

NAVAL AVIATION

NEWS

311

314

[Handwritten signatures and initials]

38th Year of Publication

AUGUST 1957

NavAvn No. 88 75B 2

SHARE THIS COPY

★ **USS ESSEX FLEXES HER MUSCLES** ★



BANSHEE JETS OF VF-114, BASED ABOARD THE USS ESSEX (CVA-9) DURING A FAR EAST CRUISE, SOARING HIGH ABOVE THE CLOUDS



AN F4D SKYRAY OF VF-141 TAXIS TO THE LAUNCHING POSITION



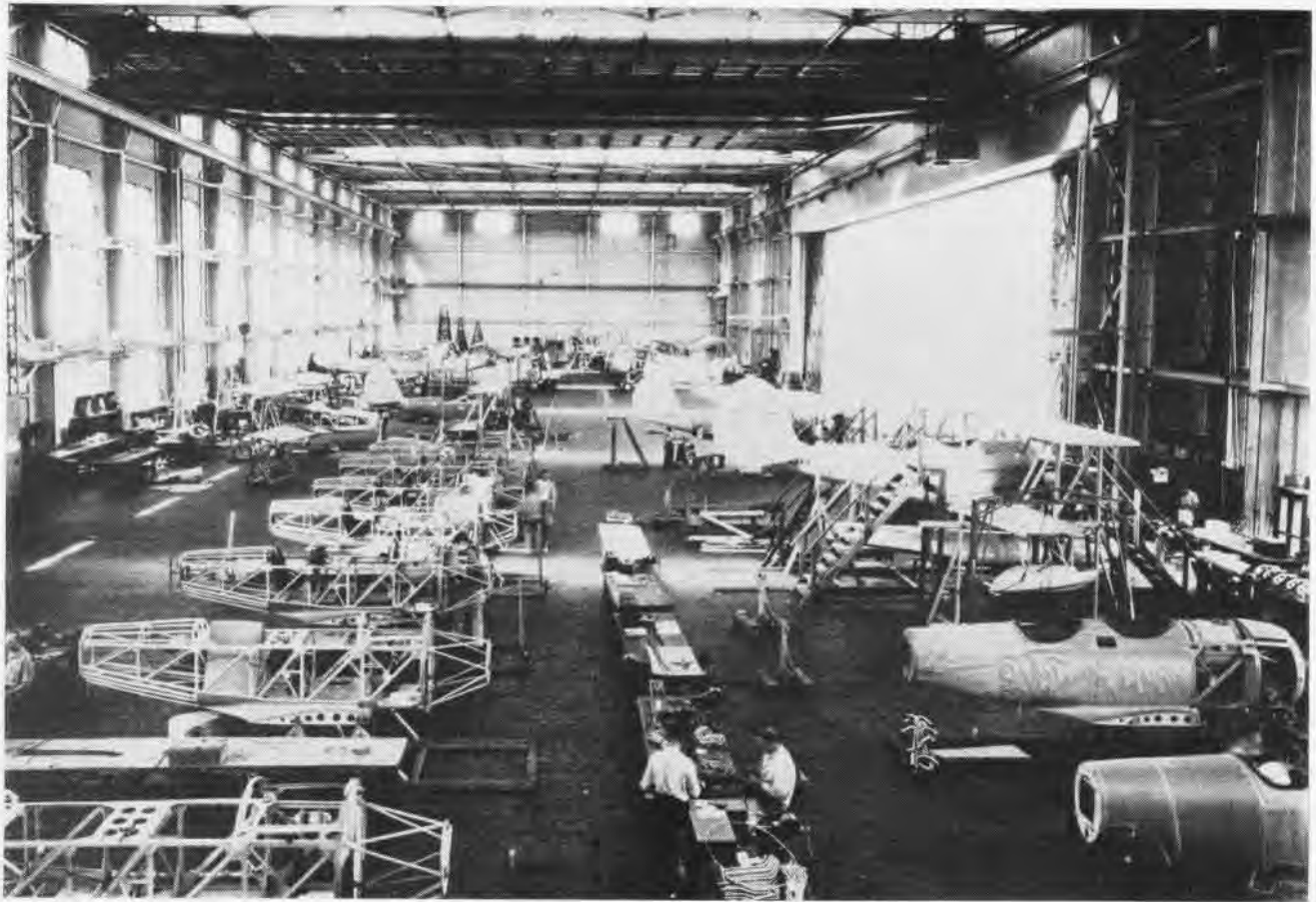
ESSEX CATAPULT OFFICER GIVES SIGNAL FOR A SKYRAY LAUNCH



AN AD-5N SKYRAIDER, OF VA(AW)-35, IS CATAPULTED FROM THE FLIGHT DECK OF THE ESSEX NEAR JAPAN. NOTE THE HEAVY SEAS

The United States Navy and its ships of the line stand guard over the seas to prevent aggression and to preserve the peace. The car-

rier Essex (CVA-9) demonstrated on its Far East cruise that the Navy is a mighty force, ready for instant action in event of an emergency.



ASSEMBLY LINE AT THE NAVAL AIRCRAFT FACTORY IN THE MID-'30'S BUSILY TURNED OUT N3N YELLOW PERILS FOR FLIGHT TRAINING

ANNIVERSARY OF A NAVY PIONEER

★ *Eighth in feature series on builders of Naval Aircraft* ★

FORTY YEARS ago the Naval Aircraft Factory was founded, and the anniversary is being celebrated this year by the Naval Air Engineering Facility (Ships Installations) which today carries on the fine tradition of the Factory. It is appropriate that the contributions of the Naval Aircraft Factory, one of aviation's earliest facilities, should not go unnoted, for it was part of the program that made Naval Aviation an integral part of national defense.

It is hard to realize that at one time the Navy had difficulty finding manufacturers to build its planes. Back in 1917, the aircraft industry was still new, and the few manufacturing plants in existence were almost exclusively given over to Army and foreign contracts. Because the United

States was at war, and the Navy needed planes to fulfill its mission in antisubmarine and patrol operations, the Naval Aircraft Factory was established in Philadelphia.

Certainly one of the great pioneers in the field of aviation, the Naval Aircraft Factory (NAF) was constructed during the fall of 1917. It had a triple mission: to increase the Navy's supply of seaplanes, develop newer models and improve existing ones, and obtain for the Navy information which could be used as a guide in letting civilian contracts in terms of production and experimentation costs for various plane types. Ground was broken for the new Naval facility on 10 August 1917, and its first plane, a Curtiss H-16, was completed in March of 1918.



USS SHENANDOAH, ZR-1, MOORED TO MAST ON THE USS PATOKA



THIS IS THE FIRST F5L BUILT BY THE NAVAL AIRCRAFT FACTORY

factory got well underway during the month of July 1918.

Production of parts was subcontracted to several small yacht building yards, the Victor Talking Machine Co., Singer Sewing Machine Co., and a number of furniture, automobile body, and sheet-metal products factories. The productive capacity of these outside plants was under the control of the manager of NAF who maintained a branch office in each.

Before the Armistice on 11 November 1918, NAF had produced in 15 months 150 of the twin-engine H-16's. This is something of a miracle considering the lack of trained personnel available, the newness of the facility, the upheaval of construction during the plant enlargement, and, in the light of today's standards, the primitive assembly methods.

During the spring of 1918, the end of WW I was not yet in sight. Plans were being made for more advanced aircraft in 1919. The F-5, developed in Britain, was placed in production at NAF. This meant that the H-16 production lines had to be revamped for the F-5, and the British



H-16 FLYING BOATS WERE PRODUCED DURING THE FIRST WORLD WAR

LOCATED in the Philadelphia Navy Yard, and under the technical cognizance of the Bureau of Construction and Repair until 1921 when the Bureau of Aeronautics was organized, the factory proper measured 400 feet square. Divided into two sections under one roof, the larger was devoted to the manufacturing departments and offices. The other section housed a high assembly shop, equipped with a 10-ton crane. Drying kilns, a dry lumber storehouse, and a boiler house were constructed nearby.

Just after the completion of NAF, the number of flying boats required by the Navy's program was quadrupled and the capacity of the factory had to be increased. More H-16 flying boats were needed for patrol and convoy work in European waters—and they were needed right away. There was no time to build anew, so it was decided to enlarge the factory assembly plant and subcontract aircraft parts to idle industrial plants. A main assembly building, a six-story storehouse, an office building, a hangar, and additional kilns and boilers were constructed as extensions to the original plant. Production in the enlarged

designs themselves were extensively modified. By the end of the war, 33 of this plane type were completed at NAF and designated F5L. By mid-1919, a total of 138 were produced. During the post-war period, this flying-boat, equipped with twin Liberty engines, was used as a Navy patrol plane.

After the Armistice was signed, production of flying boats was concluded as rapidly as possible. All production except the work on F5L's and H-16's, near completion in the assembly department, stopped. The force of 3,593 workers, including 895 women—all of whom had been trained in service—was reduced to 2,034 by 1 January 1919.

The character of work done at NAF changed. During the next 15 years, most manufacturing consisted of experimental models and parts for service aircraft no longer in production by the original manufacturer.

Though the quantity production of aircraft had all but ceased by 1924, other activities increased. Overhaul and alteration to existing airplanes of all types was inaugurated; laboratories for testing planes, materials and engines were

established. A great deal of research was done in experimental aircraft and in the field of catapults.

In 1924, the Aeronautical Engine Laboratory (AEL) was transferred from the Navy Yard in Washington to the factory. Together, AEL and the Naval Aircraft Factory were destined to contribute substantially in the development of outstanding engines. That same year, 35 acres of land adjacent to the factory were prepared for use of landplanes. On 17 September 1926, Mustin Field was officially dedicated.

From 1919 to 1934, the Factory was a beehive of activity. In the mid-1920's, NAF developed the PN series of flying boats. These were twin-motored patrol tractor biplanes, using converted F5L hulls and tail surfaces, with new wings and power plants. The PN-9, however, had a metal hull which was 500 pounds lighter than the wooden construction of the F5L. (Pushing metal construction further, the wings of the PN-10 were also fabricated in part from metal.) On its test flight on 1-2 May 1925, the PN-9 broke the world endurance record for Class C seaplanes, remain-

ballast, was 76,400 pounds. Six power cars were suspended beneath the hull. At a speed between 40 and 50 mph, the power equipment of the ZR-1, with four of the six engines at half speed, gave it an estimated cruising range of 5,000 miles.

In 1925, NAF developed the NM-1 tractor biplane which could be used as either a landplane or twin float seaplane. This was the first all metal airplane of Navy design. Beaded aluminum alloy was used for skin covering.

A series of aircraft designated TS were the first Navy designed convertible landplanes and seaplanes of the fighter class for use aboard carriers and battleships. The TS-1 was powered with an early type Lawrence air cooled radial engine, the J-1. In 1923, NAF constructed five TS-1's, two TS-2's and three TS-3 planes.

Other aircraft built at the factory included the twin-engine XTN-1 convertible torpedo plane; the XT2N-1 tractor biplane, developed for the Navy as an experimental dive bomber; and the XP4N-1 and -2 experimental all-metal patrol flying boats similar to the PN series of aircraft.



NAF BUILT 15 DUAL-CONTROLLED PT-1 SEAPLANES DURING 1922



PN-7 WAS NAF'S FIRST LARGE FLYING BOAT BUILT AFTER WW I

ing in the air for 28 hours, 35 minutes, 27 seconds. The very same aircraft was used by Cdr. John Rodgers (Naval Aviator #2) when he established a world's distance record. On 31 August 1925, he took off from San Francisco, bound for Hawaii. Although his plane went down before he reached his destination, the aircraft covered a distance of 1,841.12 statute miles. This record for Class C seaplanes stood for about five years.

The ZR-1 *Sbenandoah*, first rigid airship built in America, was launched at Lakehurst on 4 September 1923. The design, fabrication, and preliminary assembly of the hull and power cars were accomplished at the Naval Aircraft Factory. The huge structure was 79 feet in diameter and 680 feet long. Within it were 20 gas cells lined with goldbeater's skin, the membrane of the large intestine of the ox, used by metalsmiths to separate thin leaves of hammered gold. Portions of the intestines of 900,000 cattle were used. Around each gas cell was a net; and in the manufacture of these nets, 20 miles of ramie cordage were used. Dead weight of the ship, exclusive of water



CDR. RODGERS MADE HIS RECORD HAWAIIAN FLIGHT IN THIS PN-9



VIEW (CIRCA 1956) SHOWS PLANES USED IN BARRICADE TESTS



EARLY IN WORLD WAR II, MANY NAVY PILOTS TRAINED IN THE N3N-3



SBN-1 SCOUT BOMBER WAS PRODUCED AT THE FACTORY IN 1942

NAF PRODUCED 70 VE-7's. These single float seaplane-landplanes were tractor biplanes used as fighters and trainers. This type was produced in quantity for the Navy by the Lewis and Vought Corporation around 1919. During 1923-24, the factory built 29 VT torpedo biplanes from Douglas designs, featuring folding wings. The VT-4 was equipped with a fog dispelling apparatus.

During 1920-1921, six NC aircraft were constructed. Four other of these flying boats, whose four Liberty engines developed 1600 horsepower, were built by Curtiss. Huge craft for their time, the NC's had a wing span of 126 feet and an overall length of 68 feet.

The Vinson-Trammell Act of 1934, which required that ten percent of Naval aircraft be manufactured in government plants, caused a new surge of activity at NAF. Expansion of the facility was begun at once. Since no engines had ever been built at the factory, special engine shops were constructed. Production lines were set up for the manufacture of planes and radial engines for training aircraft. Research and test increased, and by 1940, the book value of the factory totaled more than \$12 million.

Between 1934 and 1940, the following orders for manufacture were placed with the factory: 404 service type aircraft including the N3N and SON; four experimental planes including XN3N-1,-2,-3 and the XOSN; 360 service type engines; three experimental engines; 78 engine conversions; and innumerable requests for aeronautical engineering data. The principal departments at NAF were engineering, production, inspection, supply and flight.

The first design work under the Vinson-Trammell Bill was for the XN3N-1, fondly called the *Yellow Peril*. It was flight tested in August 1935. The airplane, designed as a convertible, had a maximum speed of about 115 mph, a wing span of 34 feet, length of 25 feet (landplane) and 28 feet (seaplane). This trainer was a single engine, two-place, dual control biplane. The N3N-3, an improved version of the first model, featured a cleaner type landing gear and a more effective tail unit. During early WW II, this trainer was used extensively in primary flight training.

After building such observation and scout planes as the SBN and OS2N, the factory returned to the manufacture of large patrol flying boats. The PBN-1, a tractor monoplane developed from the Consolidated-Vultee PBV-5, carried a crew of seven. During 1943-1945, NAF produced 156 of these aircraft. The factory made several improvements over the PBV-5. It strengthened and redesigned the wing structure to accommodate 40 percent more fuel capacity; redesigned the tail group and hull bottom for improved take-off; enlarged the wing tip floats, modified the hull bow and forward gun turret; and provided for the installation of the largest type radar, and other gear. The range was increased about 800 miles, take-off reduced and the stability improved to such a degree that the PBN type tail was used on all PBV-6A aircraft. In the spring of 1945, delivery of the last PBN marked the end of airplane production at NAF.

Experiments on radio-controlled aircraft began at NAF in 1936. This was the beginning of a sustained Navy effort in the field of guided missiles. The first test involved the NT-1, fitted with radio controls, and a TG-2 control plane in which was installed command equipment. While this aircraft was flown on radio control several

times, it was always occupied by a safety pilot. The Curtiss N2C-2 converted for radio control, was flown pilotless.

Other aircraft converted to drones were the O3U-3, -6; the F4B-2, -3, -3A; and the SU-1 and SBU-1. The XTDN-1, forerunner of assault drones built in the U. S., was test-flown 15 November 1942, and the production schedule of 100 TDN's was completed during the fall of 1943.

During the aircraft boom of WW II, NAF employed 10,000 persons. From 1917 through the WW II effort, the factory produced more than 30 different types of aircraft—training, observation, drones, gliders, and patrol bombers. Besides aircraft, it developed and manufactured various types of aviation equipment and materials not easily obtained from civilian sources.

Two years before the end of WW II, production and experimental work at NAF expanded to the point where reorganization was necessary. Types of work within the departments had become extremely diversified. The activities of the factory were divided into four separate com-

had officially been assigned to NAF in 1919. One of the first projects in this field was catapult equipment for the USS *Langley*, the Navy's first aircraft carrier. It also developed the compressed air turn-table catapult, first installed in the USS *Maryland* in 1922, and participated in the development of powder catapults. In the mid '30's, it perfected a flush-deck catapult, thus paving the way for further developments in carrier type catapult gear.

Until its disestablishment, NAF designed and developed all the types of arresting gear, as well as the special control valves, wire rope fittings, and barriers used in the Fleet. Beginning in July 1937, factory personnel conducted arrested landing tests in the development of the arresting hook installation and configuration.

During the Korean conflict, the factory manufactured thousands of personnel, drogue and supply parachutes for the operating forces. It had a hand in the development of standard-type ejection seats for use with jet aircraft.

The catapult and arresting gear work eventually became



THE XT2N-1 WAS DEVELOPED AS AN EXPERIMENTAL DIVE BOMBER



PATROL BOMBER PBN-1 WAS DEVELOPED FROM THE CONVAIR PBY-5

mands, subordinate to the Naval Air Material Center, established on 20 July 1943. The activities separated from NAF were the Aircraft Modification Unit, the Air Experimental Station, and NAAS MUSTIN FIELD. The mission of the Center as a whole was research, development, manufacture, modification, testing, and overhaul of aircraft, components, and aeronautical materials.

Following WW II, the factory became a large "job shop" of aviation equipment and materials. Personnel at NAF conducted applied research, designed, developed, manufactured, and tested aeronautical accessories, components, equipment, and materials. This work included tail hooks, fuel tanks, photo pods, missile skids, bomb hoists, bomb trucks, photo paper processors, and *Deepfreeze* Antarctic sleds. NAF performed modifications, overhauls, and prototyping of aircraft; and assisted in administering contracts for manufacturing and technical services. But one of its major functions was to design and develop equipment necessary for flight operations aboard carriers.

