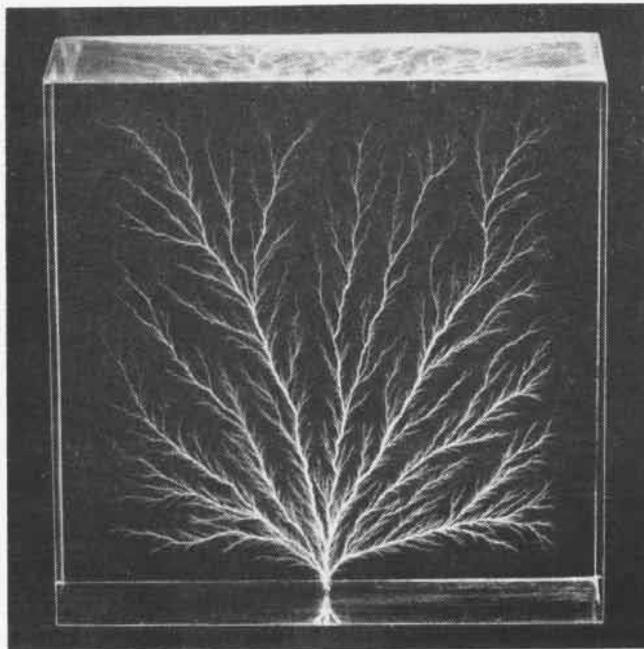
The *Carp* was waiting off the California coast. Her captain lined the submarine up with the wind, and the first helicopter circled it twice and came in for the landing. Another flew overhead throughout the operation to be ready in case of emergency.

On board the *Carp* was a landing officer who directed the pilots to their postage-stamp sized landing field.

After the first touchdown proved landings were feasible, the operation began in earnest. The troops were unloaded and moved silently across the deck and out of sight. Then a group aboard the sub would climb aboard the aircraft and head for the beach in a simulated landing.

Helicopters made trip after trip throughout the afternoon. The only time the training operation stopped was when the aircraft set down for fuel at a Pendleton re-fueling point.

'FROZEN LIGHTNING BOLT'



DID YOU EVER WONDER what a stroke of lightning looks like? If clouds did not obscure the sky, a lightning stroke originating in a thunderstorm would probably resemble the feathery structure imbedded in this plastic block. This "lightning stroke" was captured by bombarding the plastic with a high velocity electron beam. When the block was well charged, an ice pick touched to the side discharged it. There is nothing imbedded in the plastic. The electron paths produced the minute fissures pictured here. The block was prepared by the A. D. Little Co., Cambridge, Mass., which is working on an atmospheric electricity project for BuAer and ONR.



GRAMPAW PETTIBONE

Feet Wet

After a careful preflight and warm-up of his HRS-3, an experienced helo pilot lifted off the flight deck of his ship and checked his power setting in a hover. He was a little concerned, for in addition to pilot, copilot, and crewman, they had a fuel load of 450 pounds, three passengers, and a 115-pound box of electronic gear aboard. His power setting for hover was 36" at 2400 RPM, well within limits, so he lifted off, turned left into the relative wind and departed the ship.

Just as he cleared, an immediate power loss was felt. The pilot dropped the nose, hit full power (RPM) and flew close to the water for approximately one minute as he attempted to regain the lost RPM. As the helicopter lost altitude, it was necessary to come to a hover to keep from colliding with the water. Using 40 to 44" MP but getting only 2000 RPM, the HRS hovered with its landing gear in the water! The crewman called out on ICS that he was "going to lighten the load," and before the pilot could reply, he and the three passengers were gone, diving out head first thru the crew compartment door into the water! Immediately the stricken helicopter raised about a foot out of the water. The pilot eased off to the right to clear the men but still was unable to



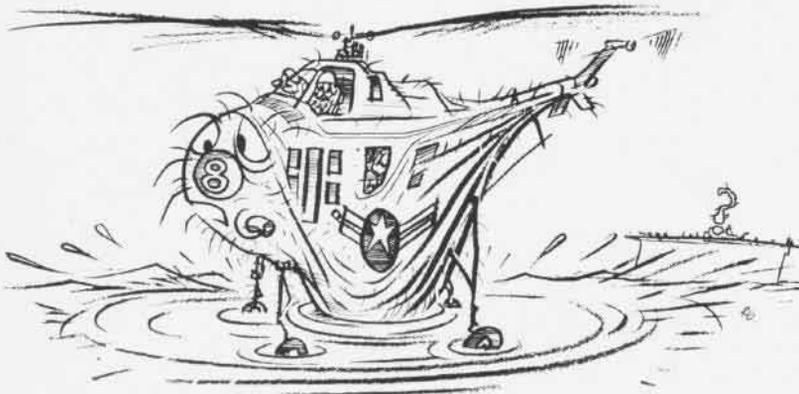
regain the engine power he had lost.

As the helo settled again, the tail rotor struck the water, directional control was lost and he cut the power. The helo settled in, rolled to the left and sank. The cockpit rapidly filled with water, but both pilots made underwater escapes and swam clear of the partially floating whirlybird. A crash boat from the ship was already on the way and picked up all hands within two or three minutes.



Grampaw Pettibone says:

Sufferin' catfish! This was a doozy! Lightening ship wasn't a bad idea under the circumstances, but a



mighty hazardous step to take. If the helo had settled on in right there, the fellers in the water woulda been chopped up more than a little by the rotor blades. 'Course, the crewman hadn't intended to have 'em ALL go, but he'd given the passengers a real thorough briefing on ditching procedures, instructed 'em to leave only when he said so. When he dove out they figured "this was it," and followed him out the door!

Best thing to do in a helicopter ditching is strap in TIGHT and ride it in. You'll stay in the eatin', drinkin', breathin' group longer that way.

Cool

An experienced aviator was cruising his AD-5 at 11,000 feet IFR, but above a solid cloud deck and in the clear. Suddenly the magnetic oil sump plug warning light came on, and the oil pressure rapidly dropped to zero. He declared an emergency and let down through the undercast, breaking clear at 3000 feet directly over a highway. Trees and telephone poles made a safe landing on the roadway a slim chance and since the engine was still running, though cutting out intermittently, he continued up the road. There were a number of light aircraft in the vicinity so his eyes were peeled for an airfield. Suddenly he spotted a small airport and made a straight in landing on the first available runway, gear and flaps down.

His touchdown was right on the end of the 2100-foot runway at 90 knots and although he had a 10 kt downwind component, he successfully braked to a stop. An engine change was required to put the AD back in the blue since investigation revealed a massive oil leak and only two gallons of oil remaining after shutdown.



Grampaw Pettibone says:

Cool, man, cool! You've gotta be pretty sure of the terrain under you to let down through an overcast with an ailing engine, also have some of the cast iron guts that seem to be standard issue in the Marine Corps.

Just in case some of the younger and less experienced lads try this, a sign I saw years ago in the training command comes to mind. "Thou shalt not let thy confidence exceed thy ability, for broad is the way to destruction."

Head Cracker

After a normal arrested landing aboard a big CVA, the pilot of an FJ-3M was ordered by the taxi director to raise his hook prior to taxiing him forward out of the gear. After several unsuccessful attempts to comply, two hook runners were motioned in to manually raise the hook. As they were struggling with it, the hook suddenly snapped to the UP position, catching one man's jaw between the hook and the fuselage! He'll live, and he's lucky, even though he had a compound fracture and will spend a long time eating through a straw.



Grampaw Pettibone says:

Goshamighty, he coulda been kilt! This lad had a purty narrow squeak. He was trying hard to do a good job and look sharp as befits a member of a smooth runnin' outfit, but no one has to COMMIT SUICIDE to accomplish the job! Guys have been caught in stuck wheel well doors, sucked in intakes while checking nose gear pins, run over while running alongside as chockmen, blown clear off the deck by jet blast, and been hit by a drop tank lost on a "cat" shot, to name a few instances. Don't let familiarity with your job or the aircraft breed contempt for the hazards around you. Remember, the life you save may be your own.

Fire, Man, Fire

A couple of F4D's roared down the runway of their West Coast base on a section take-off. It was a FAM 2 hop for the flight leader and his wingman was the assigned chase pilot. After 1000 feet of roll, they both went into afterburner. Immediately the tail section of the wingman burst into flames! The runway duty officer, who was observing the take-off and posted there to monitor the FAM stage landings, saw the fire but was unable to advise the pilot because of an inoperative radio. As they went by the GCA unit, the outside observer spotted the fire, notified the tower, who in turn called the flight leader to say "Your wingman has a fire!"

Meanwhile the two F4D's had become

Just call me Phoenix!



airborne and were climbing out. They both came out of burner, and the wingman turned away from his leader, and went into a steep climbing right turn as he tried to get to a safe ejection altitude. He eased the power back to idle, noted he had a fire warning light but had all engine instruments reading normal. A quick decision was made to try a straight-in approach to another runway 90° out of the wind. He blew off his drop tanks as he continued his turn, sending them crashing down into an orange grove, and dropped his landing gear on a short final approach to the runway, trailing smoke all the way.

A glance at the gear indicator showed an unsafe condition, so he pulled the emergency handle, but with negative results, so he added power and waved off at 100 feet, calling the tower for a gear check as he went by! The tower gave him a "Looks O.K." on the gear and warned him he was burning on the underside of the fuselage in the vicinity of the tail bumper.

The pilot made a rapid sharp climbing left turn to 2000 feet altitude, ready for possible ejection, and at the 180° position flamed out the engine. This caused the fire warning light to go out, so he turned base leg deadstick!

By the time he got to the 90° position, it was obvious he didn't have enough airspeed and altitude to complete the approach so he attempted a relight on the engine. Relight was successful and he continued the approach. When he figured he had the runway made, he shut down the engine, flared, and set it down for a good landing.

Roll-out was uneventful and he dropped the hook and picked up the arresting gear successfully. The F4D came to a stop, still burning fiercely around the outside of the tail pipe and underside near the tail bumpers.

As the crash crew was pouring foam on the fire, the pilot coolly checked all switches off and climbed out of the aircraft.



Grampaw Pettibone says:

Burn my britches, if he wasn't a cool one!! The average fighter pilot hears that clarion call of "FIRE" and he pulls the curtain just about as fast as a rattler striking. 'Course, the main thing is to be sure they mean YOU! The wave-off for unsafe gear was O.K. by me 'cause that "Ford" sure comes in cocked up, and a hard smack on the runway could really have made a bonfire out of that machine, already burning brightly as it was. I'd have pulled her up, pointed her at a clear area, and figuring I'd tried, kissed her goodbye. Nobody, but nobody, would have criticized him even one little bit.

His fire was caused by a broken tube connecting an afterburner fuel nozzle to the burner fuel manifold. This allowed free fuel to pool and ignite, and to continue to burn even after cutting the burner off. This area needs careful checking at every opportunity by the maintenance crew. There's plenty of heat and stress on these fittings.

A runway duty officer without the radio gear operative just becomes an interested spectator. If his gear had been workin', he could have advised an abort. Lots of "IFS" here, but isn't it always that way when you look back?

Harmon Trophy Winner Frenchman Outstanding Aviator

Major Andre Edouard Turcat of France has been named the winner of the 1959 Harmon International Aviation Award for the "world's outstanding aviator." A veteran of the Berlin airlift and former professor at the Bretigney Test Center of the French Air Ministry, Turcat is presently chief test pilot for Nord-Aviation.

The outstanding aviator award was presented to Maj. Turcat for his 29 October 1958 flight at Istres AFB in France. On that flight he became the first pilot to exceed Mach 2 in a ramjet-powered experimental aircraft, the *Griffon 02*. He flew at altitudes of nearly 60,000 feet.

The Harmon Trophies were established in 1926 by Col. Clifford B. Harmon, pioneer aviator and balloonist.

Maj. Turcat is the first Frenchman since World War II named the winner of a Harmon International Air Trophy.

Antarctic Scientists Honored Awards Made to Civilian Leaders

Three leading civilian scientists have been honored for their outstanding contributions to the Navy in fulfilling its mission as executive agent for the United States Antarctic Program during the International Geophysical Year:

Dr. Laurence McKinley Gould, chairman of the U.S. National Committee for the IGY, and President of Carleton College, Northfield, Minnesota; Dr. Harry Wexler, Director of Meteorological Research, U.S. Weather Bureau, Washington, D. C.; and Mr. Hugh Odishaw, Executive Secretary for IGY for the National Academy of Science, Washington, D. C. Each received the U.S. Navy's Distinguished Public Service Award. VAdm. B. L.



VADM. AUSTIN INSPECTS WEXLER'S MEDAL

Austin, DCNO (Plans and Policy) presented the awards.

Dr. Gould was cited for his guidance of the advance planning for the scientific program of *Deep Freeze*; Dr. Wexler for the establishment of the first weather communications in the Antarctic and for building the Weather Central at Little America; and Mr. Odishaw for "expediting the determination of scientific requirements," which enabled the Navy to meet "the stringent schedule for erecting the IGY scientific bases" at the South Pole.

'Old Navy' Hero Welcomed Spends Day with VA-112 at Yuma

Peacetime Congressional Medal winner Robert E. Bonney and his wife were guests of Attack Squadron 112 while the squadron was deployed at MCAAS YUMA, Arizona.

The 77-year-old retired chief water-tender was en route to a Fleet Reserve convention. Stopping off for dinner in Yuma, he saw several Navy pilots in the restaurant. He introduced himself and was invited out to the station to observe the squadron undergoing its training.

Bonney earned the nation's highest honor for extraordinary heroism aboard USS *Hopkins* during a boiler explosion in San Diego harbor in February 1914.



RADM. W. I. MARTIN, Commander Barrier Force, Atlantic Fleet, discusses the Super Constellation with LCdr. Frank Koeninger, who received a commendation for his 157 flights, 2000 hours, in the Barrier "holding pattern."

Oriskany Plays Host Role Displays CVA Flight Operations

During October, USS *Oriskany*, CVA-34, entertained various foreign VIP's. On 5 October, a delegation of Mexican officers, headed by LGen. Cuenca Diaz, Commandant of Mexico's Second Military Zone, embarked on the *Oriskany* to watch flight operations.

They were guests of RAdm. C. C. Hartman, Commandant, 11ND, and RAdm. Dale Harris, Commander, Naval Air Bases, 11ND.

For the benefit of the Mexican officers, the jet fighters grouped and simulated several low level attacks on the ship. The visitors expressed appreciation of the precision displayed.

On 14 October, while CVA-34 was moored at NAS NORTH ISLAND, 28 senior Allied officers toured the ship. They represented eight NATO nations as well as China, Philippines, Korea and Japan.

The *Oriskany*, recommissioned after a two-year modernization, has been undergoing shakedown and pilot qualifications out of San Diego. She is commanded by Capt. James Mahan Wright.



IN IWAKUNI, Japan, MGen. Carson A. Roberts (L), C. G. of First Marine Aircraft Wing, and Capt. Eugene Brady, aide-de-camp, examine new type of flight gear. Sgt. R. L. Bruncati, explains to VIP's the special features.

Bagpipes Celebrate Farewell Barrier Veteran Honored by Crew

Patrol Plane Commander, Henry J. Lunning, was bagpipied aboard at NS ARGENTIA, Newfoundland, after flying his last and 148th circuit of the North Atlantic Barrier. Lt. Lunning of Airborne Early Warning Squadron 15 had been associated with barrier flying since the Atlantic Barrier was started in 1956.

His crew mates conceived the idea of rendering the slightly unorthodox Navy honors for him upon learning that he was soon to leave the squadron. The crew obtained the assistance of Cdr. Andrew M. Sinclair and his bagpipes (now famous in AEW circles) to offset the usual Argentinia atmosphere of drizzling rain.

Lt. Lunning has been ordered to Fleet Training Center, Newport, R. I., where he will serve as an instructor.



THE STUFF THINGS ARE MADE OF

PHANTOM II is the hottest aircraft in the Navy today. Potentially it is capable of speeds well in excess of Mach 2. One of the factors retarding this progress is the cockpit canopy. Thus far, science has not perfected a transparent material that can withstand the 400°F. temperature caused by aerodynamic heating in sustained flight at Mach 2-plus, and one that is, at the same time, tough, light, and easily fabricated. Glass can tolerate the heat. To be effective, however, its weight would be so great that all other things being equal, the F4H could not realize its highest speed from the standpoint of design. The cost of a glass canopy would also be prohibitive because of difficulties in manufacturing.

For five years now, the Navy has had atomic submarines in service proving the advantages of nuclear power plants. To date, the best radiation shielding material for personnel protection is lead—a metal obviously impractical in aircraft, again because of weight considerations.

A basic fact of space technology is that the highest performance in propulsion devices is needed for success in space travel. Such tremendous strides have been made in the field of propellants that it is assured the necessary thrust can be produced. However, these fuels generate temperatures up to 5000°F., well beyond the limits of known usable

materials. Something must be developed which can contain this high temperature for more than a brief period of time.