In 1951, NAF spent 37 percent of its total effort designing, developing, and manufacturing ships installations equipment—catapults and arresting gear. Catapult work

the chief project at NAF, to the exclusion of other activities. Capt. T. D. Davies, present Commanding Officer of the Naval Air Engineering Facility (Ships Installations), points out that in addition to the diversified activities which were offshoots of the airplane and engine manufacturing days, "the catapult and arresting gear field . . . started to gain in prominence until, by about 1953, the 'tail' had really begun to 'wag the dog.'"

As a result, the old Naval Aircraft Factory was redesignated the Naval Air Engineering Facility (Ships Installations) by the Secretary of the Navy on 26 April 1956. (See NANews, August 1956, p. 1.) The importance of carrier operations in the over-all picture of national defense required a facility which would specialize in that particular equipment needed to make a carrier a floating airfield.

This was by no means the end of the Naval Aircraft Factory. As a pioneer in the field of aeronautics, its influence lives on. Aviation research and development inaugurated at NAF during its 39 years of existence continues at the various facilities within the framework of the Naval Air Material and Development Center, Johnsville.



GRAMPAW PETTIBONE

Fam Slam

Returning from his sixth fam hop in the A4D, an ensign found himself a couple of hundred feet high at the 180 position and reduced power to 55-60%, setting up a high rate of descent. He detected the high sink rate while turning into final and added a little power. Continuing to sink, he rotated the aircraft to a nose-high attitude and went to 100% RPM.

The *Skyhawk* slammed down 91 feet short of the runway at about 110 knots, collapsing the right main gear. The nose gear sheared upon contact with the runway edge. The aircraft started up the runway, engaged the abort gear with the nose gear stub, severing the pendants, and continued its slide-out on the left main gear, right external tank and nose gear stub. There was no fire, and the pilot emerged unhurt.

The pilot stated that the accident could have been avoided by: (1) Not trying to land on the numbers, (2) noticing the high sink rate sooner and using more power to compensate, and (3) not over-rotating the aircraft.



Grampaw Pettibone Says:

You're right, son, if you'd known then what you know now, the accident shouldn't have occurred.

The damage could have been minimized if shearing of the nose gear on



the leading edge of the runway could have been prevented. Jet blast, erosion, and normal wear and tear can play heck with the ground surface immediately adjacent to the approach end of the runway, and unless under-shoot/overshoot areas are constantly maintained in optimum condition, the resultant aircraft damage will be higher than somewhat.

But there are some other items that need airing. This lad with a total of 400 flight hours had flown only 25 hours in the previous three months. He had not flown for 18 days prior to the accident hop, and had accumulated only 8.7 hours in the A4D. He had only six hours of sleep the pre-

vious night and the only food he had consumed in the 20 hours immediately preceding the accident consisted of two doughnuts and a cuppa coffee, a caloric intake far below the accepted minimum.

For safe flight ops, pilots as well as aircraft and airfields must be kept in the pink. And for the pilot this includes not only adequate food and sleep, but also vigilance and attention to the business at hand and sufficient recent time in the model he is flying.

Let Himself Down

The following drama is so unbelievable that I'm letting the principals—both poor performers—speak their own incredible lines.

Plane Captain: "I followed the pilot out to the plane, an F9F-5. We preflighted it in the normal manner, and I strapped him in the cockpit. We then started the engine. When the plane started, the main landing gear doors dropped down. I tried to signal the pilot that the doors were down, but he didn't understand, and he lowered his flaps and speed brakes. The pilot signaled for an integrity check, so I signaled him that it would be done on the taxi strip.

"The pilot then signaled me to the cockpit and pointed to the landing gear indicator. The nose gear indicated unsafe. The landing gear doors were still down. I thought the pilot could raise them from the cockpit, so I signaled him to do so. He called me back to the cockpit and pointed to the indicator. I shook my head affirmative as I thought he knew more about it than I did so I got back down. He gave me the signal to pull the chocks. I pulled the chocks, went out in front of the plane and raised my arms, then the nose gear fell."

Pilot: "I called him to the cockpit and showed him the barber pole on the nose gear indicator and that the light was on in the landing gear handle. It was then I noticed that the gear handle was in the up-and-locked position. The plane captain shook his



This settles it!

head, acknowledging the indications, and I pointed them out to him again. Again, he acknowledged and climbed down. I received this same signal of the plane captain swinging his arms and crossing in front of his body. I picked up my landing flaps, and the plane captain again indicated where the integrity check would be run. Assuming he was well aware of the situation, I gave him the signal to pull the chocks. Upon releasing my brakes after receiving the taxi signal from the plane captain, the nose gear collapsed."



Grampaw Pettibone Says:

Great Horned Toadies! This is almost as ridiculous as diving into an empty swimming pool simply because nobody said not to. This pilot really let himself down. While he's not truly representative of Naval Aviation, he was guilty of compound ignorance. (Simple ignorance is not knowing; compound ignorance is not knowing that you don't know.)

Here's what the first and second endorsers of the FLIGA report said:

1. "It is very difficult to understand the mental processes which resulted in this relatively experienced pilot's (500 hours in the F9F-5) complete failure to act with any degree of competence when confronted with such an obvious, easily solvable problem.

2. "This needless incident is the result of improperly carrying out inspection procedures by the squadron maintenance section, poor judgment by the pilot, and the assignment of untrained, inexperienced personnel as plane captains."

To set up the foregoing chain of events, an electrician, while performing necessary repairs, had moved the landing gear lever to the UP position and neglected to return the lever to the DOWN position. During the

*Don't cut the budget!
Cut the accidents!*



preflight inspection, both the pilot and the plane captain overlooked the position of the gear handle, but from the way things went it appears that discovering its unsafe position earlier wouldn't have changed the outcome.

I'm reminded of all those THINK posters I've seen displayed in office spaces. And along that line of thought, all pilots should remember that a brain is only as strong as its weakest think.

Timber-r-r-r

In the middle of the night an R5D-4R departed an east coast air station on the first leg of a coast-to-coast flight. Some seven hours later—at 0530 Dallas time—the aircraft landed at Love Field, the refueling stop.

In proceeding to the designated parking area, the pilot was instructed to turn right and then left on the first taxiway. However, he took a wrong turn and he could not proceed to the ramp area because of parked aircraft and an overhead cable.

The copilot called the tower for instructions and was advised to execute a 180-degree turn in order to head back toward the unlighted gravel taxiway that led to the parking area where contractor fuel could be obtained.

The only hazards to a taxi course reversal noted by the pilot were a parked training plane and a storm drain just off the taxiway. Knowing that his wing tip would clear the training plane, the pilot concentrated on seeing that the aircraft landing gear would swing well clear of the drain.

The engine roar drowned out the

copilot's "Hold it!" as the R5D pivoted on the left main wheel and the starboard wing swung rapidly toward a telephone pole which had just been spotted through use of an Aldis lamp. The wing, damaged when it struck the pole and guy wires, snapped off the upper portion of the pole which fell and damaged the aileron.

The accident board blamed the pilot for failing to acquaint himself fully with all conditions which might affect a maneuver in a very congested area. Condition of facilities was listed as a contributing factor—unlighted and incompletely paved taxiways, construction in progress and unlighted obstacles in parking area.



Grampaw Pettibone Says:

I must confess my first reaction was a wave of sympathy for some poor throttle pusher undergoing the maze taxi test on a strange field in the dead of night, and a mighty durned long night at that.

But on second thought I'd want to be sure he had a durned good reason for making a civil airfield a gas stop when NAS Dallas was virtually a stone's throw away. I know the Rafacs indicates that the Dallas fuel spigot is in the OFF position during the wee small hours, but it's been my experience that with sufficient planning, midwatch gassing is usually avoidable. And when it can't be avoided it's sometimes accomplishable through prior arrangement.

Being a suspicious cuss, I suspect this pilot (or a passenger) wanted to be a few miles closer to town—and brought these troubles on himself.



VADM. BROWN GREETING MONACO'S ROYALTY

Royalty Visits Forrestal Sees Air Show, Makes Copter Flight

Monaco's royal family went to sea aboard USS *Forrestal* June 7 to watch an aerial demonstration. The *Forrestal* was acting flagship of the Sixth Fleet for the royal visit.

VAdm. Charles R. Brown, Sixth Fleet Commander, and RAdm. Murr E. Arnold, ComCarDiv Four, welcomed Prince Rainier, Princess Grace and Princess Antoinette aboard the carrier. Prince Rainier and Princess Grace had a helicopter ride during their visit.

Missile Contract Awarded Firm Gets \$3.5 Million for Tests

A \$3.5 million contract has been awarded Hercules Powder Company, Allegheny Ballistics Laboratory, Cumberland, Md., by BUORD for engineering and testing of experimental propulsion systems for guided missiles.

Hercules runs the government-owned lab, the Navy's principal facility for research, development and experimental production of solid propellants used in a variety of missiles.

Twin-Seat Cougar Praised F9F-8T Proves Worth at Alameda

At NAS ALAMEDA they're singing the praises of the Grumman F9F-8T *Cougar*. First of the swept-wing two-seaters was received in March for Fleet Air Alameda's training program.

Cdr. Frank Miller, VF-111 skipper, labels the *Cougar* (renamed "Twoogar") as "the biggest boon in instrument flying today."

Says Cdr. Miller: "Safety and economy are the key words. We can give ideal instrument training under the hood in back because the pilot is completely isolated, yet with someone up front it has all the safety features of a regular flight."

Before arrival of the F9F-8T, no transonic aircraft in the fleet provided space for an extra pilot to train. In the conventional *Cougar* and other swept-wing jet fighters, for example, a chase pilot is needed to monitor the flight from a distance in another plane—spotting other aircraft and giving instructions.

But this jet saves the Navy money, says the CO, by eliminating the need for an additional chase plane and thereby releasing a plane for other training flights.

"It's especially good for GCA's in both safety and economy," he said. "The same high availability exists with her as exists with the single-seated *Cougar*."

The squadron also uses the tandem-seated *Cougar* for gunnery runs to help iron out pilot kinks in gunnery practice and to check out pilots.



PRESIDENT TALKS WITH PILOTS, CREWMEN

Navy Planes Span Nation Make Ocean to Ocean Carrier Hop

Four Navy pilots made the first carrier-to-carrier, ocean-to-ocean, overland flight in history June 6, flying from the *Bon Homme Richard* off San Diego to the *Saratoga* off Florida.

F8U-1 *Crusader* pilots were Capt. Robert G. Dose, CO of VX-3, and LCdr. Paul Miller Jr., squadron F8U-1 project officer. Flying A3D *Skywarriors* were LCdr. John H. Miller and LCdr. C. C. McBratnie.

The A3D's took off first and flew non-stop without refueling. They averaged 632 mph on the 2530-mile flight to the carrier.

The F8U-1's were refueled in flight by AJ-2 tankers of VAH-11 operating temporarily out of NAS DALLAS. They landed three hours and 28 minutes after take-off for an average speed of 730 miles per hour.

President Eisenhower witnessed their landings on the *Saratoga*.

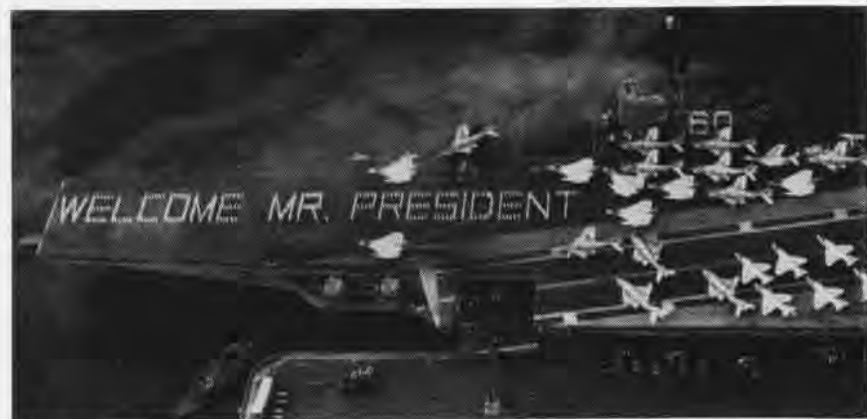
The *Crusaders* and *Skywarriors* thus proved the Navy's ability to shift carrier planes from ocean to ocean without reliance on land bases or the Panama Canal, in their flight.

Aerial Pioneers Reunited Teamed to Perfect Landing System

Twenty-two years ago, RAdm. Frank Akers made the first blind landing in a shore-to-ship flight. His landing ended two years of work and study to develop an instrument landing system for the Navy.

The Admiral, then lieutenant, was project officer of the development and Dr. Frank G. Kear was development engineer.

The two aerial pioneers were reunited at NAS MEMPHIS this spring where they added the finishing touches to a story of the landing.



WHITE-UNIFORMED sailors of the attack carrier *Saratoga* spell out a welcome for the Commander in Chief on *Saratoga*'s four-acre flight deck. President Eisenhower, with several members of his cabinet and other government officials, observed a show of Navy air might on June 6-7.

Pinkel Earns NACA Award Finds Solutions to Fires, Shocks

Research scientist I. Irving Pinkel of the Lewis Flight Propulsion Laboratory has been awarded NACA's Distinguished Service Medal. His eight-year study on causes of fire and impact hazards in air crashes led to improved fire prevention techniques and to seat design which enhances passenger safety (NANEWS, July 1956). NACA Chairman, Gen. James H. Doolittle, presented the award.

Mr. Pinkel's experiments involved intentional crashes of several planes under controlled conditions. Runway, barrier and impact areas were designed to provide maximum crash severity and fire hazard. Each crash was covered by instruments and pictures.

Early crashes were conducted to learn potential ignition sources and how these sources were reached by flammable material. Then equipment was designed to suppress ignition sources during the crash.

As soon as he demonstrated that crash fires could be prevented, Mr. Pinkel turned his talents to solving the hazards of crash impact. Again his logic was, "Learn the cause and you can find the cure."

Airplanes were crashed under maximum impact conditions without crushing the planes' cabins or cockpits. Instruments registered the loads placed on the aircraft's structure, seats, restraining harness and dummy occupants during a crash. How these shocks were transmitted to the plane's passengers was also studied.

On the basis of these findings, a flexible seat was designed to reduce the impact hazard to plane occupants.



GEN. DOOLITTLE PINS MEDAL ON PINKEL

'BULLPUP' HAILED BY DCNO AIR



ATTACK AIRCRAFT WILL LAUNCH BULLPUP

SOME FACTS on the *Bullpup*, latest addition to the Navy's air-to-surface missile arsenal, were made public by VAdm. W. V. Davis, Jr., DCNO (Air) when he addressed the national convention of the Aviation Writers Association in Kansas City.

He said *Bullpup* is undergoing evaluation by the Navy and will subsequently be introduced into the fleet as a service weapon. The missile is expected to be a "really effective addition to the Navy's capability in fighting small wars as well as big ones."

Bullpup can be launched from "current and future light attack aircraft" and will be equally suitable for carrier-based operations and shore-based Marine Corps use, he revealed.

"Ruggedness and reliability were equally important design objectives. *Bullpup* fulfills all these exacting requirements," Admiral Davis said.

The need for a weapon of *Bullpup*'s capability was first felt by Navy and Marine pilots flying close ground support for troops during the war in Korea. Pilots were being harassed by enemy small arms and automatic ground fire, particularly in close air support and interdiction missions which required low level dive and glide bombing attacks to be effective.

This intense ground fire seriously affected bombing accuracy and caused excessive attrition of planes and pilots.

In addition, weather conditions and the rugged terrain as well as the heavy concentration of enemy fire power, prevented pilots from attaining the precise dive angles, air speeds and other

launching conditions necessary to successful dive and glide bombing.

The obvious answer to this undesirable tactical situation was to develop a missile that could be launched from any position outside the effective radius of the enemy high volume ground fire and still provide sufficient accuracy to destroy small targets without excessive sorties and the expenditure of large quantities of bombs and rockets on each target.

Simplicity of design and use of known techniques well within the state of the art were considered to be basic ground rules for the *Bullpup* development in order to obtain an early, relatively inexpensive and effective weapon.

Bullpup is expected to provide light attack aircraft with a "significantly greater" attack capability against pill boxes, tanks, truck convoys, bridges, tracks, ships and marshalling yards.

This increased effectiveness is due primarily to the increased accuracy with which the warhead can be delivered on the target, Adm. Davis said.

Facts on *Bullpup*'s size, weight, speed, power plant, control system, damage capability and its fleet delivery date have not been announced.



TWO BRITISH Royal Marines of HMS Ark Royal listen to two U. S. Marines as they describe an ancient cannon at Marine barracks in Washington, D. C. They came to the Capital after Norfolk's International Fleet Review.

VW CREWMEN ROTATION PLANNED



BARRIER CONNIES, PACKING 5½ TONS OF ELECTRONIC GEAR AND USING 20-MAN-PLUS CREWS, BROUGHT DRASTIC MANPOWER NEED

SEVERAL THOUSAND *Super Constellation* crewmen in three critical job codes can look forward to normal sea/shore rotation beginning 1 July 1958.

Each has been figuratively wed to a *Super Connie* squadron since the Navy began flying Distant Early Warning Barrier missions in 1956.

The decision of the Joint Chiefs of Staff to assign six squadrons of Navy R7V and WV planes to carry out the barrier mission caught the Navy woefully short of men qualified as Flight Engineers, Aircraft Systems Maintenance personnel and Airborne CIC Operators.

The only immediate sources of men qualified in these specialties were three VR squadrons using R7V's, plus men who had once qualified in R7V's and then been transferred to other types of aircraft throughout the Fleet. Simple arithmetic says you can't rob enough men from three squadrons to outfit six new squadrons of barrier planes, three in the Atlantic and three in the Pacific.

Compounding the urgency of outfitting the barrier squadrons was the need for men in the same critical categories to man *Super Connies* of VW's One and Two flying Fleet Air Defense, and VW's Three and Four whose job is weather hunting and, secondly, Fleet Air Defense.

So a two-pronged attack was made on the problem. Operating VR squadrons were stripped to the core for qualified R7V/WV men and a comprehensive search was begun to locate

all men who had ever qualified in *Super Constellations* before being transferred to other type aircraft.

In effect, OPNAV and BUPERS used an emergency tool to cope with a bona fide emergency. The tool in this case was Special Program Codes as authorized in the Manual of Navy Enlisted Classifications, revised May 1957.

In September 1955, OPNAV recommended the establishment of three special codes in the 9900 block to "identify and control the reassignment in normal distribution channels of enlisted men who have received training in the operation and maintenance of R7V and or WV type aircraft."

Discretion as to numbers assigned was left to BUPERS, but the job descriptions were:

Flight Engineers who had completed the Lockheed factory training course at Burbank (this was later modified to include men who had received equivalent on-the-job training);

Enlisted men who had received specialized *Aircraft System Maintenance* training within their rating scope at Lockheed, FAETU Atlantic or Pacific, or at Keesler Air Force Base—this group included AD, AE, AM and AT ratings—and

Personnel who had completed the *Airborne CIC Operators* course at CIC School Glynco or who had acquired equivalent capability.

OPNAV asked Lockheed to provide a list of all its Navy graduates up to 1 July 1955 and to continue pro-

viding lists of graduates thereafter. Similar requests went to appropriate training commands.

A mammoth record search began. When Lockheed and the Aviation Technical schools sent their lists to BUPERS, key punch operators punched IBM cards and thus located 5000 men who had been trained. These names were sent to the Records Section to learn which graduates were still on active duty and where they were.

First hundreds, then thousands of qualified men were located.

When a man was fingered, BUPERS sent his commanding officer a directive ordering the command to assign the man one of the three special program codes. Meantime the training pace was stepped up by classroom and in-service schooling. Newly trained men were assigned the appropriate code as soon as they became qualified.

With men assigned the appropriate Special Program Code number (9937, -38, -39 in that order, for Flight Engineers, Aircraft Systems Maintenance Personnel and Airborne CIC Operators), the next step was to transfer them to the squadrons.

The emergency measure thus began serving its purpose of meeting and beating an emergency. Percentage of qualified men on board showed a definite increase month by month.

A BUPERS spokesman explained emphatically that Special Program Codes are designed for the sole purpose of meeting emergencies, that when the



MEN LEARN UPKEEP OF ELECTRONICS GEAR

unit with a critical need for specially-trained men approaches the point that can be considered "over the hump," it's time to take one of two courses of action.

A new rate is opened if the need is large enough (a pertinent example is the new rate of Guided Missileman) or as BUPERS explains, the Special Program Code must be disestablished and those men formerly classified in the 9900 block must be reverted to a standard Navy Enlisted Classification code within their rating group which will guarantee normal rotation to the man and well-rounded craftsmen in the fleet.

If neither of these courses is pursued, stagnation results. The long range concept of balanced manpower requires that a man be trained in a variety of jobs, not *grooved* in one particular field or to one type of weapon. The day of the elite corps has passed.

Specific factors behind the coming disestablishment of Special Program Codes 9937, -38, -39 by 1 July 1958 were recently enumerated by BUPERS:

- A calculated estimate that the various squadrons employing R7V and WV planes will be up to 100% of enlisted allowance by that date. This has been achieved through location of men previously qualified, continued operation of schools and on-the-job training programs by the squadrons concerned.

- Procurement from Lockheed of mobile (maintenance) trainers in early fiscal year 1958 will allow units working out of Memphis to take training to the squadrons.

- Two operational flight trainers will be completed next year.

- Naval Air Technical Training schools will continue training men but factory training will cease.

- CIC training will continue but Glyco graduates will be identified by rate rather than by 9900 codes.

Thus by 1 July 1958 the Special Program Codes used to *identify* will be replaced by standard classification codes used to *qualify* a man.

Both the squadrons concerned and the Naval Service will benefit by dropping the Special Program Codes and reverting to standard classification.

THE SQUADRONS will have passed their period of urgent need and will have reached a point where they're feeding trainees into the bottom of the program, yet giving their most experienced men an opportunity for normal rotation and in some cases, advancement. The Navy will be getting more versatile men in a variety of billets.

Special Program codes carry penalties as well as benefits. In the first place, the code can only be assigned or taken away from a man by special



BUPERS MAKES MASSIVE RECORDS SEARCH

authorization of the Chief of Naval Personnel. Secondly—and here's where the squeeze is put on the individual—BUPERS is obligated to make sure a man assigned a special program code is working in that particular field.

Some time ago a classification man in BUPERS was checking the duplicate status cards filed quarterly by field PAMI's. He came across a chief gunner's mate's name. Checking the man's job code against his duty assignment, the clerk found the chief, a code 9979 *Rocket Launcher Technician*, was serving aboard a provision ship! The clerk recognized rockets as a hot item but not so hot, he reasoned, as to be packed aboard a reefer. He notified his department head and a discrepancy letter went to the responsible command that day.

So, with a 100% allowance R7V/WV crewmen in sight by 1 July 1958, aviation ratings in the 9937, -38, -39 codes can look forward to absorption into the standard fleet classification category. Had the need justified, new rates would have been opened in these codes as they had for the Missilemen.



VW SQUADRONS USING GADGET-LOADED PLANES LIKE THIS ARE EXPECTED TO REACH 100% TRAINED MANPOWER STRENGTH BY 1 JULY

A PROP PILOT LOOKS AT THE A3D

By Cdr. William H. Huff, USN

THERE MAY BE no old bold pilots in the Navy, but there are some old cold pilots around. The cold pilot, as opposed to the hot pilot, is apt to be found surrounded by airplanes with many engines, all of which have propellers attached. The Navy has been transitioning the cold pilot to the hot pilot, but this takes time and there are big boat and patrol pilots who have yet to make their first jet ride.

No jet plane has, until very recently, seriously challenged the long-range *Neptunes*, *Mercators* and *Marlins*. But the A3D does. The *Skywarrior* can travel the distance with any of the patrol planes, and although it is still a bit handicapped at low altitude, it can stay low for a considerable time. This handicap is probably more than offset by the need for all combat planes to go higher and faster.

The Alpha Three Delta is tailor-made for the big boat and patrol plane boys, though they may not think so at first. After the first zestful moments of savoring the idea of becoming at long last a jet jockey, the thoughtful throttle-bender will begin remembering stories about slow acceleration characteristics of jet engines. He will also recall reading something about high rates of sink common to swept wings. He will distinctly recall words like anoxia, jet penetration, high altitude ejections, high speed buffet, low speed buffet, compressibility and residual thrust.

Then will come a sustained period of cramming with back issues of *Naval Aviation News*, Sense pamphlets, AF press releases and Flash Gordon. By the time he gets orders to the Jet Transition Training Unit and sits in on a few bull sessions with friends who have made the switch from props to pipes, he'll be almost, but not quite, ready to send his precious orders back to BUPERS.

There hasn't been too much unclassified dope published on the A3D. Something on the airplane's range, however, can be gathered from the fact that it has made several trips from the West Coast to Hawaii without refueling.



THE A3D IS THE MOST POWERFUL AIRCRAFT EVER DESIGNED FOR A CARRIER OPERATION

Considering the distance plus the high altitude westerly winds, this adds up to quite a feat for a jet.

One day our old prop pilot will find himself slipping on a streamlined hard hat and crawling up the chute into the slick sweptwing giant built by Douglas. He has already had an oxygen chamber check and an ejection seat demonstration. He has put on an oxygen mask at least once, and some one has pointed out that the A3D has no ejection seat. "You just pull that handle there and slide out that chute. That is, if you can get out, and assuming no unusual gyrations, you probably can. But be sure and don't pull the D-ring until you've reached lower altitudes. Be sure the oxygen bottle is rigged, for if you pop your chute at 40,000 feet, you'll freeze, and you can't free-fall far enough without the oxygen to keep from freezing. Also be sure your bottle hose and radio plugs are properly secured or you might wind up with no teeth when you hit the deck—if you're in condition to notice." This type of conversation is common among pilots who have, when talking to pilots who haven't, flown jets. The desired effect is usually more than achieved.

The right hand seat of the A3D is nicely designed to provide comfort and joy to the uninitiated. First thing the big boat pilot notices is a complete lack of control over there. Have faith, keep smiling, the pilot probably is very capable; he just looks young and carefree.

The next thing the new man notices is that the right seat is designed for midgets, as is the parachute harness and all equipment attached thereto. Big boat pilots are apt to be broad of beam, large of feet and long of shank. The copilot—and the word is used advisedly—further learns the seat was welded into the airplane and moves neither up, down, backward nor forward.

Getting strapped in is something more than an ordeal the first time. It remains an ordeal the 100th time as well. The new jet pilot finds the oxygen mask was devised by someone who didn't like to look down. Looking down is eliminated, the mask is in the way.

Hooking up parachute straps, attaching radio cords and latching seat belts are done entirely by feel. Everyone concerned is careful not to explain that it is easier to do this

necessary buttoning up before the oxygen mask is put on. The simple task of just snapping the oxygen mask to the hard hat can be a monumental chore to the untrained. Everyone avoids divulging that the new snaps are flat on the bottom and must be snapped on bottom-side first.

Jets are notoriously slow of acceleration. In the A3D, this might be expected to be aggravated by its weight, approximately the same as the old *Privateer*—which was powered by four 1250 hp engines—and the swept wings, which are the usual low drag, low lift design. It all adds up to the A3D's having to build up a pretty respectable airspeed before lift off. But the new pilot will find that the slow acceleration problem, at least in the A3D, is a relative one. Remember that just one of the two J-57 engines, standard equipment on the *Sky-warrior*, pack more power than all four of the old *Privateer's* fans.

The effect of releasing the brakes with those two J-57's winding up at full power does not strike the checking out pilot as slow. He is suddenly pinned so hard against the back of the seat he can't get his hands up to grab hold of something if there is anything to grab hold of, which there isn't. Or so it seems. Then, they're airborne.

About now the pilot on his first jet ride will remember all the jets he's

watched roar out of sight at 50 feet while the wheels and flaps were milked up and the jet gained a little airspeed. In the A3D, it's different. As soon as the plane breaks deck, the pilot flips the wheel lever up, hauls back on the yoke and points the nose toward the sun at a strictly impossible angle. Later the young pro explains that he does this because he has to hold the speed under 180 until the wheels are in the wells, and this demands a very high angle of climb. This doesn't help our hero whose heart stalled out three times before the altimeter read 5000 feet some 60 seconds from the time they started the roll on the runway.

Shortly the aging neophyte notes he is going through 30,000 feet, which is just 3000 feet higher than he ever got the old PB4Y over Samar in '44. The airspeed indicator reads 300 knots and the climb indicator is still stuck around the top of the dial.

At something over 40,000 feet, the pilot levels off, reduces power, and asks his passenger how he likes it. His passenger might like it fine if it weren't for that odd hunting motion the plane has suddenly developed (the A3D has a very slight yawing tendency). Besides, it is at about this point the average new-to-altitude-and-masks pilot figures he's getting anoxia. The gauge is blinking, the pressure is up, he's on 100%, the mask is cinched

to his head as if welded, but something just doesn't seem right. He wonders if someone getting anoxia can recognize the color blue his fingernails are supposed to turn to, when they do. It doesn't help to note that the cabin altitude is just a hair over 25,000 feet.

Things turn out all right. They spend a couple of hours at altitude. He has passed check points in 10 minutes that took him an hour in the Beech. He's worked out the true altitude, true airspeed and temperature on the E6B. He marvels at a radar picture that looks like a map on the scope, and he notes that the true air speed is just a bit over twice the IAS.

It's now time for the penetration. The pilot tells him that all one does is "pop" the speed brakes out with this button on the throttle, pull off the power like this, and roll the nose down and hold 250 indicated.

There is a momentary feeling of some one applying giant brakes, then of floating as the nose goes over and over and over. The rate of descent hits the bottom of the scale and sticks again. The altimeter starts winding around like it always does in test pilot movies and nightmares just before the end. There is barely time to worry about the engines cooling too fast at -50° in idle before the turn is started and the altimeter goes through 20,000 feet and unwinds at a magnificent rate.

A penetration is more like a slow spin to the uninitiated P-boy than any other maneuver. It's a busy five minutes until the pilot brings the nose up, power goes on. There is a shivery sink as the speed brakes go in, and they are straight and level at 250 knots and 1500' nearing the break.

Dirty (a word meaning wheels, speed brakes and flaps down), the A3D lumbers around the pattern like a lazy whale in a swimming pool. When the pilot with the wheel makes a two-needle width turn at 130 knots and 500 feet, the copilot tries to have faith as he vividly recalls all the airplanes he has flown that stall out at about this speed in this same condition. Actually, the A3D has a buffet range so wide between first warning and stall that it is almost a nuisance, but this doesn't help the uneducated. Touch-down occurs around 120 knots which somehow in this thing seems mighty slow indeed.

After they are on the deck, the



CDR. DALE COX, JR., TEAMMATES PLOT RECORD-BREAKING A3D FLIGHT IN MARCH 1957

pilot casually flips up the flaps and stamps down on both brakes. Miraculously the tires don't blow as the hytrol brakes barely keep them moving, and the *Skywarrior* grinds to a walk. Again the passenger is thrown on his shoulder straps, but this time he's glad. If the drogue chute is used, the braking effect is about the same as the hytrol stop, but there is no application of brakes until the plane is at the end of the runway and ready to turn off.

The older, and already bolder, ex-P-boat pilot carefully removes his fingernails from the palm of his hands, unbraces his legs, loosens his shoulder straps, relaxes his jaw muscles, and whispers hoarsely, "By golly, that sure was a lot of fun, wasn't it?"

The A3D has few idiosyncrasies. The narrow landing gear makes it feel something like a bicycle on the runway in a crosswind, and it has a fairly low angle of allowable turn at high speeds which requires a lot of anticipation for precision. But even at very low speeds, its reactions are fast and it's steady as a rock on a GCA.

The climb angle of attack, level flight or descent angle of attack is very little different. Altitude is gained or lost by power application or reduction. One never rotates (raises the nose on landing.) Sweptwing jets don't flare



A NEW A3D IS HOISTED ABOARD SARATOGA

by changing angle of attack. A percent or two of additional power will do it nicely, but this takes some getting used to.

The new pilot will try, at least once, to reduce his power and haul back on the yoke, expecting the nose to come up and the rate of descent to flatten out. It doesn't work that way with sweptwings. With the power off and the nose high, it just sinks at a higher rate. Fortunately the A3D has an almost instant reaction to power unlike many other jets, and power will fly it right out of a stall in a climb attitude. This is a real nice feature!

Approach speed, which is very, very slightly higher than landing speed must be established well before time for touchdown. Many an old time pilot feels he got that way staying fast until

the runway was made and then pulling the power, flaring and getting down to landing speed safe and fast.

In the A3D, he'll probably try the same techniques. So he'll keep Helen, the kids and his old age pension in mind and hold 145 to about 100 feet off the deck and just short of the runway. So he'll chop his power, raise his nose and expect the speed to drop the 10 or 15 knots while the rate of descent comes up from 500 fpm down to a respectable 100 fpm. He'll be thrilled to note the speed holds the same as his nose comes up, while his rate of sink eases on down to about 700 or 800 fpm down. There is time to add power and go around, but it's hairy.

The answer is simple. Establish a 300 fpm rate of descent at the approach speed with about 80-82% power. If the plane is staying high, take off one or two percent and add it back near the end of the runway with maybe another one or two to catch the rising sink. But leave that nose in a flat flying attitude! The hang of it will come with a few rides.

A final word to all the old prop pilots, who one day soon, will receive orders to an A3D outfit. When you get to know the *Skywarrior* well enough to move into the left seat, you will find it one of the nicest airplanes to fly that you have ever tried.



TO HALT THE POWERFUL A3D SKYWARRIOR AS IT COMES IN TO LAND, A STURDY DROGUE PARACHUTE IS FOUND TO BE HELPFUL

New Lightweight Radio Being Produced for Marine Corps

A new lightweight radio communications relay set that can be carried on a man's back has been developed and is being produced for the Marine Corps by Raytheon Manufacturing Company. It can be carried to otherwise inaccessible strategic battlefield locations with ease.

The new set is ideal for the Marine doctrine of helicopter assault operations. Previous radio relays much bigger and heavier had to be carried by truck or other vehicle, barring their use in many situations.

The new radios have an effective point to point range up to 10 miles.

Marine is 3500th Trainee HTG Schools Navy, Marine, CG Men

Marine Capt. James R. Plummer became the 3500th helicopter pilot to be trained by Pensacola's Helicopter Training Group since it was commissioned in December 1950. He completed his qualifications on May 24.

HTG is the only training organization for Navy, Marine and Coast Guard helicopter pilots. Plummer was checked out in the HTL trainer and the Vertol HUP at Pensacola, Fla.

Incentive Awards Given NRL Scientist Receives \$10,000

The largest group award ever made in the Federal Civil Service—\$20,825—has been given 45 employees at the Naval Research Laboratory, Washington, D. C., for their role in improving interceptor armament control systems. The award was approved by the Secretary of the Navy, the Secretary of Defense and the Civil Service Commission.

Peter Waterman, an electronic scientist with NRL's radar division and key figure in directing the work, received \$10,000 for his contribution to the project. Forty-four other employees who worked with Mr. Waterman shared the remaining \$10,825. The amount of each award depended on the significance of each worker's contribution. Ten employees in the group received the second highest amount, \$700 each.

The awards were made to Mr. Waterman and his associates by Radm. Rawson Bennett of Naval Research.

ATSUGI PIC IS ON THE ALERT



PLOTTING AERIAL PHOTOGRAPHY HAS BECOME ART FOR HOUSEMAN, AN, BENNETT, PH2

IN WAR and peace, Mobile Intelligence Production Unit Pacific at NAS ATSUGI, Japan lives up to a doctrine laid down in 1938: "To fight a war effectively, a nation has to have adequate means of obtaining and interpreting photographic intelligence."