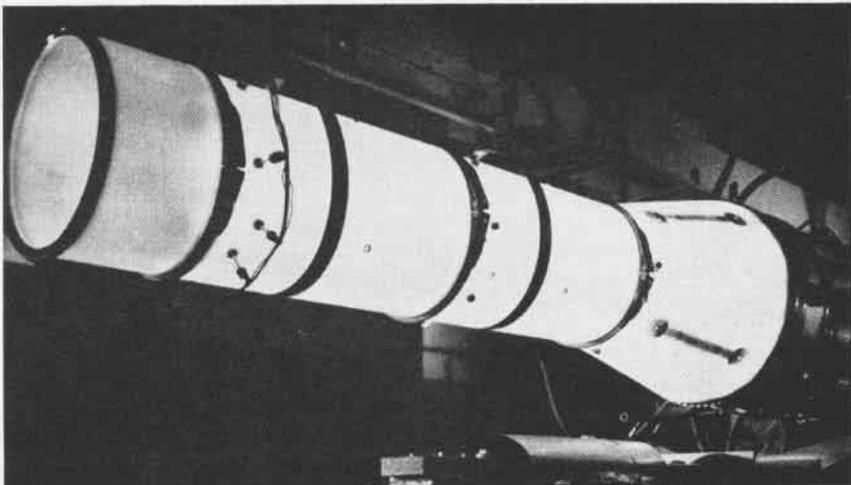
A rocket shooting out of the atmosphere into the near vacuum of space, and back into the earth's atmosphere, encounters great extremes of heat and cold. This gradient presents additional problems since the basic properties of most materials are radically changed by sharp variations in temperatures.

In addition to the two primary obstacles to be overcome in the furtherance of aeronautics and astronautics, weight and temperature, there is another—and it is a major one. The third hurdle is the presence of "destructive influences" in the upper atmosphere, such as high energy radiations which have a deteriorative effect on the exposed surfaces of flight vehicles.

The military, the National Aeronautics and Space Administration, industry and education are turning their best talents—on a crash program basis—to the task of meeting current and near-future requirements. One of the most important results of this concentrated effort is the growing recognition in the technical community that the best solutions to these problems can only come from the merging of many sciences—metallurgy, physics, chemistry, non-metallics, and others. No one field can do the job alone.



TITANIUM ALLOY compressor for Pratt & Whitney engine is 443 pounds lighter than steel.



COATED MOLYBDENUM turbine blades and other innovations make it possible to operate G.E.'s Hot Rod research engine at ultra-high temperatures to test materials for engines of tomorrow.

THREE TYPES of research are simultaneously being conducted in order to realize the greatest potential in the shortest period of time. They are closely related and interdependent upon one another. First and foremost, is the fundamental study of materials. For our purposes, it may simply be divided into metals and non-metals.

Until the start of the age of flight at the turn of the 20th century, iron and its alloys predominated in the forging of tools and weapons. Today, at least 30 additional metals are in commercial use, and another 35 to 40 are in the development stage as possible substitutes for dwindling supplies or for new applications which cannot be met by the older metals. Beryllium, titanium, vanadium, zirconium, columbium, molybdenum, hafnium, tantalum and rhenium have taken their places beside the more familiar aluminum, chromium, nickel, magnesium and cobalt.

The fundamental study of metals by military, industry and government falls into three fields of concentration:

probably be said to have the greatest strength to weight advantage up to 1000°F. of any metal. However, because of its extreme brittleness and high cost, its use has been greatly delayed.

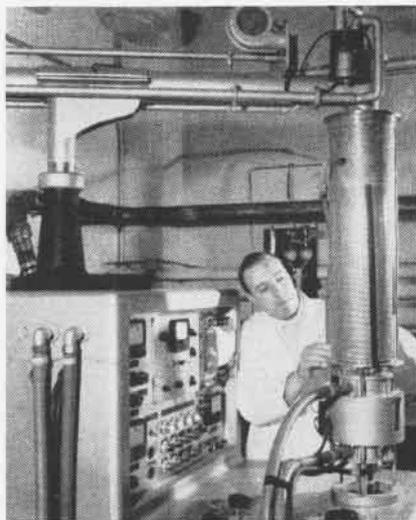
► **Combining of various metals.** Increased familiarity with more metals has caused commensurate expansion in the use of alloys, which are mixtures of two or more metals. The principle of the gas turbine had been known for years; its practical embodiment did not occur until materials capable of resisting the high temperatures and thermal shock conditions generated in the turbine and burner areas became available.

Today, alloys capable of service to 1750° F. are available primarily because the accumulated knowledge of the relationship of structure to properties has made possible refinements in melting and combining techniques.

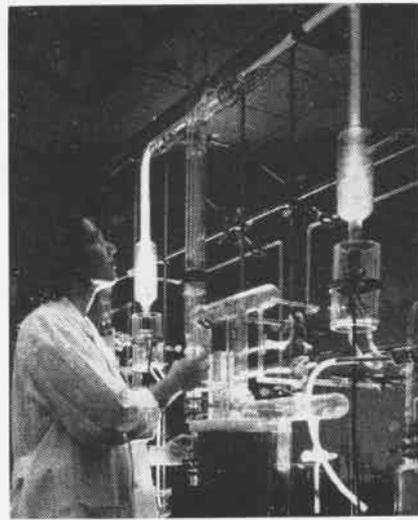
Titanium provides another good example of the fast pace in the development and application of new metals and



NASA PARTICLE accelerator produces same effect as ions striking materials in re-entry.



MAGNETIC REFRIGERATOR cools samples to near absolute zero (-273.1 C.) to test properties.



ATOMIC BARRAGE subjects materials to possible upper atmosphere conditions in NASA lab.

► **Analyzing the structure of materials** in order to understand more thoroughly the basic chemistry and physics of metals. Even iron, which has been in use for more than 3000 years, has been re-examined. Remarkable discoveries have resulted. It has been learned, for example, that the inherent strength of pure iron rests in microscopic, perfect crystals called "whiskers." Their strength reaches 2,000,000 pounds per square inch, more than 40 times the strength of cast iron, and more than seven times the strength of the finest steel today. How to build supermetals from these "whiskers" is now being investigated.

► **Putting metals to the best use.** Once the knowledge has been acquired from basic and applied research, progress becomes a matter of taking maximum advantage of the best properties of each metal. This necessarily entails learning how to do this. Frequently, it is so difficult to compensate for or nullify the inherent disadvantages of some materials, that they cannot be put to work. Beryllium, one of the so-called newer metals, is very light and strong. It can

alloys. Little more than 10 years ago, this versatile and abundant element was almost unknown outside the laboratory. Today it has taken its place among those standard materials which designers must consider when they begin work on new concepts. Much of this progress is directly attributable to the Department of Defense sheet rolling program which the Bureau of Aeronautics administers, and which has made possible superior sheet alloys of high quality, suitable to about 800°F. on a production basis.

Parallel research is being pursued with non-metals, with one important addition. It is highly unlikely that there will be created new, useful, basic metals other than those already known or being explored. In the non-metallic field, however, the possibilities of creating entirely new compounds or chemical combinations, for structural or important functional uses (transparents, fluids, lubes, etc.), are still tremendous.

It is a wide-open branch of study. Not long ago no one would have predicted the apparent paradox of plastics being superior to metals when the latter can no longer cope with



NIOBIUM BAR is purified in a vacuum having four billionths the pressure of atmosphere.



TO AVOID contamination by oxygen and nitrogen during the welding process, alloy titanium is joined in a plastic bag filled with argon gas, a new technique to increase use of titanium.

temperature. Yet such is the case with ablation (from the Latin, meaning "to carry away") materials. In the ablation process, a solid layer of material covers the metal face of a spacecraft. During re-entry, a thin layer at the surface melts, absorbing heat energy. The molten material is gradually vaporized, and the vapor flows to the boundary layer. This principle has been so effective in nose cones, etc., that it will be applied to the *Mercury* capsule to assure pilot comfort and safety.

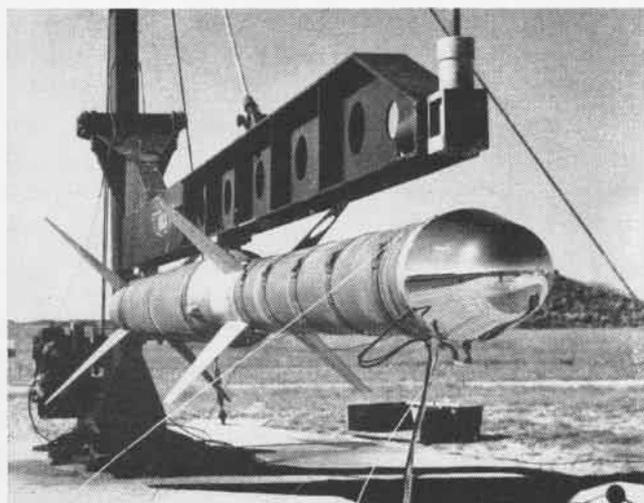
Ceramic material has shown great potential in resisting high temperatures. One ceramic, tested recently for rocket-nozzle throats, was little affected by one-minute bursts of rocket exhaust at 5000° F.

Another largely unexploited approach to materials problems is found in composites which are combinations of metals, ceramics and plastics so arranged as to make the best use of a particular set of characteristics. Safety glass, pre-stressed concrete and reinforced plastics are among the most common, and have been in use for a long time. Various type sandwich construction has been widely used

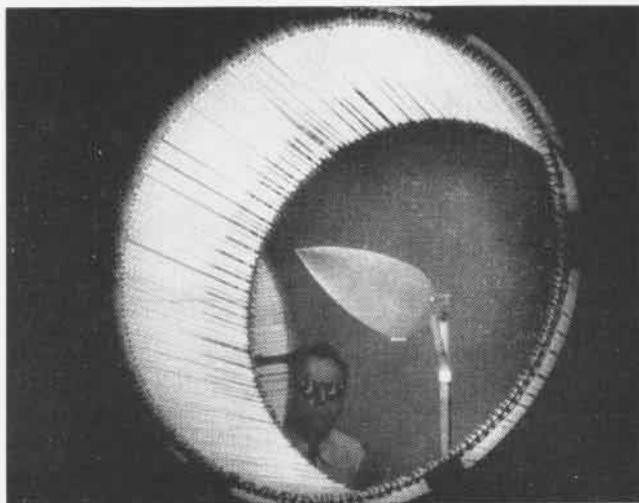
in the airframe industry for wing and controls surfaces, rotor blades for helicopters, flooring, bulkheads, etc. Despite this, the possibilities have barely been touched.

THE SECOND broad category of materials research is design. Of necessity, the relationship between design and materials is continually growing closer. The reasons are clear. New design philosophies must be developed to be able to apply modern materials in the best manner, as well as to circumvent the inherent deficiencies which occur in materials.

A manned spacecraft must be designed for safe return into the earth's atmosphere at high velocity. A goal of NASA structures scientists is to develop lightweight leading edges that can survive aerodynamic heating during the time it takes to make a gliding re-entry. Two possibilities under study involve use of materials to radiate most of the heat to the atmosphere or to negate the heat through ablation. A third novel approach is the use of a "heat sink" designed to gather and hold the excess heat, thus allowing the structural materials to function in a lower temperature.



INCONEL, ALLOY used in X-15 skin, forms nose cone that measures heat transfer at Mach 5 in NASA study of blunt shapes for missiles.



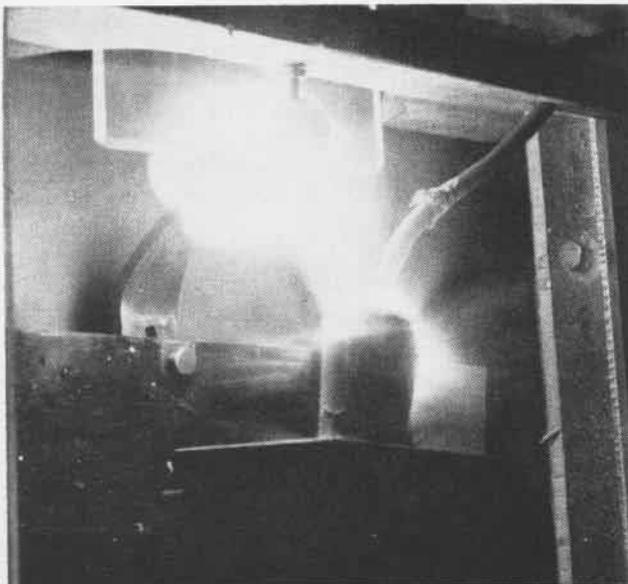
CYLINDRICAL RADIATOR uses 225 quartz lamps to simulate aerodynamic heating. Scientist wears goggles and stands behind glass.



PROJECTILE FIRED at high velocity is used to measure the resistance of Plexiglas to impacts that might be met in space flight.

In the combustion chambers of present day rockets, both temperatures and pressures are very great. Heat runs as high as 5000° F., well beyond the melting points of readily available materials. Special techniques had to be evolved to be able to use the rockets. One design, called regenerative cooling, passes the liquid propellants as they come from the tanks at very low temperatures through coils of tubing that comprise the walls of the combustion chamber. The propellants thus cool the sides of the chamber on their way to the nozzle where combustion begins.

THE FINAL field of concentration is forming and fabrication. Materials and processing cannot be divorced; the success of one is often dictated by progress in the other.



MAN-MADE LIGHTNING triggers underwater explosion. Resulting shock wave is converted into the force needed to form space age metals.

Ingenious facilities, tools and techniques are being used.

One of the most outstanding developments has been in melting purer or cleaner materials to achieve higher strength, improved fatigue resistance, better fabrication, and other advantages. This has been accomplished by use of vacuum, control of atmosphere and novel procedures.

With respect to melting and refining techniques, there are available electron beam melting and plasma jets, capable of going beyond 15,000° F., solar furnaces and arc-image devices, in a slightly lower temperature range. All of these provide new facilities for avoiding or removing contaminants in those materials where a few parts per million of unwanted elements can be detrimental.

In the field of forming, an extrusion molding machine for light alloys is being completed for the Navy. This process is between forging and casting and avoids some of the disadvantages of both. Slip casting is a shaping procedure coming into prominence and being applied to ceramics with impressive results.

By far the most exciting development in the joining field is ultrasonic welding. Ultrasonic energy, applied under low pressure, produces in a very few seconds metallurgical bonds with negligible deformation. The disadvantages of excessive heating and melting are avoided. This has made possible the satisfactory welding of such difficult materials as high strength aluminum alloys, titanium, molybdenum, and the joining of dissimilar metals such as copper to aluminum. Electron beam and plasma jet welding methods are also being investigated.

Undoubtedly the most remarkable undertaking connected with metals processing is the Navy facility, called the Inert Atmosphere Fabrication Plant or In-Fab, created by the Universal Cyclops Steel Corporation under the auspices of the Bureau of Aeronautics. Scheduled to start operation in 1960, it will inaugurate a new era in the handling of difficult-to-process metals, specifically those termed refractory. Molybdenum, columbium and tantalum fall into this category.

The biggest headache of the engineer who is designing an item for a high temperature is the almost catastrophic loss of strength in material as the temperature rises. We all know that every material has a melting point. What the layman fails to realize is the tremendous loss of strength which takes place as the melting point is approached. Aluminum and magnesium are useless above 500° F. The highest grades of steel are practically putty at 1800° F.

Recognizing that the established iron, nickel and cobalt-base alloys are approaching their ultimate temperature limits, Navy metallurgists have expanded a small, long-range research effort into a major program for refractory alloy development. As the name refractory implies, these metals have very high melting points and retain more of their strength at high temperatures than do the more common alloys. The best molybdenum and columbium alloys will resist a stress of 20,000 pounds per square inch for 100 hours at 2200° F. without fracture. The more common materials have no usable strength at this temperature.

The properties of refractory metals would be ideal for innumerable applications if it were not for certain perverse characteristics. First, they react with oxygen at high temperatures to form volatile oxides and literally evaporate into a cloud of smoke. Second, the same strength

which is so useful at high temperatures makes it difficult to form them into uniform sheets. The refractory metals sheet rolling program will investigate every aspect of the processing and quality control of flat rolled products so as to perfect the forming of consistently high quality sheet.

The In-Fab facility is designed for this function. It consists of a large room of about 150,000 cubic feet capacity, filled with highly purified argon gas. A full-sized forging impactor, a rolling mill, welding and other tools of fabrication can operate therein at metal processing temperatures up to almost 4000° F. Men who work at the facility will wear space suits equipped with self contained breathing and cooling apparatus.

Explosive forming of refractory metals is also being explored. Joining by conventional welding methods is difficult because of the contaminating influences of oxygen and nitrogen. If some of the above difficulties can be successfully overcome, refractory metals may serve dramatic functions in applications which require heat resistance.

In the Bureau of Aeronautics, the Materials Branch of the Airborne Equipment Division, headed by Mr. N. E. Promisel, has been intimately involved for years in all phases of the research mentioned to this point. It acts as BUAER's bridge between the basic and applied research conducted by industry, education, other government agencies, and the Navy. Many BUAER sponsored projects have resulted in substantial contributions to the field of structural materials. (In the new Bureau of Naval Weapons, Mr. Promisel will be the chief materials scientist and head of the Materials Division.)

Most late model military aircraft and all of the new commercial transports use hot stretched acrylic plastic for cockpit enclosure. The impetus for this development was provided several years ago when the Naval Research Laboratory, working with BUAER, demonstrated the truly remarkable toughness of acrylic sheet when properly stretched. It tends to lose this property at temperatures above 225° F. and is somewhat deficient in resistance to abrasion. BUAER's current program for this critical class of cockpit materials is concentrated on producing composites made of stretched material in combination with heat and abrasion resistant barriers. The prospects are good for achieving a hot-face temperature capability of 500° or higher for service at speeds approaching Mach 2.75.

As a matter of fact, a significant part of BUAER's materials research and development effort is devoted to other types of composites. Reinforced plastics, combining glass fibers with synthetic resins, have been extensively used in radomes and antenna housing. Favorable strength-weight characteristics, freedom from corrosion, resistance to crack propagation and ease of fabrication are among the more useful attributes. The aim is to make more effective use of the inherent strength of glass as a reinforcement agent.

The shielding problem in atomic-powered aircraft is also being tackled. Under contract to the Bureau of Aeronautics, the University of Florida is conducting a many-faceted research program. One investigation concerns weakening the energy of gamma rays by scattering them in various media.

Another is the exploration of the nuclear properties of rhenium, a rare earth metal, as a possible shield material.

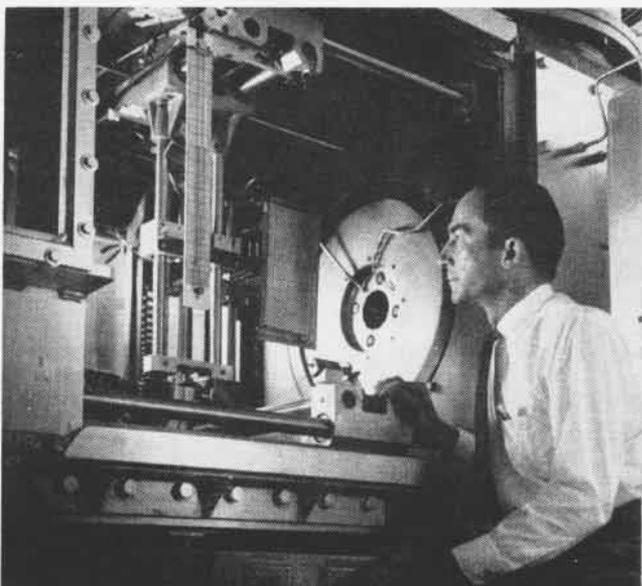


PLASTIC MODEL of rocket motor is tested in NASA wind tunnel at 400° F. In aluminized suit mechanic can withstand the high heat.

Despite the fact that rhenium was discovered in 1925, relatively little is known about it. Ultra-pure rhenium for the study is being developed and rolled in thin sheets.

The Materials Branch is actively engaged in such diverse activities as the improvement of titanium alloys, the study of special plating procedures to remedy steel embrittlement, the investigation of a new hardening device to better beryllium, and the development of a graphite-nickel coating for molybdenum for high temperature applications.

Though the field of materials research is complex in the extreme, it is for that very reason challenging. As new materials are developed and problems of fabrication are conquered, there are still ahead wide areas of unexplored knowledge. As progress is made, it can be chalked up to the credit side of basic and applied research as "material gains."



AIR PRESSURES equal to altitudes up to 150,000 feet can be simulated in NASA wind tunnel and speeds of Mach 6 can be attained.

MAGNET FLIGHTS SPAN EARTH



SCIENTISTS MANN STATIONS ABOARD WV-2



THIS SUPER CONNIE OF FASRON 102 HAS FINISHED FIRST LEG OF WORLDWIDE PROJECT

A NAVY plane has completed a 25,000-mile survey of the earth's magnetic field in the South Pacific and the ocean areas around Australia in the first of a series of *Project Magnet* flights.

Some 600,000 miles will be flown in the project which is designed to gather information for the 1965 world magnetic charts. Tracks for the airborne geomagnetic survey are spaced about 200 nautical miles apart over all the accessible ocean areas of the world.

Polar regions and land masses also will be surveyed as practicable. Several globe-circling flights through the North and South magnetic and geographic poles are planned.

After the world-wide survey is completed in 1963, intermittent flights over selected tracks will bring the information up to date. *Magnet* will thus provide basic data for essentially all U.S. nautical and aeronautical charts.

The survey will lead to a more complete understanding of the earth's

magnetism. Charted information will be available to maritime, aviation and scientific communities of the world.

Most of today's magnetic variation charts of ocean areas are based on data collected before 1929 but the Navy Hydrographic Office has been directing airborne geomagnetic survey work since 1951. A survey was completed in the North Atlantic before the start of world-wide operations.

Magnet aircraft are assigned to FASRON-102 at NAS NORFOLK. In addition to regular crews, the planes have geophysicists from the Hydrographic Office aboard.

One of the aircraft is a WV-2 and the other is an R5D. Each plane has a Vector Airborne Magnetometer (VAM) developed by the Naval Ordnance Lab to measure the direction and intensity of the earth's magnetic field.

In addition, the WV-2 carries an airborne neutron monitor, installed by the Bartol Research Foundation of Philadelphia, to provide continuous recordings of cosmic ray intensity.

NASA Center Changes Name Edwards to Conduct Aero Research

The National Aeronautics and Space Administration has changed the name of its High Speed Flight Station at Edwards, Calif., to the NASA Flight Research Center. All but a small part of NASA's test flight operations involving aeronautical flight research will be conducted there.

Reasons for the reorientation were given as the need to conduct high speed test operations away from congested airfields and built-up areas, and the economy which will result in centralization. The Flight Research Center is on a remote area of the California desert.

Both the Langley Research Center in Virginia and the Ames Research Center at Moffett Field will conduct flight research in the low-speed ranges, mainly with VTOL and short field take-off and landing craft.

The Lewis Research Center in Cleveland will continue its small-scale flight program using low-speed propeller and jet aircraft. Currently, the Lewis program involves research in zero gravity.

A study is being made to determine which flight research projects at Langley and Ames will be transferred to the Flight Research Center. Most high performance aircraft now at these centers will be returned to the military or transferred to the Edwards facility, according to the NASA statement.

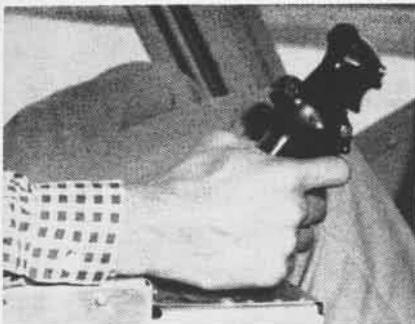
Wright Brothers Day Set Flight to be Celebrated Dec. 17

President Eisenhower has signed a bill proclaiming December 17th as Wright Brothers Day.

Aviation, the nation's largest industry, will celebrate its most historic event—man's first flight in a powered, heavier-than-air-craft.

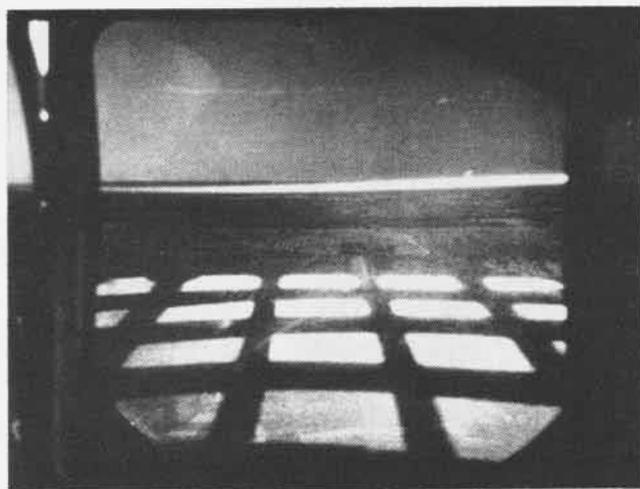
"We are glad the President has proclaimed this day," said Thomas T. Lanphier, Jr., President of the National Aeronautic Association which sponsored the bill; "not only because it recognizes the great achievement of our industry, but also because it makes for a more air conscious country. It points up the need to fulfill the main slogan of NAA: 'Keep America First in the Air'."

NAA will ask the airlines, the aviation industry, and the military services to make appropriate displays.



CYCLIC SIDE-ARM CONTROL TESTED IN H-40

BELL HELICOPTERS NOW FLIGHT TEST ANIP UNITS



IMPROVED PATTERN WILL SOON REPLACE THIS DISPLAY IN HTL-7



TESTS SHOW THAT PILOT AND NON-PILOT ALIKE CAN FLY HTL-7

ANIP, the Army-Navy Instrumentation Program, is based on the radical concept of tailoring the machine to the man. Ultimate goal is to replace the countless cockpit gauges with a visual presentation.

The problem in rotary-wing aircraft differs considerably from that in fixed-wing. With their low-speed and altitude, helicopters are susceptible to ground attack small-fire. Therefore, the display must be designed to withstand this hazard. Since one of the most critical areas of visibility in a chopper, particularly for hovering and landing, is directly below the pilot, ANIP aims to eliminate this blind spot.

Bell Helicopter Corporation, the prime contractor for the rotary-wing phase, has two flying test vehicles. Research Helicopter-1 (RH-1), basically a Navy HTL-7, is being used to evaluate the contact analog display.

This dynamic artificial picture appears on what seems to be a spherical section of window glass mounted in front of the pilot. The glass is actually a trichroic mirror; that is, it acts as

a filter which reflects one color of light and allows all other colors of the spectrum to pass through. The mirror appears transparent to the pilot except for a green image of the real world representation. When weather or darkness obscures his view, this image conveys data to the pilot by which he can control the aircraft without reference to the outside world. In good weather, the transparency of the mirror permits an unobstructed view.

The image, projected by a system built by North American Autonetics, appears as a flat plane with a uniform texture made up of small squares. The pattern is changed in altitude by signals from a Bendix-Pacific sonic altimeter; in roll, pitch and heading by signals from conventional vertical and directional gyros; and in velocity by signals from a Ryan Doppler radar. The pattern presents an integrated picture which continuously shows the pilot all motions in proper relationship as the copter moves through the air.

The RH-2 will eventually replace the RH-1. It is a system which can change

and grow with research needs. The basic vehicle is a Bell *Iroquois*, H-40.

Now installed or to be installed are a side-arm cyclic control which is an electronic system with various modes of stabilization in an arrangement similar to a space vehicle; an airborne radar which presents radar mapping information and forward looking obstacle data to be shown through a scan converter. As refinements are made, improved equipment will be installed.

Douglas Aircraft is the prime contractor for the fixed-wing phase. LCdr. R. N. De Callies, the ANIP Project Officer at the Office of Naval Research, directs the program. In January 1958, the concept was extended to the submarine man-machine system (SUBIC), with the Electric Boat Division of General Dynamics designated as the civilian contractor coordinator. Sperry Rand has held the same position in the Surface Integrated Control program (SURIC), since the spring of 1959. All efforts are designed to augment man's mental ability with streamlined automation.

HIGH SPEED TRIALS

SLICING THROUGH Pacific waters at speeds much greater than those normally used for refueling, two Navy ships sought answers to problems that will be encountered in designing "super" supply ships for tomorrow's Navy.

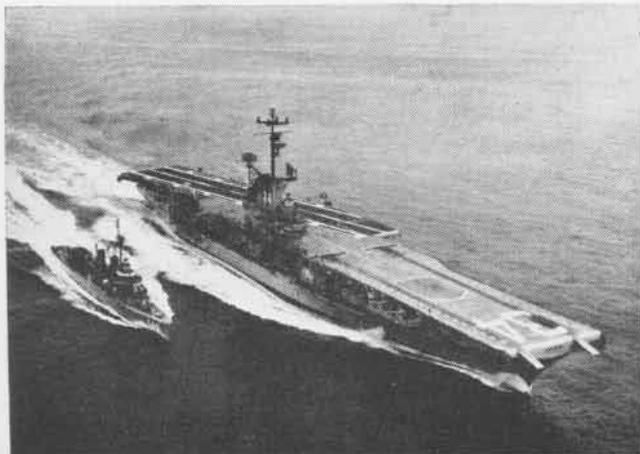
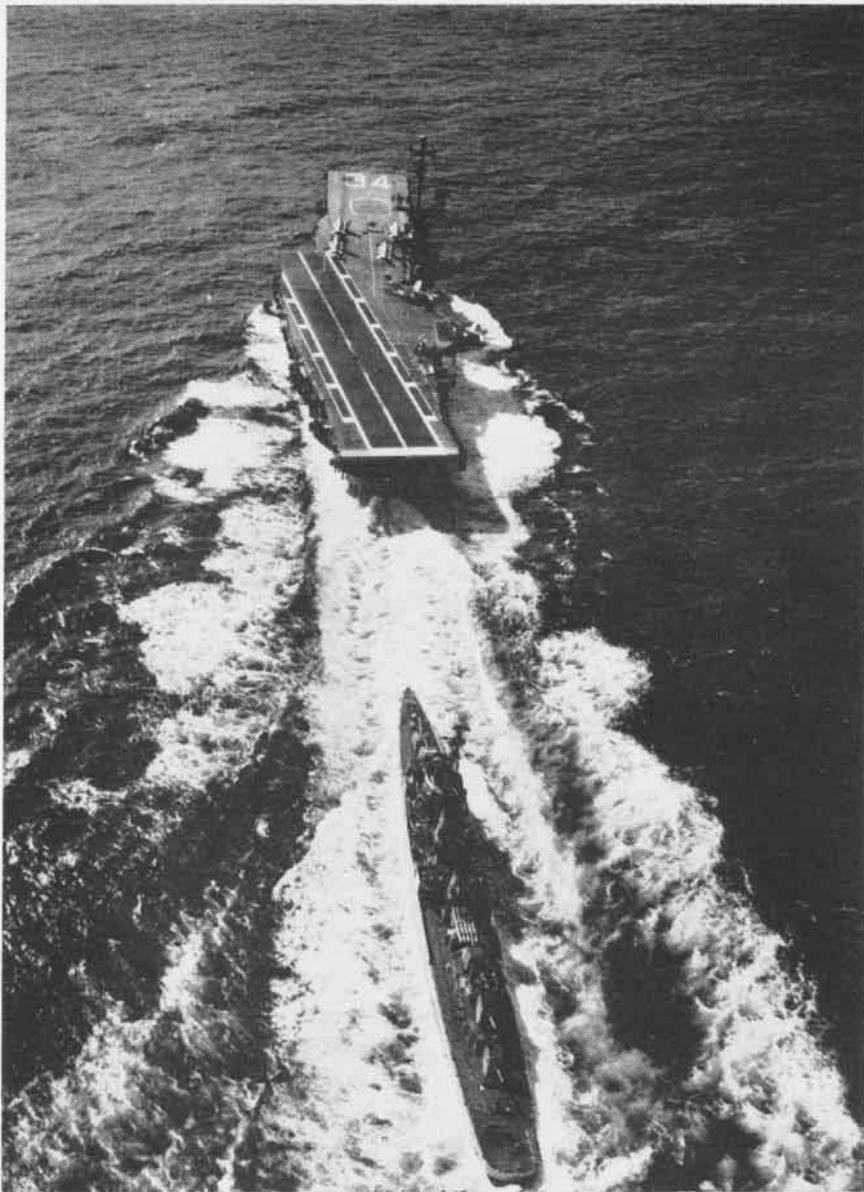
USS *Oriskany*, steaming at speeds in excess of 25 knots, refueled the destroyer *Brown* alongside and simulated refueling her astern.

Scientists from the University of California and engineers from the San Francisco Naval Shipyard were embarked to study how ships react to each other at high speeds close aboard.

Data gained in the experiments may be used in construction of a radically new type of all-purpose supply ship which is expected to be similar in size and speed to fast carriers.

Such a ship would be able to supply fuel, ammunition, food and other requirements to widely dispersed task forces at sea in much less time than current specialized auxiliary ships can accomplish the task.

Among the experts witnessing the Pacific trial was Professor Leoni M. Tichvinski of the University of California who already has contributed a great deal of research to the project.



AT HIGH SPEED, BROWN PULLS ALONGSIDE ORISKANY FOR FUEL



THESE OBSERVERS REPRESENTED THE NAVY AND CAL UNIVERSITY

NAVAL AIR STATION DOWN EAST



AERIAL VIEW OF NAS BRUNSWICK TODAY WITH AF FACILITY IN UPPER RIGHT CORNER

MAINE'S ASSOCIATION with the Navy goes back centuries. The first ship of war to be built on this side of the Atlantic was launched from Badger's Island in the southern part of the state. It was the 637-ton frigate *Falkland*, and the year was 1690.

At Kittery, present site of Portsmouth Naval Shipyard on the Maine side of the Piscataqua River, naval vessels were built during the War of Independence. The *Raleigh* was first, followed in May 1777 by the launching of the *Ranger*, under the command of John Paul Jones.