Nowadays the unit, under Commander Robert L. Hamblin, is engaged in collecting and evaluating intelligence used in the preparation of materials for the Seventh Fleet operating forces as well as being the Navy's photographic interpretation center in the Far East.

But it was only a few years ago that the Atsugi-based unit gave rapid photo intelligence service to combat units. During the Korean war courier service was set up between the Fleet and the unit at Atsugi so reconnaissance and strike photography could be delivered within six hours after the pictures were taken. An immediate interpretation of the photography would be made by the carrier or staff photo interpretation officer before it left the fleet for detailed interpretation at Atsugi.

At the height of the Korean war each photo interpreter at Special Intelligence Production Unit, Detach-

ment One, was assigned a 40-square-mile area to cover. All photography taken in this combat area was routed to this man and he came to know his sector like the back of his hand. Thus he was able to keep a constant watch on enemy attempts to repair damaged facilities or concentrate troop strength.

These efforts supplied the Naval striking forces with a continual list of targets and provided higher echelons with information on which the enemy's intentions could be predicted.

At war's end the unit's name was changed and its mission was altered to meet a peacetime role. Like similar units, it provides Fleet Commanders with reliable information.



LTJG'S STURGES, KANIG PLOT AIR PHOTOS

Italian Seaman Befriended Visitor is Aided by NAS Norfolk

The spirit of friendship was practically expressed at the International Naval Review when an Italian sailor in a strange country found he had friends to help him.

Bearnardo Ceravolo, CPO aboard an Italian DD, received word that his uncle in Weirton, West Virginia, had died. Granted emergency leave, he proceeded to NAS NORFOLK in the hope of getting transportation to the funeral of an uncle he had never met.

NAS NORFOLK went into action and provided a plane, pilot and copilot to fly him to Wheeling, W. Va., about 26 miles from Weirton. The aircraft, piloted by Ens. J. R. Williams of VS-30 and Chief Aviation Machinist's Mate V. R. Drake, arrived at Wheeling in time for Ceravolo to attend the memorial services.

Chief Ceravolo was born in a town south of Venice, Italy, and this was his first visit to the United States.



'FOURMOST' SAILOR is John Santoro, SN, who hands out mess passes as part of his duties on the USS Forrester. Santoro never forgets his service number, because it's 444 44 44.

New Houses Open at Cubi CPO Family Occupies First Unit

The first four of fifty new homes aboard NAS CUBI POINT, Philippines, were occupied in late May. Mrs. Marguerite Ellsworth, wife of an aviation chief air controlman, was the first homemaker to cut the tape on a new housing unit.

The two- and three-bedroom homes are finished in Philippine mahogany and furnished with rattan furniture.



PROUD OF THEIR achievement and their squadron are 39 newly appointed petty officers of Air Development Squadron One, massed here in the designator of their outfit, VX-1. Capt. H. F. Barfeind CO's AirDevRon One which had five men promoted to PO1, 16 to PO2, 19 to PO3.

F8U-3 under Development Mach 2 Fighter to Pack New Punch

Under a \$35 million contract, Chance Vought Aircraft is developing a new all-weather carrier-based Navy fighter which will carry the latest air-to-air missiles at speeds in excess of 1500 mph and be able to intercept enemy bombers under any weather conditions within minutes after it is launched. It will be designated F8U-3.

The new plane will be propelled by a Pratt & Whitney J-75 afterburner-equipped engine of the 15,000 pound thrust class and will be equipped with radar. It will reach altitudes which represented record heights for rocket planes a few years ago.

Design of the F8U-3 began in 1956. It is expected to be flight tested next summer and to reach the fleet by 1960.

The F8U-3 incorporates some of the F8U-1 *Crusader's* features, but is of

completely re-engineered design. Its swept wing is mounted high on the fuselage and well back of the cockpit section. A sharp, pointed nose containing radar blends smoothly into the cockpit area and the air scoop is well forward under the nose. Lines of the fighter are trim and uncluttered.

Radar and fire control systems will incorporate a number of advanced electronic devices being developed.

Announcement of the contract came as the company stepped up delivery of *Crusaders* to Atlantic and Pacific fleet squadrons and continued the testing of the supersonic long-range *Regulus II* surface-to-surface guided missile.

ATU-206 Pilots Set Mark Fly Top Record in Unit's History

Two pilots of advanced Training Unit 206 at Pensacola logged the unit's 5000th hour of accident free flight May 23. They were Lt. K. C. Darby, a flight instructor, and Marine 2nd Lt. W. P. Mohle, student pilot.

Flying a Grumman F9F-2 *Panther* on a cross-country hop to Jacksonville, the two thus set the longest accident free record since the unit was commissioned in May 1955. Encouraged by its 5000-hour start, ATU-206 is aiming for a 10,000 hour mark.



FOUR STARS come to an easy landing on the deck of the USS Boston, guided missile cruiser. Stars are on the shoulders of Admiral Jerauld Wright, CinCLant, who was lowered by helicopter sling during operations at sea.



PRAISED FOR LOGGING 5000TH SAFE HOUR

Made for High Altitudes New Full Pressure Suit Tested

A full pressure high altitude suit—the kind Naval Aviators will use when entering the stratosphere—has been flight-tested successfully by the Navy.

The new suit was tested at NATC PATUXENT RIVER by Cdr. Jack Morrissey, test pilot and WW II and Korean War veteran. He put the suit through its paces in the Navy's F8U *Crusader* which is capable of ascent into the stratosphere.

The suit was developed and produced under Navy contract by B. F. Goodrich Aviation Products, a division of B. F. Goodrich Company, Akron.

Not only does it protect a man at high altitude, it also retains lifesaving pressure after a pilot has bailed out at stratospheric altitudes, and in case of a possible ditching in cold water, will keep the pilot afloat and safe from the hazards of exposure.

Made of rubber-nylon, the suit provides an artificial, pressurized atmosphere for the pilot. It contains its own communication, oxygen, and ventilation systems, yet has more mobility, better visibility, comfort and protective features than previous models of high altitude protective equipment.

The suit contains its own atmos-



CDR. MORRISSEY CLIMBS ABOARD AN F8U

phere with sufficient pressure to maintain life in the rarefied upper atmosphere. In development since 1951, it is sensitive to drops in aircraft cabin pressure, automatically pressurizing itself for such drops.

In laboratory tests, it proved its worth in an altitude chamber which simulated pressure at 80,000 feet for an eleven-hour trial period.



HAND-PICKED PILOTS gather around one of six new T2V Seastar trainers they are FIP-ing at NAS Corpus Christi. Standing: Lt. E. A. Rawsthorpe, Lt. E. D. Walter, Cdr. I. W. Fair, Cdr. C. R. Sawyer, Lt. J. D. Sword, 1st Lt. H. M. Galpin and Lt. D. C. Shepherd. Kneeling: Lt. R. D. Donnelly, Jr., Ltjg. J. Swor, Lt. J. K. Setliff and Ltjg. P. E. Neville—part of first FIP there.

F8U-1, A3D Smash Records Carrier Planes Beat Speed Marks

On July 16, Navy and Marine pilots shattered two world speed records in one day. An F8U-1 *Crusader* flown by Marine Maj. J. H. Glenn sped from NAS LOS ALAMITOS to Floyd Bennett Field in 3 hours, 23 minutes, 8.4 seconds. He beat Air Force LCol. Robert Scott's 3 hours, 44 minutes, 53.88 seconds set in 1955 in an F84F.

Two A3D *Skywarriors* flown by Ltjg. J. P. Pruitt and Ltjg. Horace



MAJ. GLENN IN F8U BEFORE RECORD FLIGHT

Little of VAH-2 set a new California to Hawaii record. Pruitt made the distance in 4 hours, 45 minutes, besting Little by one minute. A previous record was set Sept. 29, 1952 by an Air Force B-47. The A3D pilots were on a routine flight from NAS ALAMEDA to NAS BARBER'S POINT.

This is the second record made by the F8U-1 since its Navy acceptance.

Balloon Flown into Cloud Fliers Attain 29,000 Feet Altitude

Two Naval observers took a *Stratolab* manned plastic balloon into the heart of a thunderstorm cloud June 24.

Ltjg. Malcolm D. Ross of ONR and Charles B. Moore of Arthur D. Little, Inc., ascended vertically on an updraft into the towering cumulus cloud above a mountain about 50 miles southwest of Socorre, N. M. They flew as high as 29,000 feet.

This was the first in a series of cloud experiments to be made in a summer-long program at Mount Washington by Navy and Little Co. scientists under a BUAE-ONR contract.



COFFEE BARGE SKIPPER DIDASA POURS CUP

Coffee is Didasa's Cargo "Ship" Steams 24,000 Feet Weekly

Three months short of its fourth anniversary the USS *Didasa* (SD-2) had steamed 884 miles—all within the confines of ComFairHawaii Headquarters building at Ford Island.

B. E. Didasa, SD2, skipper of his namesake which is likely the most unique vessel in the Pacific Fleet, estimates that since August 1953 he has saved the Navy 64,935 man hours by delivering coffee to headquarters coffee drinkers at their jobs via the wheeled ship. At 24,000 feet per week he travels 1,238,000 feet per year.

He hopes to remain on his job, delivering staff coffee, long enough to equal the 2300-mile distance to the West Coast. The cost of the coffee is financed by contributions of the crew.

Small Engine Being Built Designed to Power One-Man Copter

The smallest gas turbine aircraft engine ever built is being designed and produced by Solar Aircraft Company. It will be used to power a one-man helicopter.

The engine is to be 20 inches high

with a maximum diameter of 15½ inches. Weighing 50 pounds, the tiny turbo-shaft engine will produce 55 shaft horsepower plus 12 pounds of jet thrust on a 100°F day, a company release states.

Military designation of the engine will be YT-62. It is being financed jointly by the Army and the Navy.



ENGINEERS STUDY SMALL ENGINE MOCK-UP

Crippled Children Hosted Princeton Sailors Extend Welcome

Brownie uniforms blended with white hats at Long Beach when 14 children from a school for handicapped children were guests aboard the carrier *Princeton*.

The ship entertained 25,500 visitors during a two-day period but the crippled children stood apart. At least one sailor volunteered to help each Brownie or Girl Scout manipulate her wheel chair or crutches up the forward brow, across the quarterdeck, onto the hangar deck area, up and down the elevators and on a tour of other interesting spots.

End of a perfect visit came when the commissary department broke out raisin cake and chocolate ice cream.

Fueling System Perfected Crusader Gets Telescoping Probe

Inflight refueling of the F8U-1 *Crusader* is accomplished by a quickly attached or detached refueling system with a telescoping probe, the first of its kind in the aviation industry.

The refueling installation is located on the fuselage side behind the pilot. It was designed and built by Chance Vought, maker of the F8U.

When extended on its swivel arm, the refueling probe is outside the plane, opposite the pilot's head, where he can watch the refueling drogue of the tanker plane and the F8U's probe.

The refueling unit weighs only 150 pounds. It is shaped like a long tear-



AN F8U-1 RIGGED FOR IN-FLIGHT REFUELING

drop. The probe moves out and forward three and a half feet as it extends hydraulically when the pilot flips a switch.

Fighter versions of the *Crusader* will be equipped with the removable pod which can be taken off the plane in 20 minutes.

The photographic version has the refueling mechanism mounted internally in the position behind the pilot.

DK Completes 36th Course Does 5 Years Work in Off Hours

The old Navy saying, "He's had the course," is particularly applicable to William C. Wilson, DK1, of VP-26 at NAS BRUNSWICK, Me. He has completed his 36th USAFI course.

Wilson left formal schooling behind at the ninth grade level in 1953. Since then he has passed the USAFI high school and college level General Education Development tests and received his high school diploma from Versailles High School in Kentucky.

He now devotes his off duty time to study for his LDO examinations.



A MARINE CORPS ordnanceman activates a Terrier missile launcher after loading. The missile truck can transport two missiles. After a missile is placed on the launcher, the launcher is pointed continuously by the fire control system so that firing will effectively hit the target.



CASE ONE: After completing the GCA qualification for which his hop was scheduled, the flight leader led his wingman down along the coast to utilize the remaining time. The two Marines flew their AD-6's between 50 and 100 feet for five or ten minutes and then turned back toward home.

On the return flight, the leader let down to less than 50 feet and flew close to the water—too close. His *Skyraider* struck the surface and shed its prop. Almost immediately the engine fell off, the aircraft gained a little altitude and then descended into the water. No pilot escape attempt was evident as the fuselage submerged.

Case Two: Two JG's scheduled to fly their F9F-5's for simulated combat attacks on the two DDR's were commencing the fifth run on the ships when the USS———requested that one of the pilots execute a slow roll.

The accommodating pilot swung his *Panther* to the left and initiated a low pass on the starboard quarter of the requesting ship. When approximately 500 yards off the starboard quarter and at an altitude of less than 200 feet, the *Panther* commenced a roll to starboard at a nose-level or slightly nose-down attitude. While inverted, the nose of the aircraft dropped further and altitude was lost during the completion of the roll. The attitude was corrected to a nose-up position during the final phase of the roll, but the aircraft continued to lose altitude, slapped the water, exploded, pitched forward and disappeared.

Case Three: Forty minutes after take-off for a night fam hop, a NavCad deviated from the pre-briefed flight

THE WAGES OF SKIM

By L.Cdr. W. E. Johnston

Aviation Safety Division, DCNO (Air)

and commenced a series of low level passes over the beach with his F9F-5. On what became the final pass, the aircraft struck a mud flat slightly nose-up and wings-level at an estimated speed of 250 to 300 knots. Explosion was instantaneous and disintegration progressive with wreckage strewn along the flight path for more than a thousand feet.

The NavCad's own automobile, parked 75 feet to the right of the wreckage path and 716 feet from the point of initial impact, was severely damaged when struck by the aircraft's tailpipe and tailpipe shroud.

Fortunately, the NavCad's friends, who had borrowed the car, were standing on the far side of the vehicle which shielded them from the flying debris. Leaving the headlights on as a reference point for the prearranged rendezvous with their flathatting

friend, they obtained an excellent view of the low level passes.

The aircraft accident board attributed the accident to the pilot for attempting maneuvers beyond his capabilities and violating OPNAV Instructions and Civil Air Regulations. The board stated that this type of accident can be prevented only by integrity, good judgment and respect for authority by all officers and officer candidates.

These cases speak for themselves. They didn't all occur in any one day, week, or month, but the tragic thing is that they did occur—EVER! Flathatting and low altitude acrobatics can give you the thrill of a SHORT lifetime at the cost of skimming off the best years—and the rest of the years—of your life. Even when they survive, flathatting is certain to get the perpetrators in Dutch, since willful disregard of regulations and instructions simply isn't tolerated.

It is worthy of mention that the Judge Advocate General held that the death of the NavCad (Case Three) was incurred *not in the line of duty* and was the result of *his own misconduct*. It's recognized that a pilot intent on performing some hazardous unauthorized maneuver isn't going to ponder over the "benefits" which might accrue to his survivors in the event he fails to complete the maneuver successfully. However, if there's any truth in the saying that forewarned is forearmed, the realization that this additional hardship would be imposed on the prospective widow might provide the final clincher in the argument that the fun of flathatting isn't worth the inherent hazard and needless risk.



INTERNATIONAL NAVAL

MIGHTY SARATOGA, SYMBOL OF NAVAL POWER

NAVAL POWER in three dimensions was spectacularly demonstrated in June as 114 surface and sub-surface men-of-war from 18 nations, under a cover of naval aircraft, staged an International Naval Review in Hampton Roads, Virginia.

More than 55,000 officers and men manned the three reviewing ships and the 111 vessels anchored on station along the 14-mile line of review extending from the Norfolk Naval Base piers, past Old Point Comfort, out to the open water of Cape Henry in the Chesapeake Bay.

Largest international review ever held in American waters and largest, in number of nations participating, ever held anywhere, this world armada for peace assembled from nations of the Free World was the naval highlight of the eight-month-long Jamestown Festival. It was celebrating the 350th anniversary of the founding of the American colonies, from which this nation grew.

Defense Secretary Charles E. Wilson, embarked in the guided missile cruiser USS *Canberra*, reviewed the 33 war ships from 17 foreign nations, the 80 vessels of the U. S. Navy and Coast Guard, and the more than 200 Navy and Marine planes in the fly-over. Secretary Wilson's military host was Admiral Jerauld Wright, Commander in Chief, U. S. Atlantic Fleet, who presented the review.

Invitations to take part in the Review were limited to those nations which might have a special reason to celebrate the colonization of North America. The invitation list included all the nations of the Americas; those European countries which participated in the trans-Atlantic exploration and settlement of this country; and all member nations of the North Atlantic Treaty Organization.

Ever since the Great White Fleet sailed around the world in 1908 with its uniformed "ambassadors of good will," men of the U. S. Navy have visited many countries. In world naval bases throughout Europe, the Mediterranean, South America and the Far East, the bluejacket has, for many years, been graciously received and entertained.

In partial return for this long-time hospitality, the U. S.

Navy, and specifically the Atlantic Fleet, during Fleet Week, June 8-17, assumed the role of host when 12,000 men of the 17 visiting navies of the world arrived in Hampton Roads for the giant international review.

Each guest ship was assigned a U. S. "host ship" for the duration of its stay—a ship of the same type whenever possible. As the visitor arrived, a representative of its host ship came aboard off Cape Henry and rode with him into Hampton Roads where host and visitor were docked adjacent, or in close proximity. Gangways were opened between the ships for continuous liaison. The host was there to help solve any problem of logistics, or matters of protocol, and to assist the visitors in taking full advantage of a wide range of recreation and entertainment.

As each of the 33 guest ships entered Hampton Roads and fired the traditional gun salutes, she was answered for the Senior Officer Present by the USS *Norfolk*, DL-1. This 5600-ton frigate, first of her class, was selected for



ON EVE OF REVIEW, THE WISCONSIN, IOWA, DE GRASSE, SARATOGA W.

NATIONAL REVIEW

FOUR-MASTER IS THE SPANISH TRAINING SHIP



this task because of the appropriateness of her name, for her special saluting batteries, and the convenience of her operating schedule.