It wasn't until World War II, however, that Naval Air moved into Maine, but by 1945 there were six Naval Aviation activities scattered along the coastal area. Of these NAS BRUNSWICK remains to carry on the tradition.

Built on a 1487 acre lot which had been used for growing blueberries for

public picking, NAS BRUNSWICK was commissioned on 15 April 1943. Cdr. J. C. Alderman was the first commanding officer and Secretary of the Navy James V. Forrestal attended the opening ceremonies.

Primary mission was the training of British Naval pilots. A plaque was presented by the Royal Navy in recognition of this work from 1943 to 1945. U.S. Squadrons based there made anti-submarine patrols with 'round the clock' efficiency.

The first American unit to arrive was a Scouting Squadron, VS-1D1, which was soon redesignated VS-31. When operations started, the runway measured one-half mile; there were no hangars or tower. The ready room was equipped with packing boxes for seats and a pot-bellied stove to heat the hut. Wives took to dropping in so often to see their men off on missions that it was more accurately dubbed the "family room."

The air station was de-activated in October 1946. For the next five years land and buildings were put to varied uses, some far removed from aviation. For a while, University of Maine and Bowdoin College leased the facilities to relieve overcrowded postwar conditions. In 1949 the Brunswick Flying Service took over the strips, one hangar and the tower. Another hangar was a skating rink while a third housed automobiles; ammunition magazines

were mushroom farms; a shrub nursery graced the northern boundary.

The Korean conflict brought an end to these diverse activities. Permits and leases were cancelled, and on 15 March 1951, the national ensign was again hoisted, signaling re-activation. More land was acquired, dual 8000-foot runways were built and an operations tower was erected. World War II temporary-type buildings were replaced by modern three-deck barracks, a mess hall, BOQ, Navy Exchange, and service clubs.

Today, NAS BRUNSWICK, commanded by Capt. Frank R. More, encompasses 3000 acres. Ship's company numbers 45 officers and 454 enlisted; 411 civilians are employed. Squadron personnel bring the on board count to about 300 officers and 3000 men. The number is increased when Naval Air Reserve VP and VS squadrons report



COMBINED SHORE PATROL UNIT IN 1945



SECNAV FORRESTAL AT 1943 ACTIVATION



TYPICAL WINTER SCENE AT THE MAIN GATE



OPERATIONS TOWER WAS BUILT IN 1951

for their regular annual training duty.

Primary mission is support of Fleet Air Wing Three, under the leadership of Capt. George P. Koch, which comprises six Patrol Squadrons: 7, 10, 11, 21, 23, and 26. Flying P2V *Neptunes*, FAW-3 squadrons play a major part in the defense of the North Atlantic area. Operating with other NATO countries, they also deploy to the Mediterranean, to such places as Malta, Port



P2V PLASTIC NOSE PROTECTS THE DRIVER

of the P2V. By means of mock-ups and cutaways, all men attached to the Brunswick-based squadrons become familiar with the primary aircraft systems. FAETULant Aviation Training Aids Branch passes the word on the use of the electronic equipment: ECM, radar, Navigational aids and other related items.

Efficient maintenance procedures on the part of Fleet Aircraft Service Squadron 108, now commanded by Cdr. O. S. Sigurdson, have assured high aircraft availability throughout the past eight years. During this period a general streamlining of Supply Department processes has also resulted in a substantial decrease in the Aircraft Out of Commission for Parts, AOCP, rate. A speed-run delivery system has been developed which guarantees receipt of material by the fleet within two hours of a request, providing the item is in stock. All inventories have been



FLIGHT LINE OF FLEET AIR WING THREE NEPTUNES FORMS STARK SILHOUETTE AGAINST BLEAK SKY AND SNOWY PARKING AREA



REALISM HELPS ARCTIC SURVIVAL SCHOOL



BASE'S MOST POPULAR SPOT: DISBURSING



NAMTD TEACHES FUNCTION OF J-34 ENGINE

Lyautey and the Azores, carrying out their vital antisubmarine task.

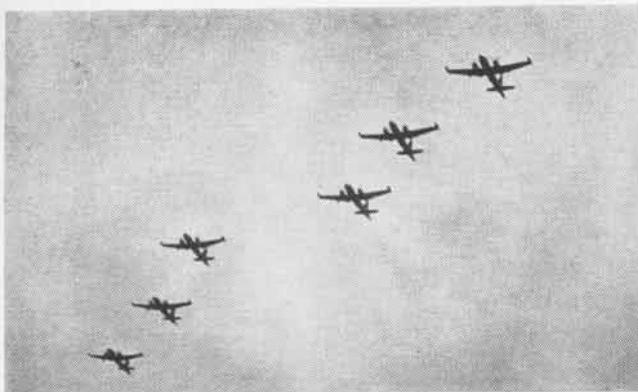
Training programs at the air station are geared to meet the special needs of FAW-3. Started in September 1956, the Arctic Survival School presents a realistic and concentrated course for personnel of units due for a tour in the far north. The Naval Air Mobile Training Detachment was organized in 1954 to provide technical training in the operation, maintenance and repair

thoroughly checked and modernized.

By far the most important innovation in the Supply Department is the transceiver punch card system which was installed in 1958 connecting Brunswick to NAS QUONSET POINT, the primary support point for aviation material. Information as to action on requisitions is now received almost immediately. Formerly, the mails had to be relied upon, and this was a time-consuming operation for NAS BRUNSWICK which, geographically, is located at one end of the supply pipeline in the U.S.

In addition to the activities in support of FAW-3, the Maine air station can be used for the masting of airships. The nearest mooring station for blimps is at NAS SOUTH WEYMOUTH, Massachusetts. Periodically, airships from the base travel north to check out mooring crews.

The USAF 654th Aircraft Control



FORMATION OF FAW-3 NEPTUNES HIGH ABOVE NAS BRUNSWICK MAINTENANCE MEN CHECK STATION UF-1, PRIMARY SAR AIRCRAFT

and Warning Squadron is physically situated at Brunswick. Part of the continental early warning system, this facility provides Commander, 32nd Air Division (Defense), with complete aircraft identification within the assigned area of responsibility.

Brunswick is the most northerly naval air station in the eastern United States. Winter comes early and stays late in Maine. Temperatures drop as low as 20° below zero and snowfall has been recorded as high as 88 inches. Interruption of air operations must be kept to a minimum in spite of adverse weather conditions from November to April. As a result, snow removal has become a fine science.

The transportation officer has the entire responsibility for handling the job. He is assisted by a crew of Seabees and civilians. Twelve hours before the time snow is predicted, a "battle plan" is prepared. Priorities are assigned for clearing runways, ramps and parking areas. All loose gear that might cause damage to the snow removal vehicles is picked up.

When the snowfall reaches two inches, the first salvo is fired by the

other bombs which start the motors of the heavy equipment. First, the push-plows shove the snow from runways and taxiways into windrows. Rotary plows next move in, chopping their way through the windrows and scattering the snow to a distance of 150 feet with huge whirling fans.

THE WINTER preparedness program can never be relaxed. During the summer months, small parts are ordered and stowed, the equipment is overhauled, and new men are trained in safety precautions and removal techniques. This continuous cycle keeps the winter months free for the major task at hand. Preparedness and proficiency are the by-words.

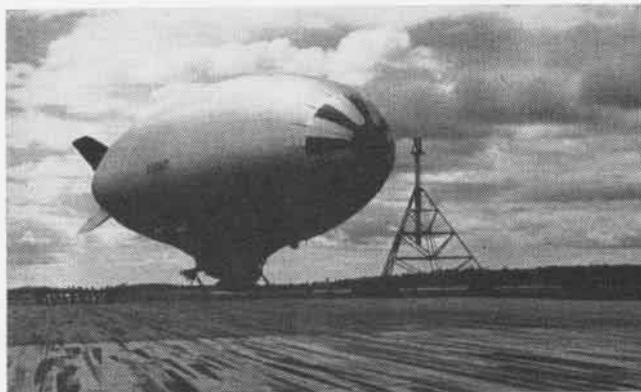
While the climate offers a challenge for five months of the year, it is always conducive to good liberty. Maine is appropriately called "Vacationland," for the state abounds in hunting, fishing, boating and winter sports. The scenery is impressive; people come from all over the country to visit the "rock-bound coast," as well as sample the famous lobster. The area is steeped in tradition and rich in historical lore for

here may be found the sites of some of the earliest settlements of our founding fathers.

Community relations are a welcome part of NAS BRUNSWICK activities. The station has been thrown open to local Boy Scout groups for holding Camporees. Sports events, which feature local and service team competitions, draw popular support.

When Guided Missiles Service Squadron Two conducted *Regulus* I operations during the summer of 1958, townspeople showed much enthusiasm over the first appearance of the missile in the northern New England area. Birds were launched from the air station and from a submarine at sea. With controlling jets guiding them, they were recovered at Brunswick. It was a memorable occasion for military and civilians alike and received much coverage in the local papers.

Naval Air Station Down East is an important link in the chain of national defense. It plays a vital role in ASW, a science which the Navy is developing and perfecting 24 hours a day the year round from bases of operations from Maine to California.



SOUTH WEYMOUTH'S 'SNOW GOOSE' MOORED AT NAS BRUNSWICK A VP-23 NEPTUNE IS SERVICED DURING A CARIBBEAN DEPLOYMENT

MEDAL FOR PICK-UP TEST

Air Command Established RAdm. Harris is ComFairSanDiego

The billet of Commander, Fleet Air San Diego, was established 1 October as part of a plan to standardize the command relationships of Naval Aviation activities.

RAdm. Dale Harris, who was ComNAB's 11 and 12, is the first incumbent. He will have additional duty as ComNAB 11. RAdm. Murr E. Arnold, who is ComFairAlameda, assumed the additional duty of Commander NAB's of the 12th ND.

Asst. SecDef Tours Far East 7th Fleet Carrier Force Visited

Charles C. Finucane, Assistant Secretary of Defense for Manpower, Personnel and Reserve, saw at first-hand the U.S. Navy's first line of defense, the attack carrier force, in USS *Lexington*.

Mr. Finucane did this in the course of his tour of U.S. military establishments in the Far East and Alaska. He was accompanied by RAdm. Edward J. O'Donnell, who is the Director for the Far East Region, Office of the Asst. SecDef for International Security Affairs.

During his stay on board the carrier, Mr. Finucane conferred with VAdm. F. N. Kivette, Commander 7th Fleet.

Just How Hot is the Sun? NRL Says Perhaps 100,000,000°C.

Temperatures ranging to 100 million degrees Centigrade may be present in the solar atmosphere, Navy scientists said after results of Project *Sunflare II* were studied.

The Naval Research Laboratory has been conducting solar flare studies from the Naval Missile Facility at Point Arguello, using the two-stage *Nike-Asp* combination.

Temperature findings were based on the fact that X-rays with energies as high as 80,000 volts were found above the absorbing atmosphere of the earth. This is tens of thousands of volts greater than detected in previous tests.

Project *Sunflare* is a study of solar flares which precede the appearance of sunspots. The flares are responsible for the discharge of highly charged particles into the upper atmosphere which in turn disrupt radio communications throughout the world.

THE FIRST man in history to be picked up from the ground by a high performance aircraft in flight, Marine Gunnery Sergeant Levi W. Woods of Camp Lejeune, N. C., has received the Navy and Marine Corps Medal for his feat in ceremonies at Camp Lejeune.

The pick-up was made 12 August 1958 during tests at Quantico, Va. A P2V *Neptune*, traveling at 125 knots at an altitude of about 500 feet engaged a nylon line suspended from a helium-filled balloon, and by this means drew up Sgt. Woods into the plane.

Sgt. Woods was cited for "heroic conduct" in voluntarily proving the feasibility of the technique.

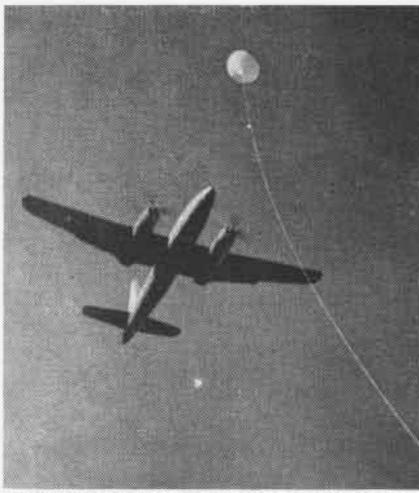
The new air-sea rescue system was developed by the Office of Naval Research in cooperation with the Marine Corps and the Robert E. Fulton Company of Newton, Conn. Extensive testing and evaluation of the equipment were conducted at Quantico, Va., from 1956 to 1958.

The Fulton Aero-Retriever, as the system is called, consists of a two-pronged yoke mounted on the nose or wing of the rescue aircraft, an electric winch in the plane, and a kit containing 500 feet of nylon line with an inflatable balloon attached to one end and a lift harness to the other.

To execute a pick-up, the rescue plane drops the kit to the man to be lifted. He inflates the balloon from a helium cartridge and releases it after strapping himself into the lift harness. The rescue aircraft then intercepts the suspended line in its yoke and winches the man up into the plane.

In describing his sensations to Navy and Marine Corps test officials after the pick-up, Sgt. Woods said: "I felt as though I was being eased up into the air. There was no jerk or jolt. The first 15 or 20 feet seemed very slow. I sort of sat in a high chair and looked around at the people close below me. Then I began to move up faster. It seemed like I went almost straight up."

The citation stated that Sgt. Woods had "made an inestimable contribution toward perfection of this air-sea rescue technique which may well result in the saving of many lives of downed pilots, air crews and advance reconnaissance personnel in future operations."



NEPTUNE IS READY TO ENGAGE NYLON LINE



AIRPLANE PICKS UP WOODS' LIFT HARNESS



WOODS VOLUNTEERED TO TEST NEW PICK-UP

KEARSARGE IN RELIEF ROLE



THIS INNOCULATION IS EXACTLY WHAT SHE NEEDS, BUT IT HURTS



HELICOPTER LANDS ON NARROW ROAD AMID WRECKAGE OF HOUSES

WHEN DEVASTATING typhoons hit Japan this last fall, the U.S. Navy quickly went into action to help communities engulfed by disaster. One of the principal cities to suffer was Nagoya.

During rescue operations, the aircraft carrier USS *Kearsarge* evacuated 6000 persons. More than 17,000 typhoid shots and other antibiotics were administered to prevent possible spread of disease.

Commander, Naval Forces in Japan, reports that in addition to helicopter operations and the assistance of Naval medical teams, the Navy and Marine Corps personnel throughout Japan collected \$5000 and more than 18,000 pounds of clothing to aid stricken Japanese families affected by the floods in the wake of typhoon *Vera*.

The USS *Kearsarge*, which was di-



MISSION PRIEST GREETES NAVY VISITORS

verted to the flood area of Nagoya, contributed a major portion of the Navy's relief help. From that carrier, helicopters lifted 200,000 pounds of supplies, including medicine.

Medical teams from the *Kearsarge* were headed by LCdr. Frederick D. Beckwith, MC. The teams dispensed

some 8000 sulfadiazine tablets and treated dozens for minor injuries.

The 2700 crew members of the 41,000-ton aircraft carrier, donated \$3000 of the money collected for relief.

Chief of Naval Operations, Adm. Arleigh A. Burke, commended the *Kearsarge* for her part in the rescue work: "Your prompt and spirited action in providing humanitarian relief to the unfortunate typhoon victims in the Nagoya area was an impressive demonstration of the Navy's willingness and capability to relieve suffering. The President's People-to-People program was furthered by your work and the aid you rendered in Nagoya will be long remembered. Well Done."

Aboard the *Kearsarge* was RAdm. F. A. Brandley, Commander, Carrier Division Fifteen. Commanding Officer of the carrier is Capt. Robt. Townsend.



NAVY AND JAPANESE PERSONNEL UNLOAD SUPPLIES FROM COPTER



TYPHOON VICTIMS ARE EAGER TO GET ABOARD U.S. NAVY COPTER

INVITATION ITALY W



YOUR START IS MADE AT THE MOMENT OF IMPACT: A CLOUD OF STEAM AND YOU'RE OFF



ALONG THE WAY, YOU MEET A FRIEND, A REAL 'BUDDY' WHO TOPS OFF YOUR FUEL TANK



LAND FALL: YOU'RE EXACTLY ON TIME OVER VESUVIUS AND NAPLES, TARGET'S AHEAD

ATTACK Squadron 66, aboard a six-month tour with The retaliatory power of the ability of each attack unit. M this deployment to prove and flew over 2000 hours during their readiness for action—be *Skyhawk*-flying squadron is C

Sixty Six decided to take N tine exercise strike mission ov to come along to act as the r

So you're on the VA-66 flight You're out of the sack wel quick breakfast. An hour and when Air Ops passes, "Pilots, light, the steam cat hisses and s towards Central Italy. After buddy tanker who'll top you o ing and re-checking your nav you must simply wait for la comes the low level portion of

Strain your eyes and you'l minutes more to landfall—you over, down to the deck where that you know the map like t your starboard wing is your Now it's time to kick up th maneuver. A last check of a up and over you go.