Originally designed as an anti-submarine light cruiser, the *Norfolk*, first major combatant ship commissioned after WW II, is the largest destroyer type ship afloat.

Hampton Roads is being called the "Capital of our Navy." During the first two weeks in June, the harbor seemed more like a Capital of World Navies. First visitors to arrive for the review were some of our closest neighbors. Uruguay's destroyer escort *Uruguay*, the Nation's namesake, was already in the harbor. Largest South American contingent came from Venezuela on 5 June. Her two 2600-ton destroyers, *Zulia* and *Aragua*, were the vanguard.

The next day, ships from the West Indies steamed in. The Dominican Republic's squadron was headed by the destroyer *Generalissimo*, flying the flag of Contra-Almirante (RAdm.) Raphael B. Richardson. With her were the

frigates *Presidente Troncosco* and the *Presidente Peynado*.

Cuba's frigate *Antonio Maceo* was revisiting a familiar port when she eased into place at the Norfolk Naval Base. Commanded by Capitan Augusto N. Erdman, she carried a 50-piece Cuban Navy band and a contingent of Cuban Naval Academy midshipmen.

Two of Turkey's destroyers, the *Gelibolu* and *Giresun*, flying the colorful red flag with white star and crescent, were her representatives.

Turkey was a great military power for 400 years, from the middle of the 12th to the mid-16th century. Under command of her great Barbarossa, Turkish Naval forces controlled the entire Mediterranean against France, Spain and the maritime nation of Venice. The Turkish Navy of today is described as a carefully tailored single purpose naval force. It is built around good submarines, destroyers and a shrewdly planned force of minecraft. With these ships the Turks can protect the Black Sea and the Straits through which the Black Sea must be entered.

From the other end of the Mediterranean came Portugal's destroyer escorts, the *Diogo Cao*, and *Corte Real*. The Portuguese Navy, dating from the second half of the 13th century when her galleons were built in the Royal Shipyard in Lisbon, has its own special place in history. Portugal was among the leaders in discovery of the maritime routes of the world—to India, Brazil, and to the Pacific.

The visitors from Canada, two of the world's newest and most modern destroyer escorts, were especially built for antisubmarine work. These 2800-ton sisters of the *St. Laurent* class, the *Ottawa* and *Assiniboine*, were built by a newly developed Canadian technique which will permit mass production. Entirely welded, they are given X-ray tests to insure against hidden defects. Their special hull configuration provides positive stability under extreme damage conditions. Forty of Canada's warships now serve under Adm. Jerauld Wright in his capacity as Supreme Allied Commander, Atlantic. This subordinate command of NATO has its headquarters located in Norfolk.



WATCH AS OTHER SHIPS MOVE INTO POSITION IN THE DOUBLE COLUMN



THE GELIBOLU, DESTROYER FROM TURKEY



CANADIAN DESTROYER ESCORT ASSINIBOINE



DE ZEVEN PROVINCIEEN, DUTCH CRUISER



THE ARK ROYAL, NEWEST BRITISH CARRIER



USCG CUTTER INGHAM PATROLLED THE AREA



USS BARBERO, GUIDED-MISSILE SUBMARINE

ARRIVING IN TIME for the gay weekend was the French squadron of six ships, largest contingent from any of the 17 visiting nations. The 9000-ton antiaircraft cruiser *De Grasse*, flagship of Vice Admiral d'Escadre Jozan, led the squadron. Accompanying her were the light aircraft carrier *Bois Belleau*, formerly the USS *Belleau Wood*, the fleet destroyers *Chevalier-Paul* and *Dupetit-Thouars*, and the fast escorts *Le Gascon* and *Le Lorrain*.

Two of Italy's modern fleet destroyers joined the visiting DD's already in port. The *San Marco* and the *San Giorgio*, flying the flag of Ammiraglio di Divisione (RAdm.) Ernest Giuriati, were both launched as light cruisers during WW II, but were not commissioned until 1956.

Boasting one of the oldest navies in the western world, Italy traces it from 260 B.C. when Roman fleets controlled the known seas. We are much indebted to Italian seamen such as Amerigo Vespucci and Christopher Columbus.

Peru sent her destroyer escort *Aguirre* to the review. Peru's navy is termed a "two-coast navy" for a one-ocean nation. She has the most modern submarine fleet in South America, second only—in the Americas—to our own. Her subs, with other ships in her Surface Vessel Fleet, operate in the Pacific for continental defense. Her Amazon River Force operates 2000 miles up the Amazon River from the Atlantic Ocean. To arrive on station, vessels travel 6000 miles from Callao through the Panama Canal to the mouth of the Amazon and upriver to within a few hundred miles of their starting point.

The Peruvian Navy was created in 1657 during colonial days by the Spanish viceroy, de Guzman, who also founded the first naval school. When Peru gained independence in 1821, expansion of her navy was begun and the school became a national institution. Thus her naval school antedates the 1845 founding of the U. S. Naval Academy.

For Fleet Week, Belgium's two ocean-going minesweepers, now completing their under-way training in U. S. waters, returned to Norfolk. The two ships, *Truffaut* and *Bovesse*, both commissioned in January 1957, are both named for WW II heroes. Belgium's navy is largely post-war. Within the framework of NATO, her navy

has great usefulness in the defense of the Atlantic. Her 10 ocean minesweepers and more than 30 coastal minesweepers have the task of keeping clear a part of the North Sea, and the waterway to Antwerp, NATO base.

Colombia's frigate *Capitan Tono* completed the South American group. Colombia's navy is small, 189 officers, 2600 enlisted men and 800 marines. But it can boast of an eventful history. The Colombian Navy had its inception in the country's struggle for independence from Spain, when patriotic seamen manned ships and small craft they salvaged after battles with Spain. Thus the Liberator Simon Bolivar found himself in command not only of an army, but also of a small navy with officers and men of maritime experience and ability. After more than 100 unsettled years, the Navy was reorganized in the 1930's.

The Royal Netherlands Navy was represented by the destroyer escort, *Groningen* and the cruiser Hr.Ms. *De Zeven Provinciën*, flagship of Commandeur H. Van Ellmeet, Commander, Training Squadron Five. Embarked in the proud cruiser was the colorful 25-piece Royal Netherlands Marine Band.

Netherlands citizens have fought the sea, and *at sea* since they settled in the river delta which is their country. In 1218 they sent a fleet to the Mediterranean to take part in the Crusades; defeated a Hanseatic League fleet in 1438; and destroyed the Earl of Warwick's fleet in 1470. As their growing merchant fleet needed protection, the Netherlands Navy increased in importance in the 16th century. One hundred years later the Netherlands boasted the largest merchant fleet and the most powerful Navy in the world. Though today's Dutch navy is small, it is well-equipped.

The Dutch visitors were not only celebrating our 350th birthday, but also the 350th anniversary of the birth of Admiral Michiel Adriaenszoon de Ruyter, Father of the Royal Netherlands Navy. The original *De Zeven Provinciën*, for which the present ship is named, was Admiral de Ruyter's flagship.

Pride of Great Britain's fleet, her newest aircraft carrier, HMS *Ark Royal* flying the flag of VAdm. M. L. Power, Flag Officer, Aircraft Carriers, led a squadron of three ships. Aircraft embarked were three squadrons of *Sea*

Hawk jet fighters, a squadron each of *Wyvern* turbo-prop strike aircraft, and *Gannet* turbo-prop anti-submarine planes, and two *Whirlwind* copters.

Ark Royal is one of the most famous names in the Royal Navy, the first ship of that name having been built in the 16th century for Sir Walter Raleigh. The ship was originally named *Ark Raleigh*, but this was changed to *Ark Royal* when bought by the Crown.

Accompanying the carrier were two 3700 ton *Daring*-class ships, the *HMS Duchess*, and *HMS Diamond*. This entirely new category ship for the Royal Navy, between a heavy destroyer and a light cruiser, is considered one of the most powerful armed ships of its size in the world.

Royal fleets have been defending Britain since the days of King Alfred, 1100 years ago. The title of Royal Navy was first given to a fleet in 1660 by King Charles II, although many previous sovereigns had given impetus to the foundation of a national Navy, one of whom was Queen Elizabeth I.

From the moment she came in sight, Spain's four-masted schooner was the cynosure of all. A white-hulled, white-winged thing of beauty, the training vessel is named for the renowned Spanish explorer, Juan Sebastian de Elcano, who, as captain of one of Ferdinand Magellan's ships, sailed around the world for the first time in history.

Built in Cadiz, the destroyer-sized *Elcano* is equipped with a 900-horsepower engine for use in entering and leaving port, and in emergencies. Each year from September to July, the *Elcano* makes a training cruise. Last year she made her third circling of the globe, sailing more than 500,000 miles.

To accommodate as many visitors as she could, the *Elcano* remained at the Naval Base piers as long as possible before taking her place in the line of ships for the review. During every minute of every visiting hour, a long line of visitors waited to go aboard her.

Norway sent her destroyer *KNM Trondheim* to the parade of navies. Though the Royal Norwegian Navy had only a few ships prior to WW II, they fought a brave if hopeless struggle during the country's invasion in 1940. Later, in exile, the navy had to be built up from an absolute zero. But those vessels took part in North Atlantic, North Sea and in Arctic en-

gagements. Norwegian destroyer *Stord* helped sink the German *Scharnhorst*.

Envoy from Denmark was her frigate *HDMS Holger Danske*. The Royal Danish Navy as such dates back about 450 years, but Danish naval history can be traced to the times of the Vikings. During this period, between 800 and 1066, Danish sea power was so strong that King Canute the Great was able to invade Great Britain from the sea and occupy the country.

About 1500 the Danish King Hans founded the Royal Danish Navy, building "The King's Ships" and establishing a Naval Dockyard. King Kristian, a famous naval hero himself, caused a whole new town section to be built in Copenhagen for naval personnel in the early 1600's with an eye to improving their living conditions. (This, about 300 years in advance of the times!) This section is still the home of many naval officers and enlisted men.

In World War Two, when German forces invaded Denmark, the Danes scuttled their ships at the Naval Dockyard, or attempted to sail them to Sweden. Denmark's navy today has been rebuilt entirely since the war.

At the time of the 1907 International Naval Review, the participating ships were considered the ultimate in firepower and maneuverability. Great changes in naval warfare in recent years, however, have brought about great changes in types of ships. The highly mobile ships of today's navies are a far cry from the short, stubby battleships, the heavily-armored, slow-moving monitors, the gunboats and torpedo-boat destroyers of 1907.

Most potent weapon of any present-day navy, combining all the latest features required for modern warfare, the giant attack carrier *USS Saratoga* headed the U. S. carrier group that included attack carrier *Randolph* and support carriers, *Valley Forge*, *Leyte*.

During Fleet Week, the flight deck of the super-carrier *Saratoga* was the scene of a ceremony that dedicated the International Naval Review Commemorative Stamp. Participants in this ceremony included the Postmaster General Arthur E. Summerfield, Secretary of the Navy Thomas Gates, Admiral Arleigh Burke, and Admiral Jerauld Wright; and mayors of the Virginia towns Norfolk, Portsmouth, Newport News, and of Virginia Beach.



FRENCH AIRCRAFT CARRIER, BOIS BELLEAU



MODERN ITALIAN DESTROYER SAN GIORGIO



CAPITAN TONO, FRIGATE FROM COLOMBIA



CUBAN NAVY'S FRIGATE ANTONIO MACEO



HOLGER DANSKE, FRIGATE FROM DENMARK



DOMINICAN REPUBLIC DD, GENERALISSIMO

THE "JAMESTOWN River aqua blue" stamp carries the official Jamestown Festival insignie superimposed on a map of the Hampton Roads area, with an aircraft carrier of the *Forrestal* class at the right against a background of silhouetted war ships.

Well over 200,000 first day covers were cancelled aboard the *Saratoga* with a special die reading "USS SARATOGA, Norfolk, Va." To accomplish this a special crew of mail clerks from the Norfolk Fleet Post Office went aboard the big carrier the evening before and began cancelling the stamps at 0700 the first day of issue.

An attraction of Fleet Week was the "Progress of Naval Aviation" exhibit of aeronautical equipment, guided missiles, and Navy aircraft ranging from pre-World War II to modern jets.

Naval Bases throughout the country had been scoured to find these planes. On exhibit were Navy trainers, fighters, attack, patrol and anti-submarine planes, many of which are scheduled for permanent display later in the proposed National Air Museum.

The *N3N Yellow Peril*, Naval Aircraft Factory built bi-wing, rested beside the sleek, swept-wing *F9F-ST* modern, high speed jet trainer.

A model of the famous *F4F* was displayed, the old *Wildcat* that first tangled with *Jap Zero's* early in WW II. The experimental *F5U Flying Wing* was there. Might of modern fighters

was represented by the *F9F-6 Cougar*, *FJ-3 Fury*, *F4D Skyray*, *F11F Tiger*.

Attack planes included the *SBD-6* of Battle of Midway fame, the *SB2C Helldiver* and rugged *TBF*. In contrast was the *A3D Skywarrior*.

Sea-based patrollers included a WW II *PBY Catalina*, *PBM Mariner* and the modern *P5M Marlin*. Highlight of the land-based patrol planes was a *P2V Neptune*, sister to the "Truculent Turtle." That world-famous plane on permanent display in the corner of the Norfolk Naval Air Station is seen daily by thousands.

Aerological and aero-medical equipment featured the newest in pressure suits and other gear required for supersonic flight.

The guided missiles exhibit traced missile development from the early research vehicle *Pollux*, to *Regulus I*, *Sparrow I*, *Sidewinder* and *Terrier*.

On display were a German *X-4*, wire-guided air-to-air missile that operated against *B-17's* near the end of WW II; the pioneering *Gargoyle* and its successors the glide bomb *Bat* and *Gorgon*, first of the more modern type air-to-air missiles; the *Loon*, Navy version of the German buzz bomb; and the *Lark*, said to be the first surface-to-air missile known to have destroyed a target aircraft.

Thousands of visitors viewed the equipment, missiles, and the more than 40 planes making up this exhibit, the most comprehensive collection of

Navy planes ever yet assembled to depict the progress of Naval Aviation.

Hampton Roads' potentiality as one of the world's greatest natural harbors was realized on June 11th, eve of the big review. On that day, more than 100 vessels slipped from their berths at the Naval Base piers, or from anchorages, to their appointed positions out in the Roads. Movement of this "international fleet" recorded an all time high for ship activity during one day in this area. RAdm. C. V. Rickover, Commander, Destroyer Flotilla Four, directed traffic to the review line from a blimp.

On the day of the review, operations went off like clockwork, so much so that the four hour review was completed and the reviewing ships were back at the piers some 30 minutes early. Only by careful and detailed planning could such a gigantic operation have been conducted with such smoothness and success.

Except for the fly-over, the review was a static one; the three reviewing ships were the only ones under way, passing down between the double line of ships lying at anchor.

Selected for the three-ship reviewing squadron were the two guided missile cruisers, *USS Boston* and *USS Canberra*. Third member was the tactical command ship, *USS Northampton*, only one of its type in the Navy. Distinctive in its outward appearance, the *Northampton* incorporates all the newest developments in communication and electronics equipment needed for a large planning staff afloat.

About mid-day these three vessels embarked their parties. Among the hundreds of guests were civilian and military heads of the Armed Forces, five-star Admirals Halsey and Leahy, senators, congressmen, international diplomats from many countries and numerous press representatives.

As helicopters hovered overhead and blimps formed a majestic escort, the reviewing ships cast off their lines and moved from the piers. The *Canberra* headed into the stream to join up with the *Boston* and *Northampton*.

And then began the ancient and magnificent protocol of the sea. As these three vessels stood out in the channel, powder smoke poured forth along the long columns when ships in the entire review line fired a simultaneous 19-gun salute to Mr. Wilson.



THE CARRIERS RANDOLPH, VALLEY FORGE, LEYTE, PROUD PART OF LINE OF U. S. SHIPS

The *Canberra* answered with a 17-gun salute to Admiral Wright and then moved forward at seven knots toward the northern column. Her brightly painted *Terriers* pointed high into the sky, poised for launching.

In fitting position, the first ships in line to port in the northern column were the battleships *Wisconsin* and *Iowa*. Long, sleek and beautiful these matriarchs of the Fleet were the only battleships in the review.

Like every other ship in the review they were in full dress—gay with bright signal flags fluttering from dressing lines rigged to mastheads fore and aft. White clad ships' crews, augmented by midshipmen, stood at attention at quarters, or manned the long rails shoulder to shoulder.

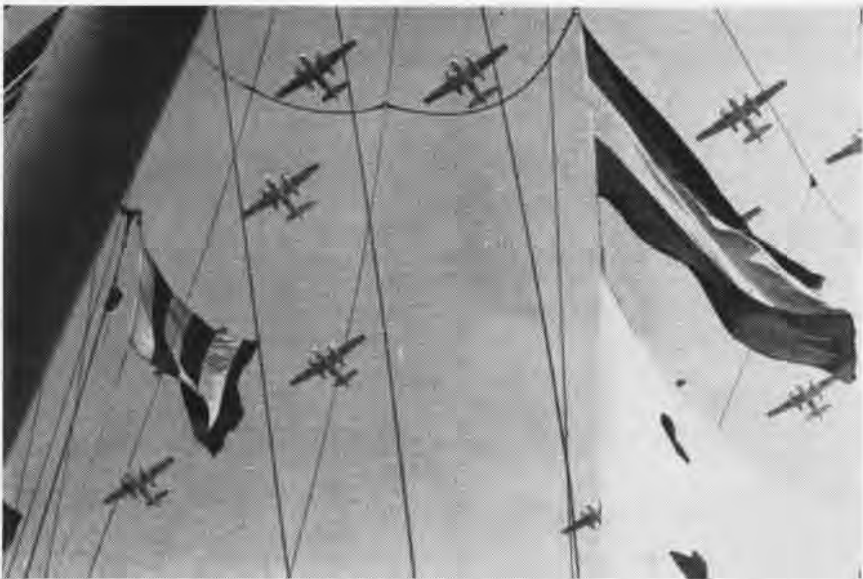
Next to the *Iowa* was the French cruiser *De Grasse*. The uncluttered lines of her gray painted hull swept cleanly back. But her black guns pointed skyward gave meaning to her name anti-aircraft.