With the release of your p home. The long trip home! I sitting in one position in thi No relief and "Charlie" time i heading seaward and watch f that TACAN will help you fi

As you get in radio range somewhat less lonely and you k of you say it can't be soon eno tower, get your Charlie time a says your final approach is righ pulls you to a stop, you know

FLIGHT OVER WITH VA-66

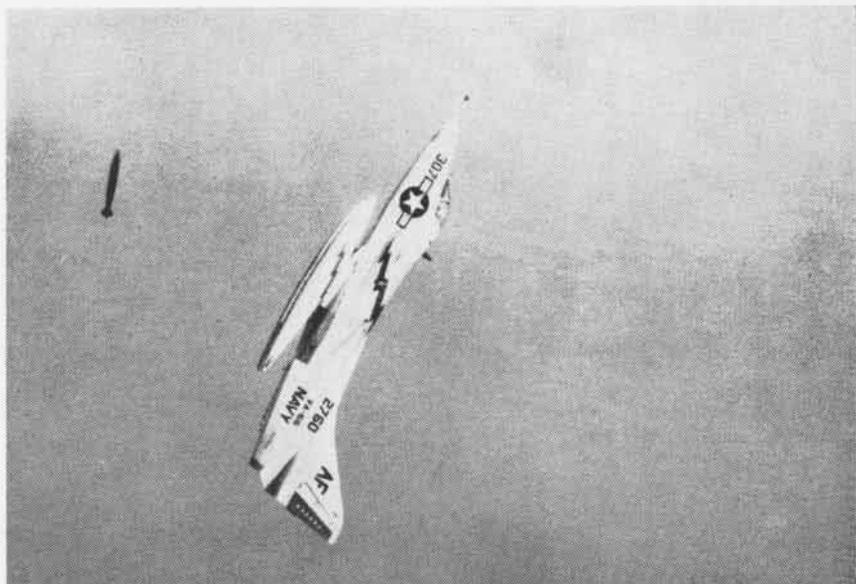
The USS *Intrepid*, has just completed Sixth Fleet in the Mediterranean. Sixth Fleet hinges on the strike capability exercises were conducted during prove this capability. VA-66 pilots is period and firmly demonstrated simulated or real. Skipper of this E. C. Griffith.

al Aviation News readers on a round-Italy. VFP-62 detachment offered der's eyes and keep him company. hchedule for the early launch.

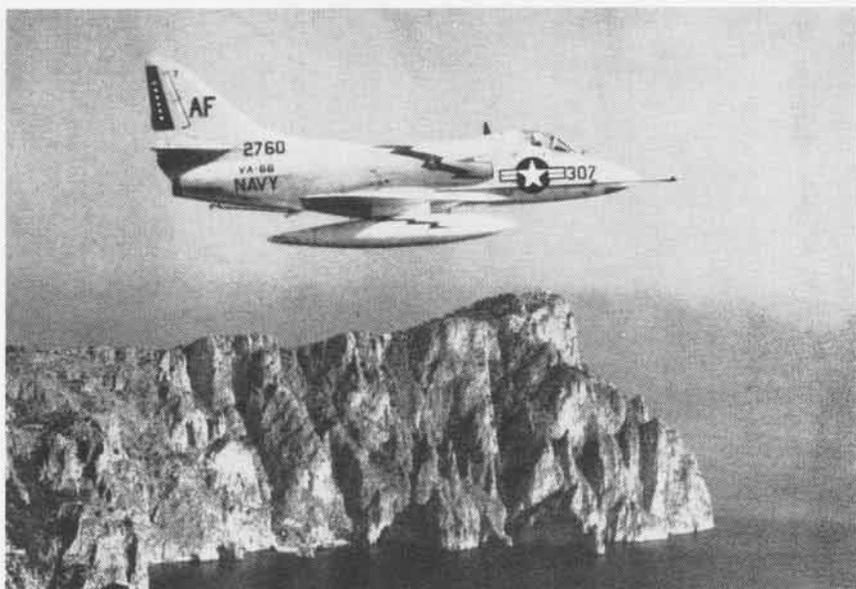
efore dawn and you rush down a half of intensive briefing is ended an your aircraft." With the first s you off to climb steadily eastward level off, there ahead, circling, is a and send you on your way. Check-ation, you finally are satisfied that fall to appear. With this landfall ar flight—the most demanding part. ee Vesuvius at 11 o'clock. Three r flight on time. Now push the nose he ground moves by fast. It's well back of your hand. That peak off ning point to the run in heading. peed a bit for that final climatic your switches and then it's up—

rtice bomb, you're headed towards right about here that the strain of niniaturized cockpit starts to tell. ver an hour away! You pass Capri the needle to lock on and tell you home. Times goes by slowly.

he babble of voices makes things w it isn't long now but other parts H. Now to check in with the ship's the landing dope. The "Meatball" on and when the number three wire a deserve a well-done and a shower.



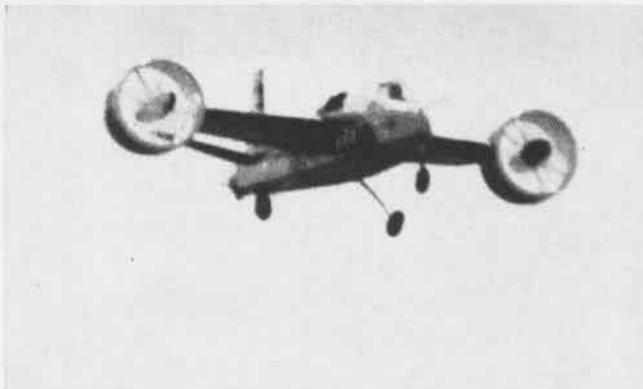
UPI UP! UP! AND OVER THE TOP FOR LOFT BOMBING PRACTICE, THEN OUT OF THERE FAST



BACK TO SEA YOU MAKE YOUR WAY HOME: THE ISLAND OF CAPRI SLIPS BY ON YOUR LEFT



HOME AGAIN, YOUR MISSION COMPLETED, YOU FIND THE FLIGHT DECK A WELCOME SIGHT



DOAK MODEL 16 VTOL RESEARCH PLANE MAKES HIGH SPEED FLY-BY



VERSATILE PLANE CLEARS TREETOPS IN 100% VERTICAL TAKE-OFF



FOR SHORT FIELD TAKE-OFF, DUCTS ARE SET AT 60-DEGREE ANGLE



BEFORE TOUCHDOWN, DUCTS ARE SHIFTED TO NEARLY 90 DEGREES



ACROBATICS COMPLETED, THE VZ-4 TAXIS TO A STOP ON RUNWAY

ARMY AIRCRAFT ARE DISPLAYED AT BELVOIR

SEVERAL of the Army's operational aircraft and a spectacular new VTOL research vehicle were exhibited at Davison Field, Fort Belvoir, Virginia, in connection with a meeting of the Washington section of the Institute of Aeronautical Sciences and American Helicopter Society.

Aircraft on exhibit included the L-26, L-23F, L-20, and L-19E liaison planes, the Grumman YA0 *Mobawk*, the TL-19D trainer, and H-34C, H-21B and H-23C helicopters. A de Havilland YAC *Caribou* did not arrive from Canada for the show.

Doak's Model 16 VTOL research plane, designated vz-4, stole the show, however. Pilot Jim Reichert took the unusual airplane through its paces—from a STOL take-off through a fast low-level fly-by, to the final VTOL take-off and transition, followed by a transition back to VTOL configuration and landing. The vz-4 required no artificial stability or damping systems for these flights.

The purpose of Army aviation was explained by Maj. Gen. Clifton Von Kann, Director of Army Aviation, who was principal speaker at the evening meeting of the society.

Mobility, he said, is where aircraft serve the Army best. Small aircraft and helicopters permit fewer foot soldiers to control larger battle areas under the dispersal concept of warfare which the atomic age ushered in.



COMBAT-READY TROOPS POUR OUT OF DE HAVILLAND YAC CARIBOU



GRUMMAN YAO-1 MOHAWK WILL HELP TO IMPROVE ARMY'S MOBILITY



H-21B HELICOPTER SIMULATES TROOP LIFT



H-34C HELO IS CONSIDERED PRIME MOVER



BEECH L-23F LIAISON PLANE CARRIES SIX



L-19E IS COMMONLY CALLED GRASSHOPPER



L-20 BEAVER CAN EMPLOY SKIS OR FLOATS



ARMY L-26C DOES COMMAND LIAISON WORK



H-34 HELICOPTER ASSIGNED TO PRESIDENT IS GUARDED BY M.P.



VIRGINIA AIR NATIONAL GUARD PLANE SHARES ARMY FACILITIES

YELLOW BIRD GOES OUT TO PASTURE

WITH THE rapid advancements in aviation, the "old" is regularly passing from the picture, so it is not unusual that another era of Naval Aviation was closed last summer. However, it is surprising that the biplane era continued until then, having been extended for some 10 years to serve a special need. Old age finally caught up with the N3N-3's at Annapolis, and they were retired when maintenance inspection showed excessive repair and overhaul work would be necessary to keep the remaining fleet of these venerable trainers in flight status.

Late in August they made their last Navy trip—by barge to NAS NORFOLK for disposition.

Thus the N3N passed from the Navy picture 25 years after the enactment

By *Harold Andrews*
Airframe Design Division, BuAer



XN3N-1 AT ANACOSTIA FOR 1935 TRIALS



ORIGINAL XN3N-1, UP FOR SALE IN 1945

and Grumman J2F's, also were retained for a few years for special purposes but only the N3N's remained by the time of the Korean War.

At Annapolis, the N3N-3's, or *Yellow Birds* as they have become known, have served faithfully for midshipmen flight indoctrination. While these flights were not intended as flight training, the operational simplicity of the N3N allowed the midshipmen to devote a maximum amount of time to actually flying the aircraft.

A number of plans were investigated



INERTIA STARTER IS WOUND UP BY CRANK

by Congress of the legislation that brought it into being. After a somewhat hesitant start, the N3N served the Navy well as the only seaplane primary trainer during a period when all Navy primary flight training began with the seaplane phase.

As a landplane it shared the load with others, being gradually phased out in favor of the Stearman N2S series which were used by both the Army Air Corps and the Navy. But when a seaplane trainer was required to provide aviation indoctrination for midshipmen at the Naval Academy, only one type was available, and the necessary small batch of N3N-3's was retained when all other biplane trainers were declared surplus.

A few other biplanes, Curtiss soc's



LAND-BASED N3N IN TRAINING COMMAND



U.S. COAST GUARD RECEIVED FOUR N3N'S

to replace the N3N's at Annapolis with land-based aircraft operating from a suitable facility as well as with water-based adaptations of other types such as the OE's and T-34B's. The *Yellow Birds* rode through all these, but they finally succumbed to wear and tear.

During the twenties the Naval Aircraft Factory developed a number of new aircraft designs, including some in all categories used by fast-growing Naval Aviation. While the NAF patrol planes were best known, two trainer designs were developed in the early twenties, the TG series (no relation to the later Great Lakes TG series torpedo planes) and the XN2N-1. Neither type was placed in production, however, and no new trainer designs were developed at the Factory in succeeding years.



MIDSHIPMAN USES GOSPORT-RIGGED HELMET

Work at the Factory turned more and more to production of special items peculiar to Navy aircraft, to overhaul, and to conversion and modification of aircraft in the early thirties, with a patrol plane prototype in 1932 being the last complete airplane built. In 1934 Congress, concerned then as now over aircraft production costs, passed the Vinson-Trammell Act which included a provision that the Navy construct 10 percent of its own aircraft and engines. Since only numbers were stipulated and since the Factory was not ready for a large production effort, a primary trainer was selected for the first type to be developed and produced under the provisions of the new legislation. Early in 1935, the first prototype N3N-3 was ordered by BUAE.

The XN3N-1 was based on a BUAER preliminary design study and the detail design proceeded at the Factory with a newly expanded engineering staff. The design was generally typical of contemporary trainers; all metal structure with fabric covering. Special features included the use of aluminum alloy extrusions for fuselage main frames, an all-metal integral aft fuselage and vertical fin assembly which bolted to the main fuselage with only four bolts and the use of quick detachable side panels along the entire left side of the fuselage. An R-790 engine, a then-current version of the famous Wright *Whirlwind*, rated at 220 hp, was selected for the power plant. The design was a convertible—an airplane which could be operated on either float or wheel landing gear.

Production orders for the N3N-1, including a group to be operated at Pensacola as seaplanes only, were placed before the "X" airplane was completed, but work was held up when the prototype was flown and found to have a number of stability and control problems. After considerable changes to the tail surfaces and redesign of the fuselage to move the engine forward and the tail surfaces aft, the "X" airplane finally completed its demonstrations and was accepted for BIS trials in early 1936. In order to make up for time lost in the program, the trials were conducted at Pensacola rather than Anacostia since it was then winter.

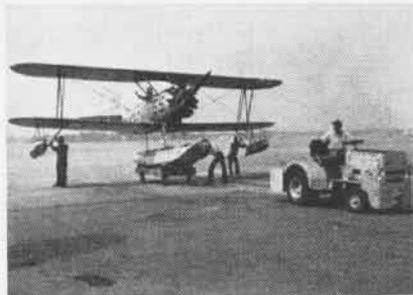
With the changes incorporated, the XN3N-1 was found generally satisfactory for a primary trainer and its acceptance was recommended. One item of interest that accounts for the recently retired *Yellow Birds* looking even more like leftovers from the twenties was the recommendation that the streamlined ring cowling on the engine be deleted. With the increased forward fuselage length, the cowling contributed too much to reduction of visibility. Apparently some cowlings had been built, however, as these showed up on individual N3N-1's in succeeding years.

Subsequent accelerated service trials of the XN3N-1 by NAS PENSACOLA brought forth the opinion that its speed was too high for a primary trainer—with a maximum speed of 120 mph!

The first production N3N-1 went to Anacostia for its trials in the summer of 1936, and with the experience of the



SIDE PANELS WERE REMOVED FOR REPAIRS



LAST TIME ON FLIGHT RAMP AT ANNAPOLIS



SANDY BEACH N3N LANDING AT ANNAPOLIS



N3N AS MODIFIED FOR CIVILIAN SPRAYER



BIN TAKES UP FRONT COCKPIT IN DUSTER

"X" model behind it, quickly passed this hurdle. Production N3N's on floats were delivered to Pensacola, and they replaced as *Yellow Perils* the old float equipped Consolidated NY's—a design then 10 years old. Land-based versions were assigned to various Naval Reserve activities as more N3N-1's became available.

Meanwhile, in an effort to develop an improved design, the XN3N-2 was ordered; this aircraft featured a completely revised tail assembly. However, the improvement was not sufficient to warrant a changeover.

During 1936 it was also decided to replace the R-790 engine of the early airplane with another version of the *Whirlwind*, the R-760, both being rated at 220 hp. Engine manufacturing shops were added at NAF and the R-760 was placed in production.

Production of the N3N-1 ended in the spring of 1938 with a total of 180 aircraft completed. In 1939, when more trainers were required for the expanding Naval Aviation program, the N3N-3, a modernized version of the N3N-1, was placed in production. This version incorporated newly redesigned tail surfaces, as well as improved landplane landing gear, but incorporated most of the design features of the earlier model.

The -3 supplanted the -1 for both seaplane and landplane training. With an immediate need for a large number of trainers, the production rate for the -3 was considerably higher than for the -1, and 816 were delivered between April 1940 and January 1942. Production was terminated at this time in favor of the more maneuverable Stearman N2's which were in production for both services. Most N3N's served well as land-based trainers in the greatly expanded Navy training programs.

By mid-1945 all N3N's except approximately 100 N3N-3 seaplanes were declared surplus. Finding immediate acceptance as dusters and sprayers, some 400 entered the civil aircraft register, with nearly 300 remaining registered today. Many of these have been fitted with larger engines and otherwise modified to better use their ample fuselage capacity. With considerable useful life ahead of them, it will be some time before the single example retained by the Navy for the National Air Museum will be the sole survivor of the N3N generation.

Weekend Warrior NEWS



MANAGEMENT engineer on RAdm. Smith's staff, Cdr. Martin, left, reports in to him.



PAST AND PRESENT C.O. of Atlanta's VA-672 get Davis and Safety Awards from Adm. Smith.



MOROCCAN GUARD at King's palace checks the credentials of Lt. John J. Lynch of VR-831.

To Find a Better Way

The continuing search for economy in government operations has resulted in the establishment of a new billet on the staff of RAdm. Allen Smith, Jr., Chief of Naval Air Reserve Training.

Cdr. Henry J. Martin, only TAR aviator among recent graduates of the six-week Navy Management Training course at the Naval Postgraduate School in Monterey, has started to work at the broad task of "improving efficiency and cutting costs" within the 18-activity command.

Official title for the billet is Management Engineer, and part of Cdr. Mar-

tin's work will consist of trouble-shooting to locate spots that might need improvement. He will make recommendations for more streamlined organization and work methods. Periodic inspection trips will be made to assist all stations.

A veteran pilot with a VP and VR background, Cdr. Martin reported to CNAResTra from ComTwelve. He has been in the TAR program since 1946.

VR-831 Trained at Lyautey

The Weekend Warriors of Naval Air Reserve Tactical Support Squadron 831, based at NAS NEW YORK, spent

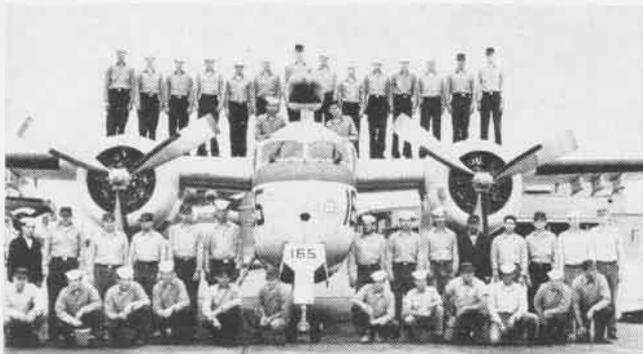
their two-weeks training duty at NAS PORT LYAUTEY, Morocco, North Africa. Operating with VR-24, they flew passengers and cargo in R5D aircraft to Naples, Nice, Rota, Barcelona, London, Athens, Weisbaden and Istanbul. They logged more than 18,671 route miles in the Mediterranean and European area, and enjoyed good liberty, too.

As a good will gesture, the squadron brought with them 1000 books which will be used in English language training courses in Moroccan schools, and 3000 ball point pens. These were presented to the Pasha of Kenitra. Cdr. H. L. Stead is skipper of VR-831.



TWO POLIO patients in iron lungs changed hospitals in the NAS Seattle recruiting van. It had enough AC power to operate the lungs. When a six-foot carrier model and cutaway jet engine were removed, there was ample space for patients and their attendants.





BIG DRIVE in Salinas area brought 49 men into VS-876 in 1959. Surrounding S2F Tracker are some of the recruits and recruiters.



CDR. KENNETH Thunem, Ltjg. Gordon Wilson, LCdr. James Williams of AWS-87 on ACDUTRA aboard *Bon Homme Richard*.

VS-876 Draws Recruits

Shortly after its commissioning in July 1958, NAR Antisubmarine Squadron 876 at NAS OAKLAND lost 15 rated men who were needed to fill the quotas of force units. The skipper, Cdr. Bob Linari; the exec, LCdr. Chuck Walters; and the senior pilots knew there was a big recruiting job ahead.

Each month the commanding officer sponsored "get acquainted" events among the men. Pilots, although still going through VS transition, took time to let each man take the controls.

LCdr. Gene Morgan, VS-876 recruiting officer, initiated an incentive money drawing, contributed by the officers. The plan was launched last January and brought in five new men. Then, in February, LCdr. Walters, a Salinas newsman, devised a program for his home town and vicinity.

Photographs of Salinas area squadron members were printed in three papers;

radio and television gave ready cooperation. Two NAS OAKLAND recruiters set up desks at the airport. That afternoon three S2F Trackers landed. About 500 citizens were on hand to greet squadron officers, including LCdr. Russ Messner, Salinas High basketball coach, and Lt. Blitz Bellizio, the Junior High coach. A plane was on the field the rest of the week.

In six months 49 men were recruited. VS-876 is now one of Oakland's largest squadrons and it is still growing.

AR to AA to AN in One Summer

For the first time in the history of NAS OAKLAND, all students in the Recruit-Airman School passed all phases of the training with flying colors.

Largely responsible for the phenomenal success of the 1959 session was LCdr. Russell Messner, who is mentioned above in the VS-876 story. For the past two years he has served as Officer-in-Charge of the 85-day accelerated training program, which telescopes the equivalent of 18-months instruction into three.

No small boost to morale was given by the visit of Miss Sue Bronson, Miss California of 1959, who finished fourth in the Miss America contest. She was piped aboard the station with full military honors. Accompanied by the commanding officer, then Capt. W. H. Weston, she inspected the four platoons. Navy Wings and 11 red roses were presented to Miss Bronson. The 12th was sent to her in Atlantic City to bring luck.

The men received their first taste of sea duty with five days aboard the *Bon Homme Richard* underway. Working closely with ship's company, they rotated duties. One student, Peter Fuller, received a letter of commendation for

services rendered in the CIC department.

Ashore, studies included military drill, mathematics, aviation subjects, as well as general recruit training.

VP-873 Had Cruise at Alameda

Patrol Squadron 873, home-based at NAS OAKLAND, spent two weeks active duty at NAS ALAMEDA. Operating as a completely self-sustained unit, VP-873 pilots flew their own *Neptunes* and personnel to the temporary base.

Cdr. J. I. Jadin's men rotated flying with ground school during the rigorous tour. Particular emphasis was placed on navigation and there were operational ASW exercises with fleet submarines. Other training hops took squadron personnel to Portland, Seattle, Salt Lake City, Houston, Las Vegas and San Diego. The annual cruise was considered highly successful.



VP-873 MECHS made periodic P2V inspection during their two-week cruise at Alameda.



LOVELY MISS California is piped aboard NAS Oakland with Capt. Weston and LCdr. Messner.

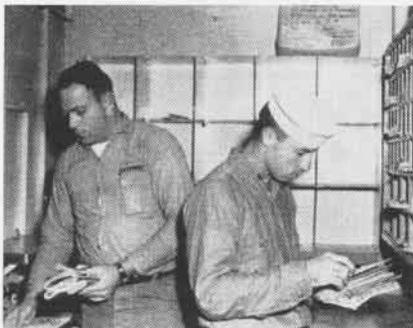
MAIL CALL ON THE RANGER

By Dustin W. Frazer



MAIL Call!" These magical words lift the spirits of some 3500 men serving aboard USS *Ranger*.

Even while at sea for operations and carrier qualifications, the mail is flown out daily to the *Ranger* via COD (Carrier Onboard Delivery). The *Ranger* post office is operated by one postal clerk and seven assistants. They often work long hours, for besides handling all the incoming and outgoing mail, they sell stamps and money orders. One or more of the clerks is on duty at all



SORTING MAIL IS PRELUDE TO 'MAIL CALL'

hours of the day or night sorting mail.

The staff also handles parcel post, registered, certified, and insured mail. The *Ranger* post office does a business comparable to that of a city of 7000 to 9000 population.

When the *Ranger* deployed to the Far East, business in the post office tripled. Not only did the mailing of souvenirs purchased by the ship's crew increase business, but all personal business had to be taken care of by mail. In two days, 4000 money orders totaling \$32,000 were sold.

Stamp business took a sharp increase too, as \$150 worth of stamps were sold daily. The average weight of one day's outgoing mail is from 200 to 250 pounds, while the daily weight of the incoming mail is from 350 to 400 pounds.

The *Ranger* post office was established as a part of the communications department when the ship went into commission. As of 1 August 1958, it became the responsibility of the administrative division. It is also a branch office of the New York City post office.

It is amazing to note that the post office has never lost a letter. Registered and insured mail is delivered to the addressee by signature only. A record of all insured and registered mail is kept in the post office for a period of three years. The post office also processes insured and registered claims and waivers.

The question most often asked of the mail clerks during their busy work day is, "When is the next mail call?"



MAIL HANDLING CREW IS GLAD TO HELP IN TASK OF OFFLOADING BAGS FROM COD PLANE

ANACOSTIA WINS CONWAY TROPHY



TROPHY IN FOREGROUND, VADM. PIRIE CONGRATULATES CAPT. LEFEVER AT ANACOSTIA

HIGHEST competitive award in the Naval Air Reserve Training Command, the Edwin Francis Conway Memorial Trophy, was won by the Naval Air Reserve Training Unit, Anacostia, for fiscal year 1959. It was a famous first for the Washington Weekend Warriors.

On hand to make the presentation to the commanding officer, Capt. Robert C. LeFever, was VAdm. Robert B. Pirie, DCNO (Air). In addressing the 300 Anacostia naval personnel present, Adm. Pirie noted: "Anacostia has been adjudged the most efficient of the 18 Naval Air Reserve activities. This means, among more important things, that through the dedicated efforts of the active duty officers and men of NARTU ANACOSTIA, and the officers and men of her drilling squadrons, the highest average combat efficiency in the Naval Air Reserve Training Command was achieved. . . . On behalf of the entire Naval Establishment, I commend the officers and men of NARTU ANACOSTIA. I place confident trust in your continued efforts to make the Naval Air Reserve an even more effective force for national defense."

The Conway trophy, one of the oldest continuous awards for aviation

achievement, was donated anonymously to the Navy Department 23 years ago to perpetuate the memory of Lt. E. F. Conway, commanding officer of Floyd Bennett Field, New York, who was killed in an airplane crash in 1933.

Capt. James A. Masterson commanded NARTU ANACOSTIA during the competitive year. In making notification, RAdm. Allen Smith, Jr., CNARestra, stated: "The winning of this trophy is indicative of outstanding devotion, performance and leadership by the Commanding Officer, officers and men."

Noel Davis Awards

Eleven Naval Air Reserve squadrons were winners of the Noel Davis trophy, signifying the most proficient within type:

NARTU MEMPHIS, Fighter Squadron 791, Cdr. R.N. Pitner, C.O.

NAS ATLANTA, Attack Squadron 672, Cdr. J. A. Brakefield, C.O.

NARTU LAKEHURST, Antisubmarine Squadron 751, Cdr. J. H. McGuinness, C.O.; Airship Squadron 753, Cdr. E. L. Mahl, C.O.

NARTU JACKSONVILLE, VP-742, Cdr. F. D. Murphy, C.O.

NAS OAKLAND, Transport Squad-

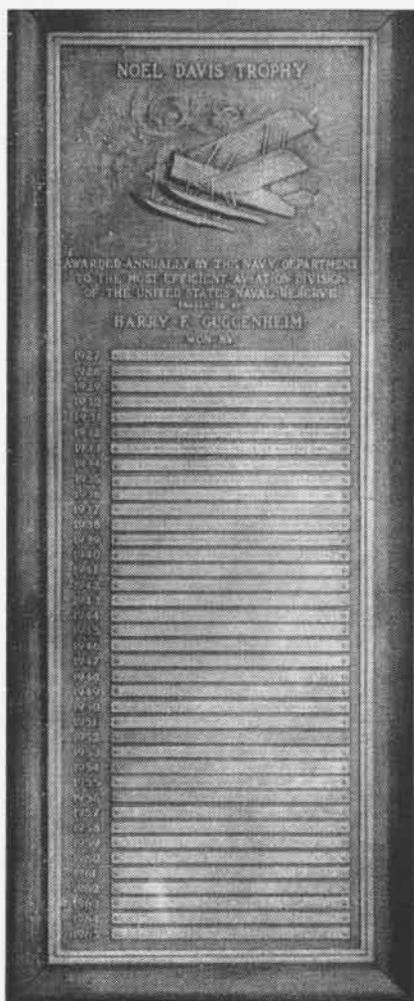
ron 872, Cdr. G. H. Hubert, the C.O.

NAS LOS ALAMITOS, Air Training Unit 774, Cdr. W. P. Sloan, C.O.

NAS GLENVIEW, BUAEER Representatives Training Unit 721, Cdr. R. W. Rawson, C.O.

NAS MINNEAPOLIS, Helicopter Squadron 811, Cdr. D. L. Djerf, C.O.; Air Wing Staff 81, Cdr. N. R. Rafshol, C.O.; Fleet Air Service Squadron 815, Cdr. C. O. Olson, C.O.

The Chief of Naval Air Training Trophy, awarded to the unit showing the most improvement during the past fiscal year, went to NARTU JACKSONVILLE, commanded by Capt. F. H. Holt. VAdm. Robert Goldthwaite, CNATra, made the presentation. Last year's winner was NARTU ANACOSTIA.



WINNERS' NAMES ARE ENGRAVED ON STRIPS

Crusader Pilot Bats .250 Marine Rips Tiny Target 35 Times

Marine 1st Lt. A. E. Wittmer of VMF-232, the *Red Devil* squadron, has turned in the "hottest" banner since the squadron's conversion from the FJ-4B *Fury* to the FSU *Crusader*.

He recorded 35 out of a possible 140 hits on an 8x40-foot target.

His .250 batting average would not brand him a slugger in major league baseball, but Lt. Wittmer's handicap was slightly greater—flying a 1000 mph airplane at a target moving at about 250 mph—this at 30,000 feet.

Pilots making target runs during



DEADEYE MARINE COUNTS HITS ON SLEEVE

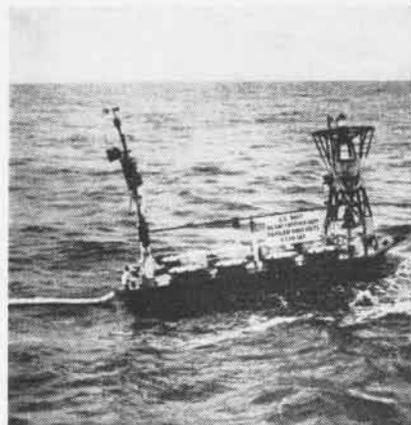


NOSE OF A NAVY HUS helicopter emerges slowly from an Air Force C-124 Globemaster cargo plane at Naval Air Facility, McMurdo Sound, Antarctica. After four-day flight from Quonset Point, Rhode Island, helicopter had flown some 12,000 miles. It will be operated by AerDevRon 6.

aerial gunnery practice are permitted to make only two runs on the target, and they must fire 140 rounds of 20mm.

Robot Buoy is Effective Transmits Reports on Gulf Storm

An experimental remote weather buoy, designed for BUAER by the National Bureau of Standards, proved its worth in October when it transmitted



WEATHER STATION IS ANCHORED IN GULF

the first report of tropical storm *Irene* off the Gulf Coast.

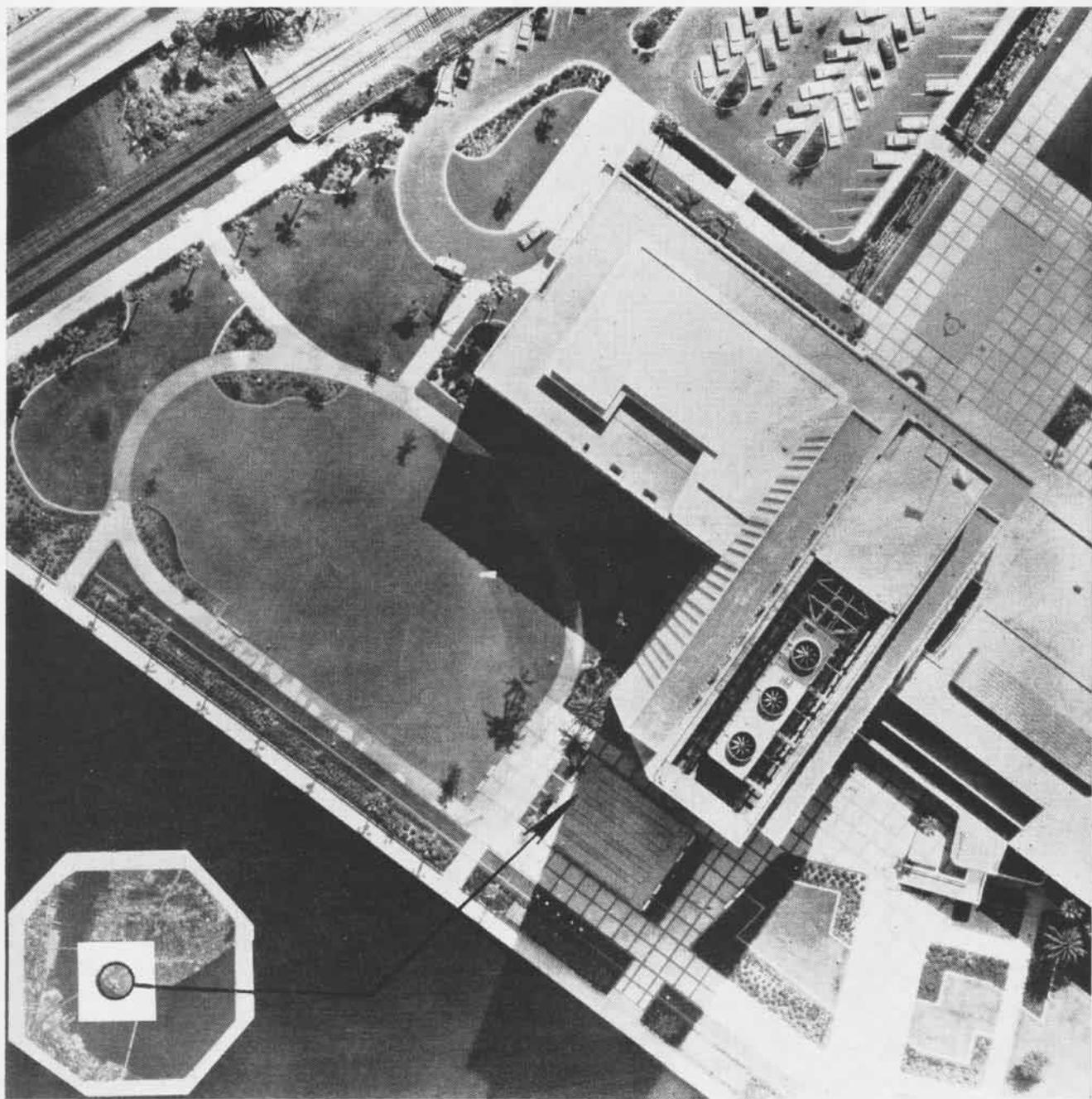
The buoy is located about 300 miles south of the mouth of the Mississippi River. Its reports were transmitted by radio at six-hour intervals and were received by Navy weather forecast stations and the Weather Bureau offices.