Pride of the British Fleet, the angled deck *Ark Royal* was next, and then USS *Saratoga*, world's largest warship, dwarfing everything in sight.

As the *Canberra* picked up speed to 12 knots, closing the gap from the *Sara* to the next ship grouping, she passed dozens of small craft clustered near the open space. These and hundreds of others kept a 70 patrol boat Coast Guard-directed force busy keeping wayward craft behind the imaginary line marking the inward boundary of the spectator area.

In startling, and charming contrast to the Spartan severity of modern warships was the Spanish schooner *Juan Sebastian De Elcano*. As the inspecting ships passed her, civilians aboard them, free of the necessity of saluting, burst into spontaneous applause. Her white-uniformed sailors made patterns of geometric perfection, standing high on her yardarms, and on the bowsprit in spread-eagle formation, and stiffly lining her rigging.

Steaming smoothly on down the northern line, the *Canberra* passed all 33 visiting ships, in addition to some of our own. As each visiting ship was raised, her sailors, ramrod stiff, stood at attention, while the ships with a band played the U. S. national anthem. Each time, aboard the *Canberra*, the tireless bugle call signalled the return salute and the *Canberra's* band hon-



ANTI-SUBMARINE S2F'S FLY IN FORMATION OVER THE GUIDED MISSILE CRUISER CANBERRA

ored each foreign ship with its anthem.

The proud Italian destroyers answered salutes with three loud, firm "Hurrahs" clearly audible across the water, while every man aboard flung his cap high.

At the end of the 14-mile run eastward, the *Canberra* and her companions circled for the return review of the southern column, formed entirely by United States vessels. Headed by the two Coast Guard cutters *Absecon* and *Yakutat*, these 60 ships completed the panorama of U. S. naval power. Ranging from the angled deck carrier *Randolph*, the cruiser *Macon*, the destroyer types with anti-submarine weapons, the auxiliaries from the Service Force, the amphibious craft, the radar picket and guided missile-carrying submarines to the mine sweeping vessels—fleet and coastal "wooden ships with iron men" and the MSB's, "mighty mites of the splinter fleet," all were a proud part of the line of U. S. ships.

When the airshow started and prop planes and jets began making passes over the review, "Eyes up" was the signal. One spectacular wave of planes followed another. Sections of P5M's and P2V's were overshadowed by waves of AD's and S2F's.

The line-up of jets screaming over included F4D *Skyrays*, FJ-3 *Furies*, A4D *Skyhawks*, A3D *Skyknights*, F3H *Demons*, F2H-3 *Banshees*, and F8U's.

Three radar-loaded WV *Connies* that

roared by in formation caused many second looks.

Climaxing the aerial demonstration, the Blue Angels, trailing red and blue vapor streamers from their F9F-8 *Cougars*, described fantastic formations in the sky. Admiring oh's and ah's in many languages were heard on all sides.

As always, the precision flying of the four-plane formation, and the maximum performance maneuvers of the two solo planes represented naval aviation at its finest.

On the morning of the review Admiral Wright said, "This review is of great benefit to the people of the United States, perhaps more than they realize. These nations have gone to much expense, in time and money, to pay us the honor of accepting our invitation to celebrate our birthday."

The *Norfolk Virginian-Pilot* editorial, "The Triumph of the Review," agreed with Adm. Wright: "That is the meaning of the International Naval Review. Its superb display, its sheer magnificence, its beauty of line, its sense of power, its color were felt by everyone who saw it. But underneath all these lay the meaning which Admiral Wright was expressing, because it is the heart of the matter. This was the outward manifestation of inner relations of nation and nation; of their good feeling; of their friendship; of their trust, and of their willingness to join together in common efforts for peace and for freedom."

Rank Dominates Jet Class Junior Student is Three Striper

In five years of training Naval Aviators in weapons delivery techniques, Fleet Air Gunnery Unit, Pacific, never had such a senior class to deal with as it has since the present jet attack class arrived.

This class includes a Commander as weapons instructor, two squadron commanders and an air task group commander rounding out the flight.



INSTRUCTOR AND STUDENTS BESIDE F9F-8T

They're learning, in an eight-weeks course, nearly all methods of weapons delivery which will help them run their new units. During the course they get five weeks of flying the "idiot loop" and high altitude work in the special weapons phase; two weeks of conventional air to ground rocketry, bombing and strafing; and one week of air to air gunnery.

Pictured above are Commanders A. S. Yesensky (FAGU Training Officer), A. K. Earnest, K. C. Ruiz and W. R. McQuilkin.

Students in the "Commander Flight" spend half their day in the air and the other half in classroom sessions.

Gun Belt Gets New Role Replaces Corpsman's Shoulder Bag

A new type Hospital Corps pouch has been developed for Corpsmen who administer emergency first aid aboard the *Lake Champlain* in the Sixth Fleet.

A Browning Automatic Rifle cartridge belt buckled to the corpsman's waist has replaced the old shoulder-type bag. This allows the medic free use of both hands while he treats an injured man.

Chief Hospital Corpsman E. W. Edwards conceived the idea which has been endorsed by flight surgeons and ship's medics for first aid calls.



CORAL SEA IS READY FOR 14 MILE TOW



WORKERS SWARM OVER REFLOATED PLANE

Turbines Help Raise R3Y Plane Recovered From Frisco Bay

Salvage experts used a new technique to raise the R3Y-2 flying boat "Coral Sea" that ripped a nine-by-14-foot hole in its hull while making an emergency landing in San Francisco Bay.

The plane rested in nine feet of water. After its crew of 16 had been evacuated, LCdr. M. W. Croft, salvage officer, faced the job of raising it.

He rejected as impractical a plan to insert air bags under the crippled boat's wings. Instead, he borrowed two small gas turbines from NAS ALAMEDA and mounted them on 40-foot rearming boats alongside the plane. The R3Y's turboprop engines and propellers were removed and its gas tanks defueled to make it lighter.

The salvage crew ran a three-inch, Y-shaped duct from the two turbines into the plane's hull which had been sealed off except for the rupture in its bottom, then began pumping air into the hull.

After two days in the mud, air pressure broke the ship loose and in a few hours raised it high enough that only 18 inches of water remained in the hull. One gas turbine was then shut down and the 80-ton plane stayed afloat on air supplied by the remaining

turbine. Air bags were fastened under the ship as a safety measure.

The plane was towed 14 miles to a beaching area 65 hours after its emergency landing in the bay, May 10.

Leadership Plaque Given VA(AW)-33 Honors School Grad

Michael Varano, 18, has been awarded All-Weather Attack Squadron 33's Leadership award for 1957. Award of this plaque to an outstanding male



VARANO ACCEPTS AWARD FROM LTJG. MOSER

senior of the local high schools in the Atlantic City area is made annually. Candidates are judged on leadership, character and scholastic record.

Mike was captain of his school's football team, member of the basketball team, vice president of the National Honor Society and a Junior Rotarian. He was also chosen to receive the Exchange Club's annual scholarship.

Ltjg. James Moser, Squadron PIO, presented the Navy leadership award.

RAdm. Hoskins Retires Appointed to Important DOD Post

Secretary of Defense, Charles E. Wilson, has announced the appointment of RAdm. J. M. Hoskins, USN (Ret.), as Director of Declassification Policy for the Department of Defense.

Until his recent retirement from Naval active duty, Adm. Hoskins was president of the Naval Examining and Physical Disability Board. As Director of Declassification Policy, the Admiral will work under the direction of Assistant SecDef (Public Affairs.)

The newly organized office will be responsible for the development, interpretation, and dissemination of policy regarding uniform standards and procedures for the downgrading and declassifying of classified materials.



HIGH SPEED Whirlybird, the McDonnell XV-1 attains 200 mph. Development of new vertical take-off convertiplane is being sponsored by the Army, administered by the Air Force.

Typewriters Top Prizes Coast Students on Navy Exercise

Typewriters provided by former SecNav Dan Kimball will be given two winners of a West Coast high school news writing contest. This announcement was made as journalism students from a four-county area comprising greater Los Angeles spent a day aboard the USS *Princeton*.

Before lunch they saw the ship from bilges to bridge, watched helicopter bounce exercises, observed S2F Trackers shoot rockets and drop miniature bombs on a towed spar.

After lunch Capt. John L. Chittenden, CO, read a statement over the public address system from Adm. Arleigh Burke, CNO, to the young writers in which he cited the importance of anti-submarine warfare.

Afternoon observations included 40mm-gunnery exercises, destroyer plane-guard duty of the USS *Bradford* and simulated refueling at sea. Each student—there were 130—got a picture of the ship, her skipper and the student group for the school paper.



RESERVE Squadron VP-873 of NAS Oakland used a lot of ammunition, rockets, and bombs on their last, highly successful annual training cruise, their first as an ASW unit.

VX-6 Ready for Antarctic Polar Fliers to Use New R4D-8's

Navy planes will make history's earliest flight to the Antarctic Continent to begin Operation Deep Freeze Three. In two previous Antarctic summers, flights have been launched in mid-December and mid-October. This year a P2V-7 and two R4D-8's will be ready to go by 15 September.

Addition of two high-powered, long-range R4D-8's will bring AirDevRon Six's on-the-ice operating potential up to an even dozen multi-engined planes for Deep Freeze Three: two R5D's, two P2V-7's, two R4D-8's and four R4D-5's left behind from Deep Freeze. Two plus several DeHavilland *Officers* already in the Antarctic.

This year's job for the Navy planes will include flying trail support for scientific traverse parties, landing men and critical non-droppable cargo at remote bases, landing men to construct a small support base at Liv Glacier between McMurdo Sound and the South Pole, and evacuation of men who spent the winter in the Antarctic between phases of the operation.

C-124 *Globemasters* of the 18th Air Force will again fly from McMurdo Sound's sea ice airstrip to shuttle heavy cargo loads to the South Pole and Byrd Stations.

VX-6 planes based at NAS QUONSET POINT will fly to Wigram Field in Christchurch, New Zealand via Moffett Field, Barber's Point, Canton Island and Nandi, Fiji. Early R4D flights to New Zealand will carry RAdm. George Dufek, CTF-43, and his staff.

One P2V-7 and two R4D-8's will fly to the Antarctic sometime between September 15 and October 1. *Globemasters* will begin shuttling priority cargo from New Zealand to McMurdo Sound by 1 October, then will commence heavy airdrop operations. The remaining planes of VX-6, one P2V-7 and two R5D's, are scheduled to arrive in the Antarctic by 15 November.

Globemasters and R5D's will operate from a prepared sea-ice landing strip but the ski-equipped P2V's, R4D's and *Officers* are not restricted to hard ice.

● Chief F. F. Farragut, USN, a member of VX-6, is getting ready with his squadron to shove off for South Polar regions. He is a great, great grandson of Adm. David G. Farragut, remembered for his famous remark, "Damn the torpedoes, full speed ahead."



FURY PILOT Ltjg. W. A. Sinden, right, earns congratulations of LtCdr. B. C. Hamilton for making 12,000th landing aboard *Forrestal*. Landing was made May 25 in the Sixth Fleet.

Hot Atoms Used in Tests Help Prove Strength of Elements

Radioactive isotopes from Oak Ridge National Laboratory are being used by Douglas Aircraft Company to improve the quality of aircraft and missiles, a company release states.

The unstable radioactive isotopes are mixed with the stable species of a given element without altering the latter's behavior or properties. This is known as "tagging" and it allows scientists to trace the element through the course of subsequent operations.

Uses of the isotopes include precise non-destructive measurement of the thickness of sprayed coatings, measurement of component concentration of plating solutions, comparison of efficiency of various methods of sealing anodic coatings and determining rising effectiveness.

Other uses include diagnosing the cause of failure in flash welds, learning the rate of deterioration of fuel tank sealants by various modern fuels and finding the amount of hydrogen in liquids by beta ray measurement.



MEDALLION in lieu of a second plaque for MATSPac Safety is awarded RAdm. Thomas B. Williamson, left, by LtGen. Joseph Smith. MATSPac logged nearly 100,000 safe hours.



JIM VINER GIVES PILOT FINAL CHECK-OFF



MARINE FERRY PILOTS IN FORMATION OVER SIKORSKY PLANT AS HMR-261 HEADS HOME

MARINES TRANSITION TO HUS-1

A NEW HELICOPTER, slated for the Marine Corps, is coming off Sikorsky assembly lines. First East Coast squadron to receive the S-58 (Marine designation HUS-1) was HMR-261, based at MCAF NEW RIVER, North Carolina.

Sixteen members of the squadron, skippered by LCol. R. J. Flynn, Jr., went to the Sikorsky plant in March to learn about the new whirlybird. Both pilots and crewmen underwent intensive training by Sikorsky test pilots and technicians. They were drilled on theory and flight characteris-

tics of the HUS-1, on the aircraft's navigational, hydraulic, and electrical systems, and were shown operating and maintenance procedures.

Each pilot was given two hours of flight familiarization training by Jimmy Viner, Sikorsky's chief test pilot. The Marines found little difficulty in transitioning to the new helicopter from the HRS, which they had flown previously.

The HUS-1 is a 12-place copter, with a load-carrying capacity double that of the HRS. It can carry eight litter cases or more than 4000 pounds

in external slings. The whirlybird has four-blade main and tail rotors, and a conventional three-wheel undercarriage, with a tail-wheel at the extreme rear of the fuselage. The fuselage measures almost 66 feet, and the height is a little over 14 feet. The cruising speed of the HUS-1 is 104 mph. Its service ceiling is over 9000 feet, and its range, with reserve is 270 miles.

It didn't take the Marines long to master the HUS. Within a few days, they packed their gear in several of the helicopters, and flew back to their home base at the New River Facility.



INSPECTION SHOWS POWERFUL WRIGHT ENGINE HOUSED IN NOSE



HMR-261 PILOTS SIGN ACCEPTANCE PAPERS FOR HUS-1 COPTER

MARINE MASTERS OF MAINTENANCE



THE SQUADRON office administers personnel services involving health, special services, and pay records for each MARS-17 Marine specialist.



THE POWER PLANT division has on hand completely assembled engines and skilled men are able to install them quickly and efficiently.

THERE IS nothing simple about the work Marine Aircraft Repair Squadron Seventeen is called upon to do. So many types of aircraft are used in Marine aviation that this squadron based at NAS IWAKUNI finds its responsibility varied and complex. The largest Marine aircraft maintenance and overhaul facility in the Far East, it is attached to First Marine Aircraft Wing.

Commanded by LCol. H. R. Kolp, MARS-17 services approximately 50 aircraft each month. These range in size from single engine OE artillery observation planes to four-engine R5D transports. All kinds of jobs from fueling to engine replacement are done.

Replacement parts are stocked by

the thousands. Whether it's a submarine electronic tube an inch long or a two-ton 28-cylinder engine for the *Flying Boxcar*, MARS-17 has it. Flight equipment, including parachutes, life rafts, oxygen masks, is also stocked and repaired. The repair facility is also equipped to service all types of weapons from the .38 caliber sidearms to 1000-pound bombs.

MARS-17's Operations Department has at its disposal transport aircraft, jets, and attack planes. Marine pilots serving in administrative or ground command capacities use these aircraft to attain monthly proficiency flight time. During a recent exercise, MARS-17 Operations logged 520 transport hours while flying support missions.



ENTIRE TAIL section of an F9F Cougar jet is removed to provide access to jet engine.



SSGT. JAMES Annis, a carburetor shop technician, removes for adjustment one of the carburetors used on a big R4Q *Flying Boxcar*.



ELECTRONICS DIVISION technicians repair all kinds of electrical and electronic equipment that are required for various maintenance jobs.

POLISH AVIATION HIGHLIGHTS



MEMBERS OF the Polish air force fly the Russian Beagle, a twin engine light jet bomber which made its first appearance in 1950. It appeared outside Russia in 1951 in East Germany. Here Polish fliers are carrying out a training exercise in order to perfect bombing techniques.



A TAIL WITH striking power belongs to the Beagle bomber with its twin gun turret.



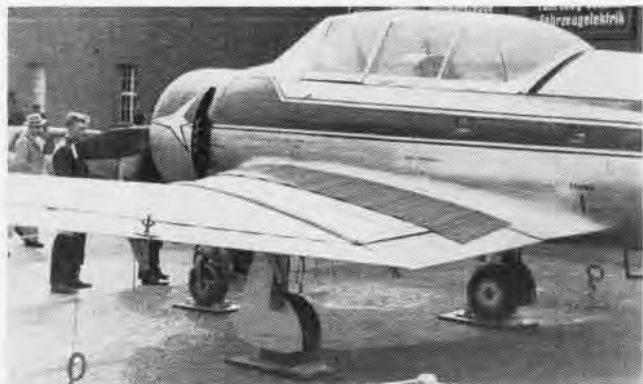
POLISH AIRCREWMEN prepare bombs before they are loaded aboard the jet bombers.



ON BOTH SIDES of bombardier's compartment in the fuselage are Beagle bomber's guns.



ONE OF THE sights that attracted visitors in great numbers at the Leipzig Industrial Fair was this Polish TS-8 Bies trainer aircraft.



STILL ANOTHER close-up view of the TS-8 Polish trainer indicates its apparent resemblance to the U. S. Navy's old SNJ training craft.



THE RUSSIAN CRATE was shown at the Leipzig Fair with its East German markings. The Crate is a twin-engine development of the Coach

with improved stability characteristics and some increase in performance. It has a square tail and wing tip compared with the Coach.



POLISH AIR FORCE men seem to be giving careful attention to special instructions. There seems to be a great difference in ages. The Polish

airmen are, of course, trained along the same lines as Russian aviators and the planes they fly are largely of Russian design.



CZECHOSLOVAKIAN aircraft was represented by this "Super Aero" light transport, carefully protected from the rain by a plastic envelope.



THIS SM-1 Polish-built Hare indicates that the Polish Air Force is showing a lively interest in the ways a helicopter can be used.