The buoy is anchored in about 11,000 feet of water in an area where shipping is relatively scarce. It is the fifth in a series of experimental floating weather stations initiated in August 1958. It can be anchored anywhere since it uses zero-weight anchor chain, that is, with the same specific gravity as sea water.

The buoy's purpose is to provide faster, more adequate weather information during the fall and winter seasons when hurricanes and severe winter storms are most likely to occur.



519TH AND FINAL production F3H *Demon*, BuNo 146740, nears completion at McDonnell plant in St. Louis. On one side of the assembly line is a square of brown wrapping paper on which is scrawled a nostalgic sentiment: "They just don't make 'em like this any more." Near it is a second sign, "That's all, folks." A long-time night-fighter standby, the *Demon* will be replaced by the Chance Vought F8U-2N and McDonnell's latest fighter, the F4H *Phantom II*.



ACCENTUATE THE NEGATIVE

PHOTOGRAPHY has come a long way from the daguerreotype in a little over a hundred years. How far is illustrated by this aerial view, an outstanding example of camera magic.

This picture of the Prudential Insurance Building, Jacksonville, Fla., looks as if it were taken from an altitude of

a few thousand feet. Actually the U.S. Navy's photo *Crusader*, flown by a VFP-62 pilot, was flying at 40,000 feet when the shot was taken. Whereas the inset represents a scale of one inch to 1.2 miles, the enlargement, 76 times in area, developed from the negative yields a clear, well defined picture

in a scale of one inch for 83 feet.

Years ago it would have been impossible to gain such clear photographic coverage at such heights. But powerful cameras and film can now produce a camera record which in skilled hands brings forth a picture where details seem to spring out in bold relief.

MICE LIVE ON SPACE DIET



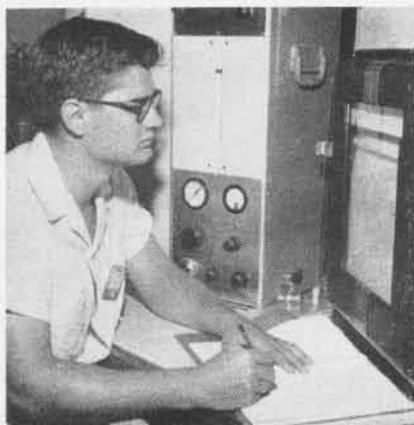
DR. RUSSEL O. BOWMAN WATCHES MOUSETRONAUTS SCURRYING AROUND GLASS CHAMBER

SPACE-MEDICINE scientists at Chance Vought Aircraft are using two white mice—Yoke and Zebra—to help solve food problems that will be encountered in man's travel in space.

Called "Mousetronauts," the animals are living in a sealed-off glass and plastic world of their own to aid scientists in creating a closed environmental system which on a larger scale would produce vital oxygen and food for man in space or on a distant, lifeless planet.

With the mice is a form of algae—*Chlorella pyrenoidosa*. The central theory behind the experiment is that the algae will produce oxygen for the mice while the mice produce carbon dioxide for the plant.

Connected to the mouse jar by a system of pumps and tubing is a narrow, four-foot-high, fluorescent-lighted, double-walled plastic tank in which about four quarts of life-giving algae



RESEARCH MAN STUDIES AIR FROM CHAMBER

and water form a dark green brew. In this system the exchange of oxygen and CO_2 is carried out.

At last report, the mice had been sealed in for 17 days and were thriving. Earlier, Yoke had made a 292-hour solo trial run which ended when he ran out of food. Troubled with patchy fur when he entered, he is in excellent condition now. Instead of holding his own, his health has improved.

The mice currently are being fed laboratory food in pellet form but later they will be fed algae from the tank. Certain salts and nitrogen-yielding urea (a soluble crystalline solid found in the urine of mammals and produced synthetically) are added to the algae medium.

The ultimate goal is a closed system which will provide oxygen, food and water for man and allow for reprocessing much of his human waste. Using mice in the experiment will give scientists a good reading on how man would fare since one mouse's requirements are about one one-hundredth of those of man. Here's why such a system is needed:

Several hundred pounds of expensive rocket are required to boost one pound of payload to a sufficient speed (about 25,000 mph) to escape the earth's gravitational pull.

Since man needs approximately five pounds of water, two to three pounds of food and 340 quarts of oxygen daily, each person would require more than two tons of food and water and more than 180,000 quarts of oxygen for a 516-day turn-around journey to Mars.

Hamilton Makes A2F Parts Channel Controls 5 Temperatures

Temperature control systems for the Grumman A2F and North American T-39 airplanes will be developed and produced by the Hamilton Standard Electronics Department, it has been announced.

The A2F will be powered by two Pratt & Whitney J-52 engines. The T-39 is North American's entry into the small utility jet transport field. It carries four to eight passengers and a crew of two as a transport, but may be used as a high speed navigational trainer. Power is supplied by two Pratt & Whitney JT-12 engines.

The system for the A2F will control the temperature in five "channels"—the cabin, electronics compartment, water separator for de-icing, windshield defogging, and ventilation of pilot and crewman's exposure suits. On the T-39, only the cabin temperature needs regulating.

The two new systems are similar in principle to those which are in use on the Convair 880, Grumman YA0-1, Lockheed T-104 and other aircraft. They are all completely transistorized.

More Phantom II's Bought McDonnell Awarded \$137.6-million

A second production contract in the amount of \$137,600,000 has been awarded McDonnell Aircraft Corporation for F4H-1 fighter aircraft. The number of planes was not announced.

The F4H-1 *Phantom II* is undergoing extensive tests prior to its introduction into fleet carrier squadrons.



CAPT. C. H. TURNER, C.O. of the *Antietam*, congratulates Lt. J. R. Tappan on the occasion of his 100th T2V landing. Lt. Tappan is first BTG-9 instructor to complete 100 *SeaStar* landings aboard the training carrier.

MARINES CULTIVATE CARIBOU ON ADAK



CARIBOU captured at Anchorage are unloaded from Navy RSD at Adak. Idea was to populate the island with game for food and recreation.



SGT. MAJOR J. T. Langley of Marine Barracks at Adak was on hand to meet shipment of baby caribou arriving at Adak from Anchorage.



PFC. F. J. KNUSTA examines young. Numbers on calves are for identification to insure that each one gets proper care, warmth, food.



DAILY BOTTLE of formula administered to one of baby caribou by Pfc. Knusta is checked off by Pfc. J. R. Polo. Nobody misses chow.



SPECIAL AFFECTION grew between Knusta and one of young. Here it accompanies him on a stroll on the tundra near Marine Barracks.



FORMULA of canned milk, cod liver oil and egg is mixed by Marines at Adak. Developed by trial and error, the formula proved healthy.



A NAVY PHOTOGRAPHER at NAS Glynco, Brunswick, Ga., produced this "best ever" picture of burricane "Gracie" as she neared the South Carolina-Georgia coast. Taken through a CIC radarscope by B. J. Dalma, PH2, the eye, 20 miles in diameter, is surrounded by swirling clouds and 100-125 mph winds. High winds are beginning to reach Beaufort, S. C., which is at the upper left outer edge of the center mass of clouds. Clondless wedge, left center, indicates peak velocity winds. Closely spaced lines at lower left show the track of an airplane which flew a distance of approximately 20 miles during the five-minute exposure. The airplane flying in the eye of the storm is revealed in faint lines in the lower left of the eye.

F-104 Wins Collier Trophy Five Men Share Aviation Award

The F-104 Lockheed fighter plane has won for its three designers and two Air Force record breakers this year's Collier Trophy, according to the National Aeronautic Association.

The American aviation award goes to the United States Air Force and the industry team responsible for the F-104 interceptor: Clarence L. Johnson of Lockheed Aircraft Corporation for design of the air frame; Neil Burgess and Gerhard Neumann of the Flight Propulsion Division, General Electric



LAST RESERVE BLIMP flight is made from Lakehurst, N. J. Three Weekend Warrior airship squadrons, scheduled for deactivation December 31, conducted final flights September 30, marking end of 12 years of weekend training for lighter-than-air airships in the Naval Air Reserve.

Company, for development of its J-79 turbojet engine; LCol. Howard C. Johnson, USAF, for establishing a world landplane altitude record of 91,243 feet; and Maj. Walter W. Irwin, USAF, for establishing a world straightaway speed record of 1404.09 miles per hour.

The Collier Trophy, established in 1911, is awarded annually by the National Aeronautic Association and sponsored by Look Magazine. It honors an individual or group for the greatest achievement in aviation in America, value of which has been demonstrated in actual use during the preceding year.

VMF-451 Deploys on Lex Accident-free Record Maintained



MARINE FURIES READY FOR CATAPULTING

Pilots of VMF-451 kept the squadron's 1959 accident-free record intact during a month of operations aboard USS *Lexington* in WestPac.

Serving as part of Carrier Air Group 21, squadron pilots took part in such exercises as weapons delivery, carrier-controlled approach, intercepts controlled by shipboard and airborne units, fighter sweeps, and combat air patrols.

In its year of accident-free flight, VMF-451 pilots have logged 5500 hours in FJ-4 *Furies*, flying from land bases and the carriers *Midway*, *Sbangri La* and *Lexington*. Commanded by LtCol. William R. Nowadnick, VMF-451 employs 24 aircraft and 265 officers and men.

VMF-451 is based at Atsugi, Japan.

F8U-1's to be Modernized Program Will Continue into 1961

The Navy has awarded Chance Vought a \$9.5-million contract for modernizing 164 F8U-1 *Crusaders* between now and February 1961. Eleven aircraft will be sent to Dallas per month, according to the manufacturer.

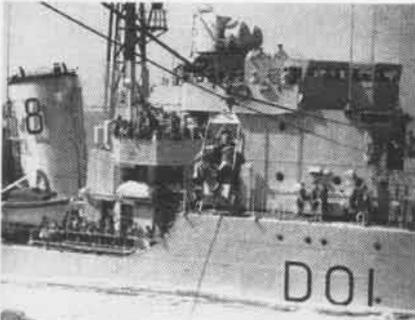
Changes and improvements will be made on 147 fighters and 17 photo planes to place older planes on a par with new *Crusaders* just coming off the production line.

Included in the program will be incorporation of advances made in the aircraft's liquid oxygen, electrical, fuel transfer, hydraulic, escape, and control systems. The older planes also will be processed to provide for increased protection against corrosion during their carrier deployments.

Hands Across the Sea Briton Saved by Lexington Fliers

Sub Lieutenant John G. Wood, Royal Navy, was forced to eject from his Hawker *Sea Hawk* jet when it went into an uncontrollable spin following a mid-air collision with another *Sea Hawk* over the South China Sea.

As his crippled plane fell to the sea it was seen by the pilot of a *Lexington* AD *Skyraider*. Turning to investigate, the AD's crew sighted the Briton's parachute and radioed the *Lexington*. Before Lt. Wood reached the water, the



LT. WOOD IS HIGHLIGHTED TO HMS CAPRICE

big Seventh Fleet carrier, 30 miles to the east, had its rescue operations underway.

Three *Skyraiders* of the *Lexington* flight rushed back to their ship and escorted the rescue helicopter to the scene. Meanwhile, the remaining *Skyraiders* and several British aircraft dropped smoke markers and kept a close watch on the downed pilot.

About a minute after he hit the water, Lt. Wood inflated and climbed into his raft. Thirty-five minutes later the *Lexington* "angel" was hovering overhead.

Not sure that British pilots knew how to board a conventional rescue sling, helicopter crewman Thomas E. Ash, AMH3, a veteran of 48 previous



WHEN COMMANDER-IN-CHIEF of the United States' Pacific Fleet, Admiral Harry D. Felt visited the Australian national capital of Canberra, he engaged in a series of talks with departmental and service chiefs. Here upon his arrival at a nearby RAAF Base Admiral Felt (left) chats with Air Marshal, Sir Frederick Scerberger, Chief of the Air Staff of the Royal Australian Air Force.

helicopter rescues, decided to lower the new "Triple Saddle" three-pronged rescue seat. His choice proved wise, for Lt. Wood quickly positioned himself for the lift into the helicopter. En route back to the *Lexington* he compared family trees with Ltjg. George S. Wood, pilot of the rescue helicopter.

Aboard the *Lexington* the Briton was treated for minor injuries, then transferred to the British frigate HMS *Caprice* for return to his own ship, the Royal Navy carrier, HMS *Centaur*.

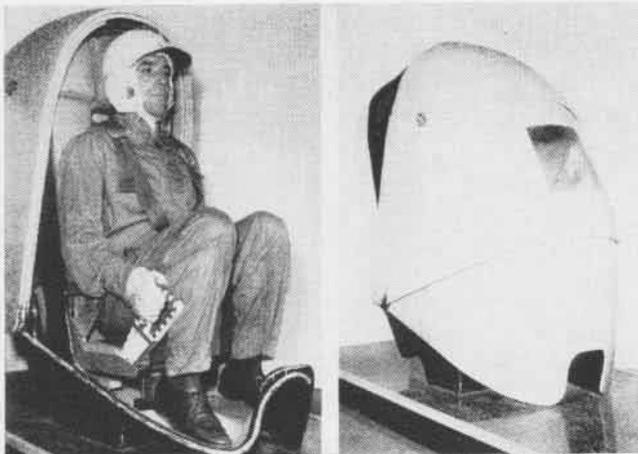
Shangri La Enters Yard Praised for Work in 'Handclasp'

USS *Shangri La* has entered the Bremerton shipyard for a four-months overhaul. She returned from the Far East in October and received wide acclaim for delivering 30 tons of Operation *Handclasp* food, clothing and medicine to Hong Kong refugees.

The veteran ship (CVA-38) will receive a new paint job and her miles of wiring and plumbing will be checked and repaired as necessary.



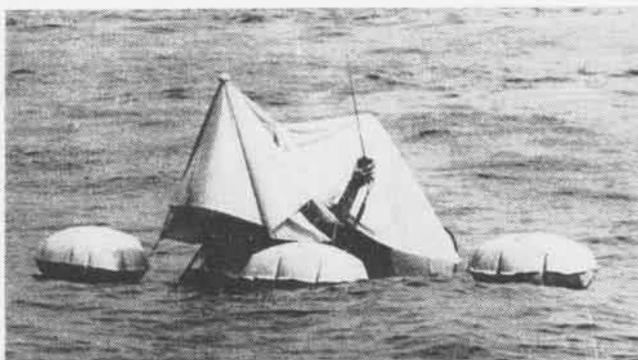
CALIFORNIA STATE DRILL champs for 1959 display the impressive array of more than 75 trophies accumulated by the NAS Oakland drill team for marching feats. NAS Moffett Field tied with Treasure Island for second place honors. Bob Lynch is drill master of the Oakland outfit.



CAPSULE DURING NORMAL FLIGHT, LEFT, AND AFTER EJECTION



TSGT. J. B. GRAVES DURING 72-HOUR EVALUATION AT KEY WEST



RIGGED FOR RAIN, GRAVES HOLDS RADIO ANTENNA IN HIS HAND



NAVY HELICOPTER RESCUES GRAVES AFTER TEST IS COMPLETED

SURVIVAL ON LAND, SEA, OR EVEN ICECAP

GOODYEAR Aircraft Corporation has designed an escape capsule for pilots and crewmen of supersonic aircraft which is reported to be adequate under all conditions—fair or foul weather and on land as well as water.

The ability of an aircrewman to remain alive after parachuting into open water was proved in a joint Navy-Air Force evaluation of the capsule near Key West.

After 72 hours afloat in the GAC capsule, TSGT. Jimmy Graves was picked up by helicopter and flown to a nearby Naval hospital where he was pronounced in good condition in spite of the ordeal.

The spherical, wedge-shaped capsule, which is about two feet wide, 40 inches from front to back, and 46 inches high, with a curved front that can be opened, is the result of nearly 10 years of research. Its built-in survival kit contains food, clothing for either the tropics or polar conditions, and firearms for emergencies.

In an emergency, the pilot simply pushes the "panic" button which closes the capsule, seals and pressurizes the enclosure, and triggers a rocket charge that shoots the entire unit clear of the airplane.

If the capsule parachutes to land, there is no problem. The occupant simply steps out, flicks on his tiny radio unit, calls for help, and establishes a radio beam for rescue units to use in establishing a fix on his location, then calmly sits down to live on the enclosed provisions.