STRUCTURAL FAILURE HAS BEEN THE CAUSE OF MANY A CRASH AERONAUTICAL STRUCTURES LAB AIMS TO KEEP PLANES FLYING

STRUCTURE STRESS STATISTICS

EVERY TIME an airplane goes through a pull-out, a roll, or any maneuver, it grows a little older—a little more tired. There's bound to be wear and tear. The airplane frame ages, and the tempo of this process is related to how it's used.

An A3D, for example, used in tactical training, wears out far more quickly than another A3D used mostly for long-range navigation hops. Let both of them start out in the same condition and fly the same number of hours, there is certain to be a difference. Both suffer a measure of fatigue, but the tactical trainer has the greater.

This difference in fatigue damage raises critical questions. How long should Navy airplanes fly before final removal from service? What sort of flight-load experience should be taken into account in designing high performance airplanes for the Fleet? Only realistic answers are useful, and realism is possible only if we have data on what airplanes actually are doing in their routine operations.

"Educated guesses" were all right 20 years ago when there was permissible margin for error. But today, the working margin between a good airplane and an overweight or under-strength "dud" is narrow and designers must figure right to the line. If this line is obscure, there can be trouble.

Airplanes lost or damaged because of structural failure can be replaced,

By W. A. Langen, Jr.

Naval Air Material Center

or the design "fixed," but there is no real replacement or "fix" for pilots whose lives may be lost under these circumstances.

Fortunately, there is a solution to this problem of finding the design "line." Navy is getting the "word," the right word, on Navy aircraft and their flight loads in service. Instrumentation is providing the data we need. Miniature automatic in-flight recorders and analysis and computing gear are providing the Navy with the life histories of many of its fighters, attack aircraft and bombers. The information is "just what the doctor ordered."

The program to collect these data has been established by the Bureau of Aeronautics at the Navy's Aeronautical Structures Laboratory, Naval Air Material Center, Philadelphia. The ASL goes to Fleet squadrons to install and maintain the gear which records everything the aircraft do from take-off to landing. Every pull-out, roll, and rocket run is down on the record. Detailed analysis gives the needed statistical picture of the airplane, and on the basis of this information, it is possible to determine design requirements based, not on assumptions and "educated guesses," but on actual use. Instruments tell ASL experts more

about the aircraft than you know about your own costly motorcar.

Let's take a quick look at the gear and what is actually "watched." An illustration (bottom of opposite page) shows the various components mounted on a display board. Actually they are separated and placed in convenient places in the fuselage. This takes some doing in the well-known right airplanes we have today.

The system, developed by ASL, has a "heart," a miniaturized oscillograph containing pencil-lead thin galvanometers which deflect beams of light on sensitized paper as signals are received from the various sensing elements. Study a typical record of a bombing run (opposite page). A single paper loading is good for ten hours in the air. The best part is that it is automatic, going on at take-off, off at landing. Nobody needs to concern himself with the gear.

Apparently delicate, the instrumentation has stood up well. P2V-7's at Malta, F9F-8's aboard the USS *Lake Champlain* at sea, as well as aircraft based at naval air stations have yielded accurate data despite rugged treatment. The gear has accurately recorded airspeed, altitude, linear accelerations (including the familiar G's), and angular motions (rolling, pitching and yawing) about the three airplane axes.

In addition to the recording sys-

tem, G's alone are counted in several hundred Navy airplanes by means of the small "counting accelerometer" shown in the lower left of the system illustration. Just as the odometer in a car counts miles, this instrument counts the number of times the prescribed G (or load factor) levels are exceeded. Fighters and attack planes are set to count at the 4, 5, 6, and 7 G levels while larger airplanes have lower settings. Since G's pulled determine the stresses in the wing, this information can be used directly in setting up fatigue tests to see just what the airplane can do before it "breaks."

Meanwhile, "back at the ranch" at ASL, technical experts work over the records received from the recorders and counters and pass the word to the Airframe Design Division at the Bureau of Aeronautics. To process the records, semi-automatic electronic equipment (including, of course, an electronic "brain") is used. Thus the work is reduced from years to weeks and made available swiftly.

At the Laboratory, engineers have developed a fatigue test facility. Here it is possible to break aircraft wings on purpose by repeatedly subjecting them to loads until the fatigue breaking point is reached. Thus the probable fatigue life expectancy of like wings can be estimated if their probable flight load history is known. Realistic tests such as these are developed to improve design standards.

Selection of a particular Fleet squadron for the collection of data is based on the need for information for particular types, models and missions. In the beginning, data for all types were needed. The research program started in AD-4's at VC-33, now VA(AW)-33, and F2H-4's at VC-4 now VF(AW)-4, and has expanded to include many models, including the FSU-1 *Crusader*



LABORATORY MEN INSTALL RECORDING GEAR

tested by Fighter Squadron 32.

Coverage of the FSU started in the Fleet Introduction Program at NATC PATUXENT RIVER as it had with the FJ-4, A4D-1, and F11F-1. The aim was to "catch it as it emerged from the egg."

Nor has the Navy's largest aircraft, the blimp, been overlooked. Since the blimp figures prominently in ASW work, its design problems are important. On the other hand, surprisingly little is really known about airship load histories despite the fact that it is our oldest type of flying machine.

A squadron is approached directly by ASL engineers with the blessing of AirLant and AirPac. CNO has already given his blessing to this load-history gathering program. The commanding officer, exec, maintenance officer and flight personnel are introduced to the objectives of the project, and enthusiastic reception and cooperation are instantly given almost without excep-

tion. None know better than the pilots the need for well designed, sound-performance airplanes when the chips are down.

Nor is design the only area of benefit. There is often an interesting by-product. A squadron exec was following the book in bomb practice, but just didn't ring the bell as often as he should. A comparison of his flight records with those of others supplied the answers he needed, and he was set.

It is well to point out here that the pilot's identity is normally submerged in a code number (for the effects of pilot technique on load history) and these records have never been used to spy. The purpose of the research program is much too important to jeopardize its effectiveness by monitoring individuals.

This kind of data has been put to good use in Aviation Medicine. The AeroMed people were given "time-at-G-level" statistics which they used in designing a new type pressure suit. There is no substitute for information on actual use.

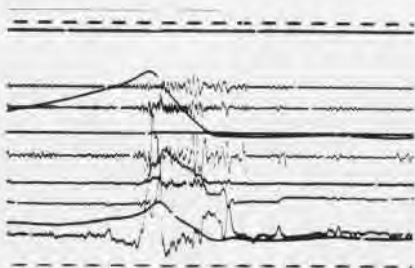
In addition to covering normal operations, special programs are monitored to determine any deviation from the normal in the results. For this purpose, ASL recently went to the 1957 Naval Air Weapons Meet at NAAS EL CENTRO, California, with VA-44 and VA-45.

The development of a thorough method of studying aircraft in flight under all kinds of conditions yields valuable data.

The Navy and the Aircraft Industry are eager to get the kind of information the Aeronautical Structures Laboratory is gathering. The system ASL installs to get the data pays in dividends. Pilots who fly Navy planes are welcome to visit the Laboratory when they are near Philadelphia, Pa.



THESE INSTRUMENTS COLLECT STRESS DATA



A BOMBING RUN RECORD LOOKS LIKE THIS



ASL EXPERTS EDIT THE RECORDS TURNED IN

AND THERE I WAS ...



Japanese Navy Build-Up

IN THE *U. S. Navy Daily Aviation News Bulletin*, early edition of NANews, appears this item in the issue of 5 January 1920: "The following information has been received from a reliable source in Japan: 'The construction of a depot ship for aeroplanes from which aeroplanes can be launched from the deck by using hydraulic power, has heretofore been used with success only by the British Navy. After various investigations in this matter, our Navy has succeeded, generally speaking, in perfecting a depot ship of this type.'"



A Signifi-cat Factor

FOR A CALL sign designated for identification purposes, Advanced Training Unit 206 received that of "Polecat." When it was decided to acquire a mascot for unit interest and morale, the appropriate choice was a live Florida Polecat (Skunk).

A local veterinarian, Dr. J. W. Andress, volunteered his professional knowledge and experience and supervised a skunk hunt. Lt. E. D. Goetschius said he would accept the stinking duty and assist in the capture. Success crowned the efforts of the hunting party and they carefully disarmed the lonesome Polecat they caught.

At a ceremony at Forrest Sherman Field following a personnel inspection, Dr. Andress

presented the Polecat to Cdr. R. A. Beveridge, O-in-C of ATU-206, and assured him that the pet was unloaded. The Polecat raised his tail to dispute the point, but to no avail.

Cdr. Beveridge accepted the nameless, odorless mascot and presented Dr. Andress with a "Good Neighbor" certificate for his efficient and generous service.

Flying Horse

BACK IN 1920, there were grave questions as to the feasibility of air transport. In the *U. S. Navy Daily Aviation News Bulletin* of 9 April 1920 the scepticism of the non-air-minded is reflected:



"A horse entered in an exposition at Santa Barbara, Calif., arrived by airplane from Los Angeles. The trip was delayed a day, until officers of the Humane Society had been convinced no cruelty was involved in the trip, which was made in an especially equipped airplane."

Peek-a-Boo

THE ADMIRAL was faintly amused when the first face showed up at the porthole of his sea cabin on the aircraft carrier flagship, its owner staring inside with wide-eyed curiosity. However, when a second, third and fourth appeared in quick succession, he sent his Marine orderly to fetch the Petty Officer of the Signal Gang.

When that worthy arrived and stood before



him fidgeting nervously, the Admiral fixed him with a penetrating stare and remarked: "Son, if your boys are curious about this cabin, send them in one at a time and I'll be happy to give them a personally-conducted tour of the premises. But keep them away from that porthole!"

Duck's Talent

EVERYONE knows a duck can swim, but who ever heard of one wanting to be a life-guard?

Well, believe it or not, one applied for duty at MCAS EL TORO. Claimed to have had experience, even had a Red Cross certificate to prove it, and said the job was "duck soup."

Private William R. Duck, who serves with VMF-542, was among the Marines who applied for the choice billet. He didn't get the job, and everyone is ducking questions as to why he didn't.

Private Duck's record failed to show whether he was related to the famous Hollywood star, Donald Duck.

And Then the Fun Began

WHILE THE ships of Destroyer Division II were fueling from the *Hornet* during a lull in operations, members of fueling detail were confounded and the remaining crew



members of the big flattop were convulsed when the Bos'n's Mate of the Watch sounded his pipe over the ship's public address system and solemnly intoned: "Now the smoking lamp is out throughout the ship while destroying refuelers."

Seven Come Seven

THE 77,777TH aircraft recovery aboard the *USS Philippine Sea*, CVS-47, was made recently off the coast of Japan. The ship is part of Task Force 77 in the Seventh Fleet.

Cdr. Neil S. Weary, CO of VS-37, was pilot; RAdm. Thomas A. Ahroon, ComCarDiv-17 was co-pilot.

Simultaneous with the 77,777th landing, CVS-47 was refueling the destroyer *Perkins*, DD-877. The *Phil Sea* pumped 73,000 gallons of 17.5 degree specific gravity fuel to the *Perkins*.

The landing was made at 1617, the 977th minute of a 24-hour day.

IN FOREIGN SKIES

British Navy's 'Seaslug'

The ship-to-air guided missile known as *Seaslug*, developed for the Royal Navy, can engage enemy bombers "at any height at which modern aircraft are capable of operating."

The Admiralty recently released further details of the medium range weapon to the House of Commons.

The *Seaslug* is to engage bombers which evade fighter defenses of the Fleet. Targets are detected by long range radar and subsequently plotted for range, height and bearing. Propulsion consists of a motor and four boosters, the latter being jettisoned after the missile reaches supersonic speeds. First tests were made in Wales and Woomera in Australia.

Seaslug is fired from enclosed positions within a ship. While it needs a far smaller crew for firing than in the conventional gun turret, a large number of officers and men are engaged in maintenance and preparation for firing. The missiles are fired from a triple-ramp launcher which is automatically fed from a magazine below decks.

The *Seaslug* will first be fitted in the four guided weapon destroyers already ordered by the Admiralty.

Britain's Newest Helicopter

The Westland Aircraft Company has announced that the prototype

Westland *Wessex* helicopter has made its first flight. The *Wessex*, a single rotor aircraft ordered by the Royal Navy, is powered by a *Gazelle* turbine engine.

The use of the turbine engine permits a higher load than formerly and in addition, because of its smoothness, the service life of major components is extended. Its noise level is lower than piston-powered helicopters.

The *Wessex* is designed for antisubmarine work, but would also be suitable for search and rescue, communications and supply, casualty evacuation and training. Besides a crew of two, it will carry 12 passengers and baggage or eight stretcher cases.

First production versions of the Westland *Wessex* are expected to be ready by late 1958 or early 1959.

Mirage III

Recently Gen. Gallois, the commercial Manager of Generale Aeronautique Marcel Dassault talked to a group of journalists about the single-seat, delta plane, *Mirage III*. He said that to increase the utilization possibilities of this tactical support craft, a project is now under way to use it in conjunction with a take-off ramp, identical to the one used for the American missile, *Matador*.

Immediate take-off will be provided by two Jato rockets developing a thrust of 13 tons for a period of

two and a half seconds and giving the *Mirage* an acceleration of four G.

Naval Air Training in India

A Naval Air Technical School is being set up at Indian Naval Air Station Garuda, at Cochin. The establishment of the school is a step toward building up local resources and achieving self sufficiency in air training by the time an aircraft carrier, recently acquired by the Navy, arrives in India.

The school will train all technical personnel associated with aircraft maintenance, such as naval air mechanics, electricians and radio mechanics.

The Indian Naval Air Arm was formally inaugurated in May 1953 with the establishment of a fleet requirements unit operating from the Naval Air Station Garuda. Aircraft there were used to gain experience in the anti-aircraft training needs of the Indian fleet and provide experience for a nucleus of personnel for expansion.

Eighteenth Farnborough Show

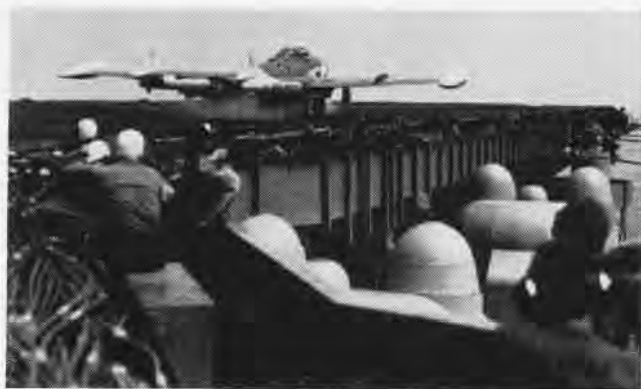
Britain's annual air show, the 18th of its kind, will be staged at the Royal Aircraft Establishment at Farnborough, Hampshire, September 2-8. Officials promise that it will be bigger than ever.

According to the Society of British Aircraft Constructors (SBAC), more than 350 firms have booked space in the exhibition hall, compared with the previous record of 338 last year.

Guided weapons are likely to be prominent in the show, and the aircraft industry hopes to get security clearance so that it can give the public some indications of its achievements.



AFTER THE INTERNATIONAL Fleet Review at Hampton Roads, a cross-training operation was carried out between the USS *Saratoga* and the British carrier *Ark Royal* and their aircraft. Both ships have the



angled deck and mirror landing system. Above are shown a British *Fairey Gannet*, an ASW type plane, landing on the *Saratoga*, and a two-seater *Sea Venom* fighter being catapulted for flight to *Ark Royal*.



EARL MARKERT, ADC, SHOWS LT. BERTHELSON HE CAN FLY BIRD



'READY, SIR' SAYS CREWMAN TO LT. A. BERTHELSON, O-IN-C

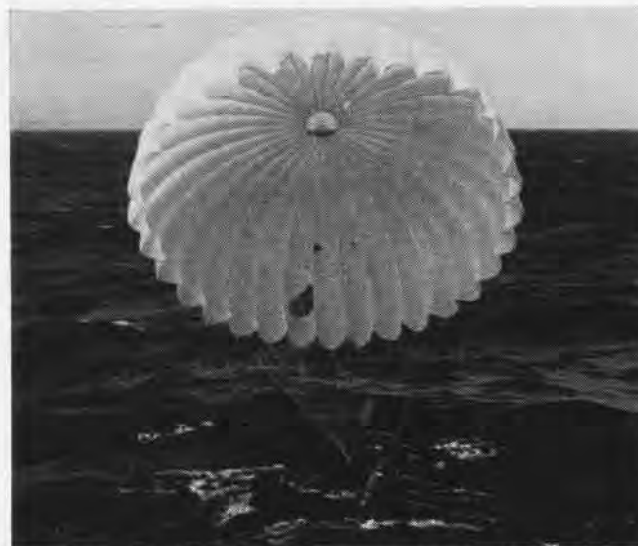
AIRCRAFT CARRIER JUNIOR GRADE



DOWN THE 30-FOOT RUNWAY GOES TARGET DRONE AT 200 MPH

THE NETLAYER, USS *Etah*, is setting up targets these days. It doesn't look like an aircraft carrier, but launches and recoveries are all in a day's work. The aircraft are KD-6G-2 drones which weigh 350 pounds and have a speed of 180 to 200 mph. Each drone costs about \$3100, but if eagle-eyed gunners don't shoot them to pieces, they are used over and over again to sharpen the eyes of the fleet.

Similar to the KD-6G-2 are the KD-2R-3 and the KD-2R-5. The latter drone is capable of radar out-of-sight control. All are effective, cheap and make challenging targets.



PLASTIC-LINED WINGS CAN KEEP DRONE AFLOAT ABOUT 30 MIN.



DRONE IS RECOVERED A FEW MINUTES AFTER IT HIT THE WATER



WEEKEND WARRIORS, Lt. J. Gillespie (L) and Lt. P. Florea piloted NARTU Jax's last two AFs to Litchfield Park, Ariz. Future operations of VS-741 and VS-742 will be in S2Fs.