If the unit comes down on water, four booms jump out and plastic bags at the end of each boom inflate as outriggers to prevent the unit from tossing and turning.

Weather presents no particular problem. If the weather is nice, the pilot can open the capsule and enjoy fresh air. If the water becomes rough or it begins to rain, he can leave the capsule closed.

Under normal flight conditions the capsule does not restrict pilot visibility or access to aircraft controls. In case of emergency, however, he is automatically enclosed in the rigid, sealed and pressurized structure. A rocket is fired and the capsule is ejected from the cockpit with sufficient force to avoid collision with other parts of the aircraft.

Normally associated with high-altitude, high-speed ejection, the capsule is designed for low-speed capability to provide on-the-runway escape and survival in speed ranges from 90 to 300 knots. Escape at dynamic pressures in excess of 2400 pounds per square foot can be accomplished with the capsule without exceeding human tolerances.

ELECTRICAL AIMS STUDIED

THE U.S. Aircraft Electrical Systems Advisory Staff, following its annual review of the Navy Bureau of Aeronautics' presentations of long range weapons research and development programs, has completed its proposals for flight vehicle electrical programs for the military services in the next 5-10-year period.

These recommendations provide a means for all equipment manufacturers interested in this field to save considerable time and money in initiating their own equipment development programs.

Under the advisory staff's recommendations are approximately 100 items which it considers of prime importance in turning out electrical systems of sufficient adequacy for the planned missiles, space vehicles and aircraft. Suggested items range from improvements in electrical hardware to the generation of electricity from nuclear energy for space vehicles, where engineering advancements must be made to meet existing Department of Defense mission requirements.

The staff report emphasizes a strong recommendation for the development of energy conversion processes for electric power sources to be used in satellites, since the need for satellite electric power will precede by a considerable time the development unless action is taken now.

Other items of equipment and studies suggested for inclusion in the program for advanced missile, aircraft and space vehicles—and assigned an "A" priority by the staff—include variable speed, constant frequency, environment-free generators, static switching devices, static conversion equipment, a study

of environmental effects, a reliability program, a space environmental test facility, and a "super hot" (above 600°F.) electrical program.

The staff believes there would be use, in the next two-year period, for everything recommended if it were available immediately.

The staff considered that problems confronting the services and industry this year are much more formidable than in previous years. Many needed technological breakthroughs in materials, processes, and new systems which seemingly were "just around the corner" several years ago have not yet materialized.

At the same time, the need for more advanced electrical systems has grown. Missiles and aircraft now operate at higher altitudes and faster speeds, with resulting higher operating temperatures and strain on the equipment.

Higher costs of the weapons and more dependence on electric power for guidance and control systems require that the electrical system have a peak reliability.

A purely advisory group meeting under the chairmanship of a full time government employee, the staff has played a useful part in the development programs of the military services, particularly in making long-range military requirements known to industry for their own advanced planning.

The group's history dates back to 1951 when the Bureau of Aeronautics and the Air Force asked a group of 14 outstanding aviation electrical engineers to review and make recommendations on a variety of long range electrical research and development plans.

Since its inception, the advisory staff has met annually. It has grown to 22 members.

Included in the activities of the group have been exchanges of technical information with the British counterparts on two occasions.

Early this year, staff members were asked to consult their companies' advanced planning groups to determine which areas of electrical systems for aircraft, missiles and satellites would require development to be adequate for planned vehicles in a 5-10 year period.

The staff convened in Washington for its 1959 meeting under auspices of BUAER and the Air Force. The findings of each industry representative were consolidated into a coordinated development program under the title of "Recommendations of the Advisory Staff for Aircraft Electrical Systems." Copies of these recommendations can be obtained by addressing a request to the Airborne Equipment Division of the Bureau of Naval Weapons, Department of the Navy, Washington 25, D. C.

VU-5 to Operate Firebees Maintenance to be Done at Okinawa

Personnel of VU-5 at Atsugi, Japan, have formed a detachment at Okinawa for operation of KDA-4 *Firebees* shipped to Naha. Field maintenance of the KDA-4's will be performed at Okinawa; major overhaul and repair will be done in Japan.

A P2V *Neptune* bomber has been transferred from Utility Wing, Pacific Fleet, Brown Field, near San Diego. The P2V serves as the "mother plane" and will air-launch and air-control the *Firebees*.

The free-flying jet targets will provide Navy and Marine units in the Far East with air-to-air target practice.



SPIN RECOVERY tests on the McDonnell F4H-1 are conducted at Edwards Air Force Base, Calif. Before test flight, the emergency spin recovery chute is tested by deploying it during high speed taxi runs. The recovery chute is installed in modified aft fuselage.

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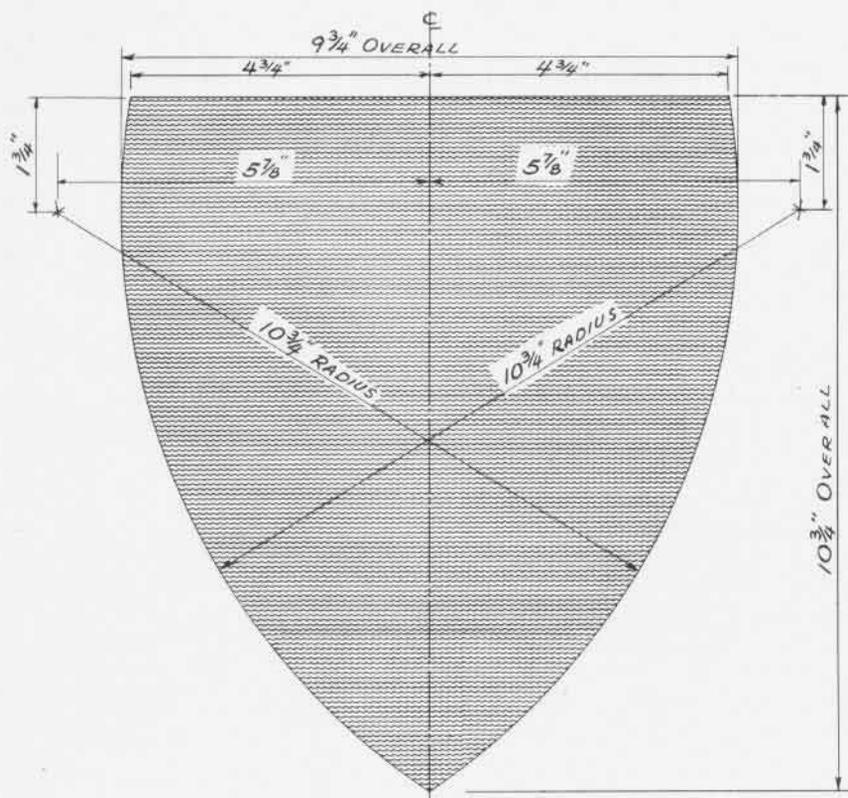
Subject	Issue	Page	Subject	Issue	Page	Subject	Issue	Page
<i>Ranger</i> men try pressure suits	May	30	ATU-202 (maintenance)	Apr	28			
Ream Field rescue training	Mar	24	ATU-222 (F11F evaluation for training)	Feb	18	T		
Recovery systems test site, Lakehurst	Apr	15	BTG-5 (mission)	Feb	6	Tape Keeps Track of Men	Jan	14
Repel the aggressor	Jun	35	BTG-9 (mission)	Nov	6	<i>Terrier</i> , improved	Sep	17
Replacement pilot training	Jan	7	CVG-4 (mission)	Jan	7	Test pilots, Cherry Point	May	11
Replenishment at sea, <i>Forrestal</i>	Jun	37	CVG-7 (operations)	Jul	14	Quantico	Oct	6
Rocket tester	Sep	37	CVG-12 (mission)	Aug	14	<i>Thetis Bay</i> , LPH-6	Sep	16
Rocket, <i>Zuni</i>	Nov	34	CVG-19 (mission)	May	14	Top Gun	Nov	20
Roosevelt Roads NS	Mar	6	FAGU, Pacific	Mar	18	Torpedo snare	Feb	29
Russian aircraft, CAT (transport) helicopters	Jan	33	HAW-1 (bombing derby)	Feb	24	Training, basic	Feb	6
	Aug	21	HU-1 (training)	Mar	24		Nov	6
S			VA-12 (tries A4D-2)	Apr	39	in F11F	Feb	18
Safety in ejection	Sep	15	VA-44 (mission)	Jun	30	maintenance by pilot	Mar	32
	Nov	13	VA-66 (training flight)	Dec	20	pre-flight	Jun	22
<i>Salisbury Sound</i> , AV-13	Sep	30	VAH-2 (navigation board)	Apr	29	replacement pilot	Jan	7
Search for silence	Apr	7	VAP-62 (transition to A3D-2P)	Nov	30	rescue (helicopter)	Mar	24
Sense pamphlet, bail-out and ejection	Jan	21	VAW-12 (safety)	Mar	14	Trampoline team	Aug	30
Service test division, Paruxent	Jan	32	VF-211 (operations)	Apr	14	Twenty-questions game	May	19
<i>Shangri-La</i> , CVA-38, aids Far East	Aug	13	VF(AW)-5 (air defense)	Apr	22			
Ships and Aircraft of the U. S. Fleet, award	Mar	20	VP-45 (mission)	Aug	33	U-V-W		
<i>Sidewinder</i> shot	Jun	12	VP-67 (mission)	May	38	Underwater escape test	Aug	31
Simulator, FSU-2	Jun	34	VP-71 (mercy mission)	Nov	27	von Karmán, Theodore	Jul	24
	Sep	18	VR-7 (mission)	May	28	War game simulator	Jan	16
	Aug	24	(simulator)	Sep	18	Waves, 17th anniversary	Jul	25
Sixth Fleet	Aug	24	VR-8 (mission)	May	28	Weapons Meet 1959	Nov	20
Skyhooking damaged aircraft	Jun	18	VS-36 (mission)	Oct	28	Weather research	Mar	22
<i>Skyray</i> , F4D, production history	Jun	10	VU-1 (photo-lab)	Jun	39	West Germany's naval air	Mar	29
Sonic boom	Apr	32	VU-5 det. (transition to <i>Furies</i>)	May	37	Whiting parachute riggers	Nov	35
Space, astronauts	May	20	VU-6 (mission)	Jul	30	Wind tunnel at Chance Vought	Jun	38
centrifuge	May	7	Marine squadrons, units, etc.	Jul	33	Woods, L. W., GySgt.	Dec	18
food, Republic Aviation	Sep	29	H&MS-12 (mission)	Oct	6			
mystery and master, Part I	Aug	34	HMX-1 (mission)	Nov	18	X-Y-Z		
	Sep	32	VMA-331 (AD <i>Skyraider</i>)	Mar	17	XF8U-1 still flies	Aug	39
	Oct	32	VMA-332 (POW training)	Feb	28	X-15	Apr	12
suit	May	30	VMF-312 (deployment)	Mar	30	ZPG-3W	Aug	3
<i>Sparrow III</i>	Feb	14	VMT-1 (mission)	Aug	30	Yellow Bird end	Dec	24
Squadrons, redesignations	Sep	2	Starflights trampoline team	Sep	14	<i>Zuni</i>	Nov	34
Squadrons, Units, etc.	Sep	2	Stick and throttle jockey?	Jun	37			
			Strike the stores below	Dec	7			
			Stuff things are made of	Dec	7			



COMMANDER AIR GROUP ELEVEN (center), Cdr. R. L. "Zeke" Cormier, and his squadron commanders are pictured upon the return of the Air Group from a seven-month cruise in the Far East aboard the *Shangri-La*. The group, which begins a training cycle at NAS Miramar, consists of Cdr. Robert Bothwell's VA-115, Cdr. Jack E. Godfrey's VF-111, Cdr. Billie C. Spell's VF-114, Cdr. H. S. Matthews' VA-113, LCdr. L. H. Sette's VAH-4 (Det. C), LCdr. K. E. Bebb's VAW-11 (Det. CW),

LCdr. W. Reed's VCP-63 (Det. C), and Lt. G. C. Lyne's VAW-11 (Det. CN). CVG-11 received a ComNavAirPac grade of "Excellent" during the Operational Readiness Inspection. The group flew a total of 12,772 hours. "Sea Turtle," an amphibious operation with American Marines and ROK soldiers; Exercise "August Moon," designed to test the radar defenses of Okinawa; "Saddle Up," a SEATO exercise off North Borneo, were exercises which kept aircraft belching off catapults.

PLAQUE (TICALLY) SPEAKING



BLACK LACQUERED shield plaque designed for use as background of squadron insignia display planned for OpNav passageways in Pentagon.

THE DEPUTY Chief of Naval Operations (Air), VAdm. R. B. Pirie, has issued a call to all aviation commands of the Navy for a display of their approved insignia on the bulkheads of the OpNav passageways in the Pentagon.

Each squadron, group, station or activity is being asked to provide a reproduction of its insignia in color. In the interest of uniformity, the insignia should be mounted on a black shield plaque, the design for which is shown above. The shield plaque should be three-quarters of an inch thick, with the over-all measurements as indicated on the sketch.

While no specific instructions are offered with the insignia itself, one of the easiest means of reproduction can be accomplished by using a squadron decalcomania. For protection, the decal should be sprayed with clear lacquer after mounting on the shield. Other suggestions might include an artistic

reproduction in oil paint, or for the more elaborate, a bas-relief wood cut of the insignia in color.

When completed, the collection will provide the most complete display of Naval Aviation insignia in existence. Completed plaques may be sent directly to Naval Aviation News, Op 05A5, Navy Department, Washington, D. C.

VA-15 Sets Lofty Mark AD-6 Pilots Fly 9032 Safe Hours

In a 15½-month period beginning 13 June 1958, Attack Squadron 15 logged 9032 flight hours which included 3448 day Field Carrier Landing Practices, 1048 night FCLP's, 2137 day carrier arrestments and 656 night carrier arrestments; all accident-free.

Aboard the *Franklin D. Roosevelt* as part of Carrier Air Group One for the 1959 cruise, VA-15 will return from the Mediterranean in February.

VA-15 pilots fly AD-6 *Skyriders*.

NRL Scientists Win Honor Photographed Sun with New Gear

A four-man NRL research team has been awarded the Photographic Society of America's highest award for developing a camera used in space research.

They are Dr. Richard Tousey, Dr. Donald M. Packer, Mr. William R. Hunter and Mr. James DeWitt Purcell.

The team developed a camera which employed mirrors instead of lenses to make detailed photographs of the entire sun from an *Aerobee-Hi* rocket approximately 123 miles above the White Sands missile range in March.

This is the first time the Photographic Society has presented its annual award to more than one person.

VAdm. John T. Hayward, DCNO (Development), also received a scroll on behalf of the Navy Department.

Watch that First Step

The First Marine Air Wing had this write up in their Safety pub "Wing Tips," of an AAR board's comments some 40 years ago:

"It was conceded by all that the pilot had accomplished a brilliant piece of work in landing his disabled machine without damage under the circumstances. It is not with intent to reflect less credit upon his airmanship, but it must be noted that he is a well-experienced aviator with over 40 total hours in the air, embracing a wide variety of machines, and this was his seventh forced landing due to complete failure of the engine.

"It was doubly unfortunate that upon alighting from his machine he missed the catwalk on the lower airfoil and plunged both legs through the fabric, straddling a rib, from which he received a grievous personal injury.

"Some thought should be devoted to a means of identifying wing-traversing catwalks to assist aviators in disembarking from their various machines."

- With afterburners, the jet engines in an all weather interceptor have power equal to 150 average automobiles.

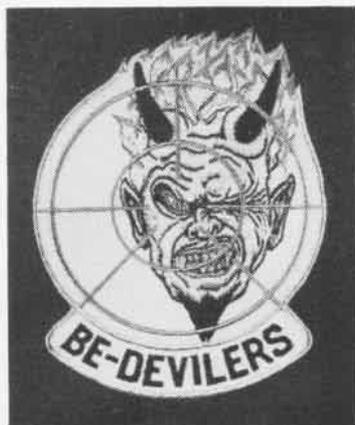
- Because of the high and extraordinary stable orbit it has achieved, the *Vanguard I* satellite will remain in orbit more than 200 years. Its current apogee is 2452.5 statute miles and its perigee is 406.9 statute miles.

Picture Credit

Naval Aviation News expresses appreciation to Mr. Peter M. Bowers of Seattle and Mr. William T. Larkins of Concord, Calif., for their courtesy in providing many of the photographs which appear on pages 24-25.



SQUADRON INSIGNIA



VF-74

Somewhere in the Med, two VF-74 Skyrajs are hurled from the steam catapults of USS Intrepid. Within minutes the pilots are in radar contact with a fast towed target above 30,000 feet. Thus, the Be-Devilers train day and night for all-weather defense of the fleet. First to deploy with the F4D-1, the squadron made two cruises with it in three years.



All pilots became Centurions before return to Oceana. Cdr. W. H. Shawcross, front row center, is commanding officer.