Former Angel Flies Tests Calls F8U-1 Greatest Thrill Yet

Former *Blue Angels* pilot Dayl Crow is a Chance Vought test pilot.

After V-5 training at Oklahoma University, Korea combat service from the USS *Philippine Sea* which included action at Inchon and Hungnam, a period as all-weather instructor in jet instrument flying at Corpus Christi and finally a tour with the *Blue Angels*, Crow left the Navy in June 1955 to return to college. He studied engineering at the University of Texas.

The 28-year-old pilot describes flying the F8U-1 *Crusader* at 1000 mph in level flight as his "most exhilarating experience" to date.

CVA Unit Makes 575th CCA Logs 38 Radar Approaches in Day

USS *Yorktown's* Carrier Controlled Approach team completed its 575th radar-guided approach in June. At the start of her cruise, the *Yorktown* had 276 such approaches on the books.

The present CCA team, with cooperation from CVG-19, ran the number up to more than twice the previous figure. In the process, the team set a new *Yorktown* record for a single day's operations by directing 38 approaches.

Members of the "Fighting Lady's" CCA team are LCdr. Charles Leonard, Officer in Charge; Lt. Frank Bardecki; Rex Maddox, ACC; William Parker, AC1; Benjamin Clark, AC1 and James Walker, AC1.

Yorktown's unit challenges other AirPac CCA teams to prove they have topped 38 CCA landings in a day.

● Fuel alone carried by a modern jet bomber weighs more than a fully loaded B-17 bomber.

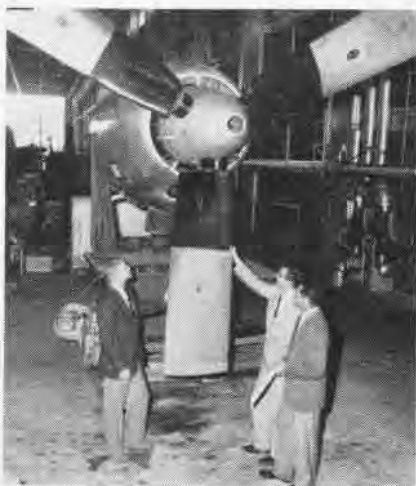
O&R Saved Some Repairs VF-91 Men Replace FJ Tail Cone

While attempting a take-off with a tow banner during a deployment at Fallon, one of VF-91's FJ-3's stalled out and damaged its tail cone section. An O&R representative inspected the plane and recommended sending the damaged tail section back to NAS ALAMEDA for replacement. This would have resulted in a long repair delay and the loss of one operating aircraft for some time.

E. E. Tefft, AMC, T. I. Waddell, AM1, and D. R. Killian, AM3, of the squadron's structure shop went to work on the problem. They first thought they could repair the aircraft to the extent that it could be flown back to Alameda for repairs. But then they found a damaged FJ-3 in the Fallon pool and decided to try a complete repair job.

They salvaged parts from the scrapped plane, manufactured a few, and eight and a half days later, had their *Fury* in flying condition. It was flown to Alameda, where an O&R representative rated it 100% O.K.

The result of the trio's work was one airplane back in operation in a relatively short time, considerable saving of taxpayers money, and a "well done" to the structure men from Cdr. T. A. Turner, CO of the squadron.



FOUR TURBOPROP engines like this, mounted in pairs fore and aft on the deck, are installed on an ex-Liberty ship by O&R at NAS Jacksonville. BuShips estimates the ship will move at a speed of eight knots.

P2V Pre-heating Improved Polar Planes Get Baffles, Covers

Patrol Squadron Ten has adopted a new method of preheating P2V-51's operating from Arctic bases of the Northeast Command (formerly NEAC).

The problem was frozen oil lines, blown seals, ruptured air coolers and engines that wouldn't start—all typical of cold weather operations.

LCdr. R. H. Dudley, Maintenance Officer; Ltjg. P. H. Dittmar, Airframes Officer, and J. R. Elrod, AMC, Maintenance Chief, put their heads together to see what could be done to eliminate these cold weather problems.

The first conclusion was that the P2V has altogether too much ventilation with its open wheel wells and nacelles and that the engine pre-heat was lost.

They designed a set of aluminum baffles to close the area immediately aft of the prop and a 42-inch cotton duck cover for the wheel wells. The installation of cover and baffle is simple, requiring approximately ten minutes per engine. Best of all, it may be accomplished by men wearing gloves.

In trials where temperatures ranged as low as minus 25° they recorded no instances of engines failing to start.

Information on the wheel well covers and engine pre-heater baffles has been sent to BUAER and has been forwarded to interested commands.



CPO'S ALFREDO Gineña, Manuel Grondal and Jose Casal, Spanish Navy, have finished copter maintenance training at Santa Ana in order to teach Spanish sailors. MSgt. John Clements (kneeling) served as their translator.

A CON MAN YOU CAN BELIEVE



CHIEF WEISS IN A FAMILIAR POSITION, FAMILIAR TO HIMSELF AND TO HIS ASSOCIATES

TAKE YOUR pick in interpreting the headline. He's a man who, just by the unexcited monotone of his voice and his concise directions, instills confidence in pilots. Or, 'Con' might be short for Controller, and that is just what he is. At any rate, he is one of groups of men who are banded together for one purpose—to talk aircraft safely to the ground in almost any weather condition—world-scattered Ground Control Approach Units.

One of such groups is GCA Unit 42 at NAS HUTCHINSON. It is manned by specialists, just as any other unit, but one man in particular, a chief petty officer, has been so well trained that the Navy gave him special permission to stand duty ordinarily designated only to commissioned officers.

Leo J. Weiss, ACC, through the actions of the Hutchinson CO, was given permission by CNO to assume the duties of an officer temporarily. This action was necessary because of the reassignment of the O-in-C of the GCA Unit. This left only one qualified commissioned officer to stand duty on a 24-hour operating basis of the Unit. It was realized that it might be several months before a qualified officer replacement might arrive.

CNO gave the permission because

of Weiss' background in ground control work. In addition, he holds a CAA senior certificate as control tower operator and is approved to operate any commercial airport tower.

Weiss assumed his new role in mid-April and has alternated with Lt. E. F. Leonard on a 24-hours-on, 24-hours-off shift since that time.

Weiss began his career in ground control work at NAS OLATHE in 1953, but had been thoroughly familiar with control towers for some years. When he enlisted in the Navy in 1935, he started in aviation ordnance. During WW II, he served in the CVE *Marcus Island*. But after that big war, still an ordnanceman, he began working control towers. At the time, towers were operated by enlisted personnel with a specialist "Y" rating.

In 1949, Weiss was changed from ordnanceman to his present air controlman rating. After the changeover, he operated two of the Navy's busiest control towers. From a stint at NAS JACKSONVILLE, he moved to Naval Base, Guantanamo Bay. Then he became interested in ground control approach.

After training at Olathe, he was sent to a unit at NAS OCEANA. From there, he was transferred to GCA Unit

15 at Argentina. Chief Weiss described Argentina as "the worst weather for any unit to operate in. The weather is practically zero-zero year round."

In March 1955, Weiss narrowly escaped injury while on duty with that unit. During an Atlantic Fleet exercise, which included patrol squadrons operating out of Argentina, the GCA unit was attempting to talk a P2V *Neptune* to a safe landing. The sky was overcast with a very low ceiling and ice was on the runway.

Weiss had left the unit to get a cup of coffee in the control tower. Returning to the unit, he was just in time to see the P2V slice into the GCA trailers parked near the landing strip.

"The pilot had engine trouble," Weiss related, "and when he attempted to reverse power to slow the big ship down, one engine failed to respond. The plane swirled around directly into the trailers at more than 70 knots. Four men were injured, including an officer who was thrown through a door onto the ground. Only one man was injured seriously. He was almost crushed to death when one of the trailers tipped over. The man lived but gave up ground control work."

"We did have one laugh out of the accident," Weiss continued. "I told the officer who was tossed out of the hatch that he should be placed on report for leaving his duty station during an emergency."

GCA Unit 15 rarely failed to talk a pilot safely home. During his 18-month stay in Newfoundland, Weiss said he probably talked more than 550 planes down through bad weather.

"I couldn't even begin to estimate the number of pilots other members of the crew gave assistance to, but you can figure it must have been high with several men on constant duty."

From Argentina, Weiss reported to Hutchinson, where instrument weather is lighter, but with a work-load that's heavier.

When Chief Weiss "swallows the anchor" in a couple more years, he plans to enter commercial air traffic work. He says the Navy has taught him more than that required by commercial air lines in air traffic control.

USN-Ryan Develop APN-67 Automatic Navigator in Production

An automatic navigator (APN-67) developed to meet requirements of jet-propelled flight, is now in production. The 200-pound equipment provides continuous navigational information to pilots.

Based on the air-ground radar Doppler system (an observed change in frequency due to the relative motion of the transmitter and receiver), APN-67 was developed during ten years of research by the Navy and the Ryan Aeronautical Company.

It gathers data instantaneously and transmits it as a visual display for the pilot or navigator, screening out irrelevant aircraft motion. Data includes latitude, longitude, ground speed, desired and actual ground track, ground miles traveled, and course error.

Doppler systems use airborne radar to transmit electromagnetic impulses to the earth's surface which bounce back to an airborne receiver, making it possible to determine the aircraft's speed and precise position over the ground.

Providing knowledge of ground speed and drift angle, the APN-67 enables pilots to take advantage of prevailing winds, resulting in increased speed and range and thereby bringing about greater economies from savings on fuel and time. In addition, the new instrument will enable accurate loca-



PILOT CHECKS NEW AUTOMATIC NAVIGATOR

tion reports of enemy ship and aircraft contacts to be filed and it will increase the ability of mine-layer, attack and fighter aircraft to locate a target precisely.

A special version of the equipment is being used with helicopters in anti-submarine warfare work as a means of providing all-weather capability.

5 DE's Leave East Coast Will Stretch DEW Line in Pacific

Five Newport-based radar picket ships were transferred to the Pacific Fleet in mid-July.

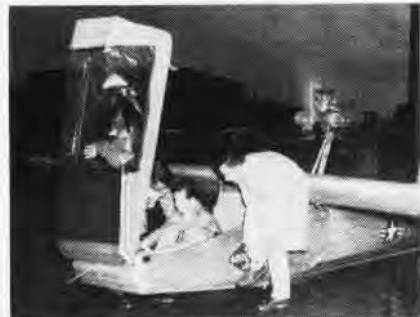
They were the *Strickland*, *Harveson*, *Brister*, *Fessenden* and *Joyce*, all destroyer escorts.

The five DE's will be used to extend the Distant Early Warning (DEW) Line of land and sea-based radar stations. This line stretches across northern Canada and Alaska.

Inflatoplane Steals Show Rubber Plane Unveiled at Olathe

Aviation writers witnessing an open house at NAS OLATHE were captivated by the demonstration of a rubber airplane.

They saw the Goodyear *Inflatoplane* brought into a hangar as a 5x5x3 foot package. The only hint of an airplane about to be unfolded was a small propeller attached to a 44 hp. engine.



TEST PILOT ULM PREPARES FOR A TAKE-OFF

Unpacked, the craft was inflated by an air pressure hose.

Maximum speed for the *Inflatoplane* is more than 60 mph. Its minimum speed is less than 40. They watched it take off in less than 100 feet.

The *Inflatoplane* promises to be a boon to pilots downed behind enemy lines because it can be dropped by parachute from almost all conventional airplanes.

The plane is made of air mat material with nylon threads woven between two rubber-coated pieces of cloth.

Nuclear Carrier Approved Atomic CVA to Cost \$300 Million

Construction of a \$300 million atomic attack carrier has been approved. A House Appropriations Committee reserved authorization for the construction of five additional nuclear carriers pending the shipbuilding industry's ability to produce an acceptable ship in an efficient and economical manner.

The Committee said: "The new carrier will be capable of handling the most modern supersonic aircraft and will be armed with guided missiles as well as provided with electronic equipment of the very latest type. It will represent a tremendous advance in the development of nuclear propulsion and in the striking power of the fleet."



TALOS MISSILE zooms skyward from proving ground to lock onto a target. It is guided by a mechanical brain called a steering intelligence system. When within lethal range, a proximity fuse detonates its warhead. Talos, with nuclear capability, will join the fleet next year as a major armament on the missile cruisers *Galveston*, *Little Rock* and *Oklahoma City*.

LETTERS

SIRS:

I occasionally see a copy of *Naval Aviation News*. It makes very fine reading. I'd like to see more of them.

The 6091st Reconnaissance Squadron is now based in Japan. The more than six hundred men of our squadron could make excellent use of *Naval Aviation News*.

Thank you for any help you can give us in this request.

THOMAS C. McEWEN, JR.
First Lieutenant, USAF

Team Visits NAS Key West Sells Navy Way to Airlant Fliers

ComAirLant's Officer Retention and Naval Air Reserve Affiliation Team has conducted a series of lectures for squadrons in the Key West area.

The two-officer team (LCdr. Daniel E. Chesler and LCdr. Frederick D. Hooks) began lecturing in January. Presentations have been made in the Norfolk and Oceana, Va., areas and at Jacksonville, Cecil Field and Sanford.

The team's goal is to talk to all squadrons under the supervision of ComAirLant in the United States and Europe. Presentations explain to aviators the difference between the Navy way and the civilian way of life.

The talks are designed to retain the young Naval aviators now in service or to keep them active in the Naval Air Reserve after release from duty.



ON THE VALLEY FORGE, Defense Minister *Yong Wao Kim* (Center) of the Republic of Korea learns about U. S. antisubmarine defense from RAdm. William Miller, ComCarDiv-16.



CHECK FOR CHRISTOS is handed to Cdr. S. E. Mendenhall, CO of VAP-61 by Ens. K. W. Westall, I&E Officer. The \$233 check will continue squadron support of Christos Kalopaniyotis, a Greek youngster, which began in 1953 under the "Save the Children" program.

MATS Aircrews Honored Ninth Anniversary is Celebrated

Prize aircrews from MATS Navy squadrons, including a Wave flight orderly, were honored in ceremonies at Andrews AF Base commemorating the ninth anniversary of the Military Air Transport Service.

LGen. Joseph Smith, MATS Commander, presented honor certificates to selected members of Air Transport Squadrons Six, Seven, and Eight.

Aircraft commanders and crews honored were: from VR-6, Cdr. W. L. Fitzsimmons, Lt. Fred P. Clark, Jr., Ltjg. R. R. Christian, and AD1 J. R. Palmara of VR-6, JOSN Evelyn M. McCrum; from VR-7, LCdr. Noel P. Koger, Jr., Ltjg. Homer W. Pate, ACD Dave W. Barr, ABG3 W. R. LeFavor; and from VR-8, Cdr. Richard J. Long, ADC Donald D. Kuehl, and ALC Andrew Pavlic.

New Designators Assigned Ships Join Guided Missile Class

Classification and hull numbers of six light cruisers have been changed. *Little Rock*, *Oklahoma City*, *Providence*, *Springfield* and *Topeka*, once CL's are now CLG's 4, 5, 6 7, and 8 respectively. CLG's 1 and 2 are *Boston* and *Canberra*. The *Galveston*, formerly CLG-93, is now CLG-3.

The *Gyatt* has been redesignated DDG-1. It was formerly DDG-712.

CONTENTS

Aircraft Factory.....	1
VW Crew Rotation.....	10
A3D Checkout.....	12
Atsugi PIC.....	15
Flathatting	19
Naval Review.....	20
HUS-1 to Marines.....	28
MARS-17	29
Polish Aviation.....	30
Structure Stresses.....	32
Sea Stories.....	34
Target Carrier.....	36
Old Hand at GCA.....	38

● COVER

Two F8U Crusaders zoom for altitude as they jettison fuel prior to entering the traffic pattern of the USS Franklin D. Roosevelt. This is a safety precaution taken when an assigned mission is completed in less time than original estimate.

● SUBSCRIPTIONS

Naval Aviation News is now available on subscription for a \$2.25 check or money order (\$1.75 additional for foreign mailing) made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C. Single copies are 20 cents each.

● THE STAFF

Cdr. Bart J. Slattery, Jr.
Head, Aviation Periodicals Office

Cdr. William A. Kinsley
Editor

Izetta Winter Robb
Managing Editor

Lt. Moriece Gleason
Joseph E. Oglesby, JOC
James K. Ready, JO3
Associate Editors

E. L. Barker
LCdr. Warren E. Johnston
Contributing Editors

Jan C. Burns
Editorial Assistant

James M. Springer
Art Director

● Printing of this publication has been approved by the Director of the Bureau of the Budget, 12 April 1955.

NAVAL AVIATION

Published monthly by Chief of Naval Operations and Bureau of Aeronautics to disseminate safety, training, maintenance, and technical data. Address communications to Naval Aviation News, Op-05A5, Navy Department, Washington 25, D. C. Office located in room 5E573 Pentagon; Telephone extensions 73685 and 73515.



SQUADRON INSIGNIA

The Marines of Fighting 334 choose an attacking eagle with a background of clouds and a bolt of lightning to parade their fierce speed and all-weather capability. VA-116 also uses a lightning bolt in its insignie, but has added electron orbits to portray the electronic capabilities. Six stars mean that the squadron was the sixth unit formed in CVG-11. The clock hands and stars of VA-115 represent day and night readiness with world-wide mobility shown by the globe. Reserve squadron VA-924's design portrays the speed of the modern jet aviation age.



VMF-334



VA-116



VA-115



VA-924



RESERVE A SPOT WITH RESERVES

It takes a lot of know-how to keep a modern jet plane in the air. The pilot has the easiest part of the job, an important part, but the men on the ground have to know every bolt, rivet, component of the pilot's plane, and how to keep it ready to do the job he has been trained for. If and when the whistle blows, your country will need trained hands to perform this task. Naval Air Reserve can train your hands and keep you ready to defend your home. Two days a month and two weeks each year devoted to this training will give you the know-how, acquire retirement benefits for you and net you a tidy little addition to your income. Visit one of 28 Naval Air Reserve installations. Discover an avocation.

NAVAL AVIATION
NEWS